Exploring the Impact of a Pedagogical Intervention Employing Explicit, Metalinguistic Vocabulary Instruction Using Technology: A Practitioner Action Research Study

Alison Barr

Bachelor of Education (Hons), University of Glasgow, 2004

University of South Australia

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Glossary of Abbreviations

ACER	Australian Council for Educational Research
BVM	Blended Vocabulary Model
CESA	Catholic Education South Australia
DLD	Developmental Language Disorders
EAL	English as Additional Language
ICSEA	Index of Community Socio-Educational Advantage
LENA	Language Environment Analysis
LSAC	Longitudinal Study of Australian Children
NDIS	National Disability Insurance Scheme
PAT	Progressive Achievement Tests
SES	Socio Economic Status
SAMR	Substitution, Augmentation, Modification, Redefinition
SLD	Specific Learning Disability
SLI	Specific Language Impairment
STEM	Science Technology Engineering and Mathematics
VINE	Vocabulary Innovations in Education
VST	Vocabulary Size Test

Abstract Summary

This practitioner action research was undertaken to examine the effectiveness and capability of a pedagogical intervention that utilised the Seesaw application to design a vocabulary intervention that focused on the introduction of new words related to a Year 3 science topic. It investigated the following questions:

- Does an explicit direct instruction approach to vocabulary development combined with metalinguistic follow up activities improve the use of descriptive vocabulary in Year 3 students?
- Can common classroom technology be used to facilitate a successful oral language program?

This pedagogical intervention was designed to support students within the teacher-researcher's cohort of students as it was identified that there was a need for robust teaching and learning programs in this area. Students explored new descriptive vocabulary through a Blended Vocabulary Model and metalinguistic approach facilitated using the Seesaw app video recording and platform sharing features. There were fourteen participants in the intervention group from one Year 3 class (aged between 8 and 9 years old), with the teacher-researcher delivering and structuring the intervention activities as part of the weekly timetable.

This thesis extends the knowledge of the field by demonstrating that explicit instruction and metalinguistic activities can improve the development of vocabulary and offers an innovative way in which the curriculum can be reimagined using technology in the Primary years. Further, evidence is presented that students use of objective language improved throughout the intervention. The case studies also highlight the impact on individuals as varied and the need for further research in cultural sensitivity for children with different accents, student self-confidence and identity, interruptions to learning and engagement with technology.

Declaration

I declare that this thesis presents work carried out by myself and does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; to the best of my knowledge it does not contain any materials previously publishedor written by another person except where due reference is made in the text; and all substantive contributions by others to the work presented, including jointly authored publications, is clearly acknowledged.

Signed 

Alison Barr 31st October 2023

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Chapter 1

Introduction

This study explores the implementation and outcomes of an intervention which employed metalinguistic activities and digital media technology with the aim of improving vocabulary used in expressive spoken language of Year 3 students. Metalinguistics refers to the overt study of language, specifically to the connections, structures and nuances and plays and important role in the successful development of language. This intervention focussed on the use of descriptive vocabulary in a Science topic and aimed to address the issue of promoting oral language and vocabulary development as a focus area in the curriculum.

This study took place in a traditional Australian schooling context, where students were grouped into a class based on chronological age and with a variety of academic ability represented within the participant group.

In Australian schools, a national curriculum sets out learning objectives in the English curriculum area. The Australian Curriculum for English is clear in the expectation that metalinguistic knowledge is an essential component in a comprehensive English curriculum. Language, in this curriculum context, is defined as a resource for making meaning and developing understanding (Derewianka 2013). The Australian Curriculum intertwines three strands of Literacy, Language and Literature that work together to create a functional model of language that is clearly sequenced and structured for each year level (Australian Curriculum v8.4 2022). The concept of metalinguistics features in the Language strand with a focus on the use of meta-language. This is understood to operate *'at the level of the whole text through to the paragraph, the sentence, the phrase and the word, emphasizing the function that language plays at each of these levels and the interconnections between each level'* (Derewianka 2013). It is this metalinguistic awareness that is at the core of the design of this intervention; all activities in the intervention were designed to foster metalinguistic awareness through conversations, inquiry and experimentation with new vocabulary. It is argued that in this way new meaning and conceptual understanding are developed, and connections are created or strengthened (Elleman et al. 2019). The extent of metalinguistic

awareness that each child possesses can vary in sophistication, but all can be enhanced through metalinguistic activities designed to develop word consciousness.

Metalinguistic awareness can be considered in terms of six categories as developed by Gombert (1997). These have been summarised by Myhill and Jones (2015) as:

- Metaphonological: developing understanding of the sounds that build words.
- Metalexical/metasemantic: developing understanding of word structures and word meanings.
- Metasyntactic: developing the ability to reason consciously about syntax and intentionally control it.
- Metapragmatic: developing understanding of how to use language appropriately in social contexts.
- Metatextual: developing understanding of text structure including cohesion and coherence.

This intervention aimed to specifically focus on the *metalexical* and *metasemantic* elements of children's acquisition of knowledge and deepen understanding of new vocabulary and its meaning through their participation in metalinguistic activities. This was determined to be important in the acquisition and use of unfamiliar words during the activities and in later talks.

As an area of study, metalinguistic activity has many facets of research and discovery. Metalinguistic activity has been defined as 'the ability to reflect upon and manipulate the structural features of spoken language' (Turner 1984, p. 1). More recently Kuo et al. (2017) elaborated on this definition by stating that metalinguistic activity is 'the ability to distance oneself from the content of speech to reflect upon and manipulate the structure of language' (Kuo et al. 2017, p.95). Clearly, both definitions focus on the modality of speech. It is important to note that the area of metalinguistic awareness and activity also includes written language; however, within the context of this study, the focus is on spoken language. The metalinguistic activities in this study focussed on teacher and peer conversations where students were encouraged to reflect, discuss and argue about their understanding of new

vocabulary. The use of these conversations made space for a more dialogic approach to classroom communication. In this way, it was intended that children's oral language be promoted, not only in the acquisition of vocabulary, but also in the increased opportunities for talk in the classroom.

Lesaux and Harris (2015) describe oral language as a rich and complex relationship between phonological skills (an awareness of sounds), morphographical skills (understanding the meaning of parts of words), understanding syntax (grammar and word order rules), using and applying pragmatics (social rules of communication) and semantics (vocabulary and meaning making). Oral language has also been described as the foundation on which all other aspects of literacy are built (Law et al. 2017). However, many teachers can attest to the argument from Beck and McKeown (2007) that there is simply not enough oral language focus in school literacy programmes, especially in the primary years. An integral aspect of oral language learning is the acquisition of a wide and varied vocabulary. This study was designed to focus specifically on this aspect of oral language learning through the use of metalinguistic activities to promote deeper understanding of new words and allow participants to draw from a wider choice of descriptive vocabulary when creating informative talks.

The importance of a wide and varied vocabulary in overall literacy development is widely accepted (Moody 2018). Spencer (2015) states that vocabulary is an essential building block in the formation of literacy skills and must be addressed in literacy programs in all schools. Currently explicit vocabulary instruction is an area of literacy that receives very limited attention in the primary years (Beck & McKeown 2007). Neuman and Roskos (2012) advocate that the method of using 'teachable moments' when unfamiliar words appear in texts as the only form of vocabulary instruction is simply not a rich enough learning experience for most students. In their study of middle school vocabulary programs, Elleman et al. (2019) recommend that educators should teach vocabulary intentionally, include morphological analysis in lessons by developing word connections verbally and through graphics, provide opportunities to use new words in discussion and writing, and ensure that classrooms are a language-rich learning environment that engages and motivates students.

Within the context of metalinguistics, the focus vocabulary was designed to create deeper semantic links and provoke peer-peer conversation. This study focuses on the use of 'descriptive vocabulary' as this is common use terminology that refers to words and phrases that are used to describe the characteristics, attributes, or qualities of people, places, things, or events. It is an essential component of effective communication and can be used to convey a wide range of concepts, visual representations, feelings, reactions and ideas. In order to use descriptive vocabulary effectively, it is important to have a strong understanding of the meaning and usage of a large variety of words (Green 2021). This includes knowledge of adjectives, adverbs, prepositions and other descriptive terms that can be used to convey specific qualities or characteristics. Descriptive vocabulary can be used to paint a vivid picture in the mind of the audience and by using effective descriptive vocabulary, a writer or speaker can engage the audience and develop a deeper understanding of their intended meaning.

Descriptive vocabulary is also considered important in the field of science as students are required to be able to understand and communicate clearly and accurately when recording observations (Rule 2007). It is important that students can use appropriate descriptive language in order to engage in conversations with peers. This type of discourse is an ideal opportunity for teachers to encourage students to explore the use of full and varied descriptions (Wasik & Iannone-Campbell 2012), and to convey their understanding of concepts, question results, deepen understandings and participate in conversations that engage and stimulate (Thwaite & McKay 2013). The intervention activities used in this study were all connected to the class science topic of animal classifications and habitats. Explicit instruction, engaging metalinguistic activities and basic classroom technology used as a tool were utilised to reimagine what an effective vocabulary program could look in the modern classroom.

The use of descriptive vocabulary can be shaped by the use of subjective or objective language. This intervention is designed around the factual description of animals and their attributes, appearance, habitat, etc. When primary aged students in Australia begin using factual recounting for presentations or in writing, they are taught that subjective language is not appropriate and that objective language, based purely on the facts available, are the more appropriate choice (Australian Curriculum v9 2023). This is true across the subjects but is of

particular importance in Science and the wider STEM based subjects. This has an impact on the descriptive vocabulary available for use. For example, an accurate objective description of a dog might be *'The dog is part of the canine family, has four legs, fur and is a mammal.'* However, for a child, an accurate choice of subjective language could be *'The dog is lovely and cute and can do cool tricks.'* While both could be argued to be true, the objective description allows the audience a more accurate description. The use of recounting and factual language is one way in which we can communicate precise attributes and details accurately (Christie & Derewianka 2013).

Objectivity and truth when observing, reporting and describing in Science and other STEM related disciplines is essential to provide a true and accurate account of the phenomenon being recorded (Stamenkovic 2023). For the purposes of this study, the definition of objective and subjective language has been taken from the Australian Curriculum website (2023), which defines each as

> **objective language -** A language that is fact-based, measurable and observable, verifiable and unbiased. It does not include a speaker or writer's point of view, interpretation or judgement.
>
> **subjective language -** Use of language which reflects the perspective, opinions, interpretations, points of view, emotions and judgment of the writer or speaker.

Underpinning the intervention design is the pedagogical mix of explicit instruction followed by metalinguistic activities that promote inquiry. Explicit instruction has been recommended in the teaching of vocabulary since the mid 20th century and continues to be instrumental in the design of vocabulary instruction models (Graves 2006, Beck et al. 2013, Tyson & Peery 2017, Marzano 2020). These models will be explored more fully later in this chapter. The importance of explicit and clear direction from a teacher cannot be understated. When used in conjunction with metalinguistic activities it creates a model of learning that allows students to benefit from the expertise of others and then form connections and understanding to new vocabulary (Nagy 2007). However, once students reach the primary years, language focus tends to shift to reading and writing, with explicit language teaching and vocabulary building activities being limited at best (Scott, Miller & Flinspach 2002). There has been a call for increased vocabulary instruction in the primary years (Biemiller & Slonim 2001). This study

has been designed to address this issue by implementing an explicit instruction model that maximises use modern technology available in most Australian schools. The model also uses an interactive model of classroom communication, where conversations and questions were encouraged.

Over the past two decades digital technology has been integrated into classroom settings. Most Australian classrooms now have access to laptops, iPads, digital cameras, internet, learning apps and sharing platforms. Many schools have adopted a 1:1 device policy in their middle to upper primary years, with many schools providing shared devices in the junior primary. Classroom technology has become the norm for students who are themselves digital natives and there have been calls for educators to integrate this technology to redefine learning experiences (Puentedura 2006) and ensure that all students have the necessary skills for future success (World Economic Forum 2015). This intervention was intentionally designed to include the use of student created video to capture examples of expressive language via the popular education app Seesaw.

Plowman and Stephen (2007) outlined the importance of allowing students access to technology in order to provide 21st Century tools for creating representations of their knowledge and understanding in key curricular areas. This intervention used these skills to allow self and peer assessment in an innovative form of data collection that is rarely used in the modern classroom despite ample access to electronic devices. The use of this type of technology in the explicit teaching of vocabulary has not previously been documented. As digital natives, the participants were very familiar with creating short videos, allowing this form of media to be used with relative ease independently.

Context

The study took place in South Australia, in a Catholic sector primary R-7 school. The school had undergone radical change and had moved site, changed name, was under new leadership and had a new pedagogical vision of inquiry-based learning. Teachers in each year level work collaboratively in open plan learning spaces.

In 2020 (the year the study took place), approximately 60% of students were from the original school, while the remaining 40% joined the new school in its inaugural year. The school aimed to be an inclusive community where children could grow and learn holistically, in a safe and nurturing environment. There was an emphasis on outdoor learning, nature play and sustainable ecology.

The school is located in a middle to upper-middle class suburb of Adelaide, the capital city of South Australia. At the time of the intervention, the school community had 345 students from predominately mid-high socioeconomic backgrounds. All schools in Australia are ranked using the Index of Community Socio-Educational Advantage (ICSEA) scale. The school had a value of 1105 indicating that the majority of students were from the middle to upper quarter of socioeconomic advantage, with only 3% in the bottom quarter. Most students spoke English only, with five percent of students speaking English as an additional language. Most parents in this groups were able to speak in basic – moderate English. Numbers of students from an indigenous background were low with 2% of students identifying as Aboriginal or Torres Strait Islander, however the school maintained close links with the local Kaurna elders. Of the total student population, 4% of were concession card holders.

At the time of the study, the school priorities were the areas of STEM, Mathematics and Literacy. Oral language was taught in each cohort in accordance with Australian Curriculum requirements. The extent to which oral language teaching occurred differed between classes with some teachers placing high emphasis on oral language skills and others spending less time on them. In 2018, many junior primary and primary years teachers expressed concern that the overall expressive oral language of students appeared to be declining. The school hosted several private speech pathologists who work on site with individual students on a weekly/fortnightly basis. This service is predominately used by students who receive National Disability Insurance Scheme (NDIS) funding. The number of students with a diagnosed or imputed Specific Learning Disability (SLD) dramatically increased from 8% to 16% between 2019 and the end of 2021, impacting the need for increased support. It is unclear why the number of students with an SLD increased. Possibly the alternative nature of the school appealed to parents whose children struggled academically in more traditional academic settings.

Vocabulary was taught at the discretion of each teacher, mainly through the use of spelling programs and word walls. Year 3-6 used the PLD spelling program which was introduced in 2019 and has a focus on vocabulary being essential to the implementation of the program.

Assessments of any aspect of oral language were not consistent across all classes. Marie Clay's Record of Oral Language was administered in the Early Years, during each student's first year in Reception and was then repeated in Year 1. This was mandated by Catholic Education South Australia (CESA) and makes up part of the First Years of School Literacy Assessments. Oral language in Years 2-7 was assessed at the discretion of each teacher and in a variety of different ways and there were no consistent assessments in place. The intervention for this study was designed with a consistent assessment component to address this deficit.

The methodology for this intervention is important to define. This study is a practitioner inquiry with the researcher being the teacher of all participants and the research taking place as part of the normal literacy program. Cochran-Smith and Donnell (2006) defined practitioner inquiry as 'the array of educational research genres where the practitioner is the researcher, the professional context is the research site, and practice itself is the focus of the study' (Cochran-Smith & Donnell 2006, p. 503). Durrant (2016) and Ravitch (2014) further highlighted the contextualised nature of practitioner research to note that it focuses on improving the specific aspects of practice in a given setting rather than a more generalized collection of data.

This study centres around a pedagogical intervention that was specifically designed to implement the explicit teaching of vocabulary. Pedagogical interventions have a focus on changing a specific aspect of instruction or activity that deviates from the accepted norm, thus changing the pedagogical context (Klehr 2012). As a classroom teacher I developed this study based on a specifically designed intervention and qualitative and quantitative data collection. I identified that explicit instruction of vocabulary diminishes as children get older within my education sector. I designed and implemented an intervention to investigate if explicit, direct instruction used in conjunction with a metalinguistic model of peer-to-peer collaboration would improve overall oral language proficiency. There is no oral language

program that is consistently used with Primary years students, so I utilised the commonly used classroom app Seesaw in order to allow students to record their speech independently and conducted the intervention in a naturalistic environment of the Year 3/4 classroom.

The purpose of this project was to investigate the current research in vocabulary development in primary aged children and ascertain how metalinguistics activities using technology may be used to facilitate this learning. This classroom- based intervention will therefore address the research questions:

- Can an explicit instruction approach to vocabulary development combined with metalinguistic follow up activities improve the use of descriptive vocabulary in Year 3 students?
- Can common classroom technology be used to facilitate a successful oral language program?

To address these research questions, I adopted a mixed method approach to data collection. Quantitative data was collected to assess if students used descriptive vocabulary in their expressive language recordings. Quantitative data was collected in the form of observations and student feedback. Case studies were also used to further investigate students who showed interesting results that lay well above or below the recorded average.

The following chapters of this thesis are outlined as follows:

Chapter Two looks at the research surrounding areas pertinent to this intervention, including vocabulary acquisition, various models of vocabulary instruction, the use of technology in the classroom and the use of metalinguistic activities.

Chapter Three gives in depth detail on the importance of practitioner inquiry, the design of the intervention and information about the participants of the study. There is detailed information about the groupings used, the weekly structure of lessons and all vocabulary introduced throughout. Rationale for the selection of the vocabulary selected is included alongside resources used to facilitate metalinguistic activities.

Chapters Four and Five are dedicated to the results of the intervention. Chapter four introduces all quantitative and qualitative data collected during the six-week intervention period, with quantitative data placing emphasis on the pre, mid and post intervention interviews conducted. The qualitative data analysed includes all data collected from student made videos each week along with self-assessments, observations during lessons and student feedback.

Chapter Five then analyses three participants in more depth and presents a case study for each. These case studies identify students who had results that were far from the average, one academically excellent student with a large growth in descriptive language, one academically excellent student who showed no discernible growth and one student who requires much additional support in literacy who showed considerable growth. Each case study investigates the progress made for each and discusses possible reasons for their outlying results.

Chapter Six discusses the results and gives context to the findings. This chapter is followed by the overall conclusion of the thesis where the findings suggest that the intervention did result in a statistically significant increase in descriptive language across the intervention cohort.

Chapter Seven outlines the limitations of the intervention and discusses possible implications for pedagogical practice. Recommendations for future studies are included.

Chapter 2

Literature Review

This chapter will review theoretical and research literature related to metalinguistics, oral language acquisition and vocabulary instruction. This review identifies important considerations for the intervention and underlines the need for further research in the emerging area of literacy learning using technology with a specific focus on vocabulary development.

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The Scopus, ERIC and UniSA databases were used and the search criteria specifically targeted research titles and abstracts containing particular base search phrases used with accompanying search terms based on the inclusion criteria. The primary search phrase of 'education + vocabulary' was used alongside accompanying phrases such as 'metalinguistic', 'oral language', etc. Inclusion criteria was limited to narrow the search to participants aged between birth and eighteen years old, use of technology in education, oral language, metalinguistics and explicit instruction. Owing to the continued importance of early conceptual work in this field, the review spans a period from the mid 20th century to latest developments. All research reviewed is limited to publications within the field of literacy development including articles in peer-reviewed journals, literature reviews and scholarly books published by reputable academic publishing houses. While all studies were published in English, the research reviewed is international, spanning multiple countries. Exclusion criteria for this review were opinion pieces, book reviews, research studies pre-dating 1990, dissertations, case studies and research involving studies of participants that were over eighteen and classified as adults.

The chapter will focus firstly on metasemantic and metalexical development within the field of metalinguistics. It then explores the development of oral language and vocabulary, the use of oral language in current education settings and explicit vocabulary instruction, including vocabulary models and word classifications. The final section focuses on studies that use technology in the teaching of vocabulary and literacy skills.

2.1 The Role of Metalinguistics in Vocabulary Acquisition

Metalinguistics is a complex theory of language acquisition, comprehension and use. Metalinguistic awareness is defined as the ability of a person to reflect on and actively consider the structure and use of oral and written language and how it is used by themselves and others to convey meaning (Nagy 2007). Metalinguistic awareness is central to the successful use of language and is an ongoing process from birth (Gombert 2013). Particularly relevant to this intervention are the metalexical and metasemantic elements of acquiring knowledge and deeper understanding of new vocabulary and its meaning. The literature reviewed in this section explores these concepts and begins with the work of Schiffren (1980) to the most recent analysis conducted by Melogno, Pinto and Lauriola (2022). It investigates the conceptual theory of metalinguistics and focuses on empirical studies researching the use metalexical and metasemantic approaches to vocabulary instruction.

Metalinguistic awareness is defined as an individual's ability to understand that language is a code and to evaluate, reflect and manipulate this language (Smelser & Baltes 2001). Metalinguistic awareness is further described by Kuo et al. (2017) as multiple areas of development that are related to phonological, morphological, syntactic and lexical awareness. In his studies of metalinguistic awareness, Gombert (2013) found that comprehensive development of all areas of metalinguistic awareness does not appear in a typical child before the age of seven. Agreeing with the earlier works of Culioli in the 1980s he stated that children transition through an epilinguistic phase where their awareness of language begins to evolve but the conceptual complexity and manipulation of language is not yet fully formed. The distinction between the epilinguistic and metalinguistic phases of development is described by Melogno:

> The former refers to cognitive processes that address the structural features of language on an intuitive basis, generally not verbalized or little articulated, while the latter refers to attentional processes deliberately focused on these features, consciously verbalized and explained. (Melogno et al. 2022, p. 22)

In their study of 160 children aged 5-7, Melogno, Pinto and Lauriola (2022) found that the seven-year-old students were far more capable of completing metalinguistic tasks than the younger children. This distinction is essential to the design of this study as the activities were

intended to develop metalinguistic awareness in participant children aged between 8 and 10 years old. The research evidence suggests that students of this age will have a degree of metalinguistic awareness and will have the necessary understanding to be successful in the activities.

For decades, theorists of language have argued that metalinguistic activity is essential to the development of language. In his analysis of literature of multiple vocabulary and comprehension studies, Nagy (2007) demonstrates the importance of metalinguistics in understanding new and acquired language. He argues that when students have time to think about and analyse language, they develop an interest in new vocabulary and ultimately do acquire new vocabulary which they can use in conversation, writing and reading comprehension. He advocates for 'word consciousness' as a compulsory component of all literacy programs (Nagy 2007, p. 56). Graves and Watts-Taffe (2008) further describe word consciousness as students being aware of the words that surround them, both through listening to speech and reading different texts, and also advocate for the inclusion of strategies designed to encourage this in learning spaces.

Scott, Miller and Flinspach (2012) conducted a study of their VINE (Vocabulary Innovations in Education) intervention to develop the word consciousness knowledge of teachers, who would then make changes to their instruction to include word consciousness strategies and develop vocabulary in fourth and fifth grade students. They conducted the VINE intervention over three years with 37 teachers and 1400 children. Teacher participants undertook training in theory, strategies and resource creation, selection and sharing specifically designed to encourage word consciousness. They were also provided support to develop this area in their literacy activities and encouraged to support each other. All teachers implemented additional activities that focused on word consciousness into their weekly literacy timetable. The researchers found that student groups who participated in the intervention outperformed those in the control groups in vocabulary testing on words from the fourth-grade curriculum and grade level texts. They suggest that these findings indicate the importance of teacher education in informing curriculum design.

In a later study of 27 children aged 3-4 years, Neugebauer et al. (2017) investigated the intentional use of 'word consciousness talk' by teachers (Neugebauer et al. 2017, p. 28). The researchers define this as teacher talk that promotes word consciousness and intentionally encourages students to use and explore new vocabulary. They analysed video footage of classroom-based vocabulary activities and recorded instances of teachers using talk that promoted word consciousness. Their findings suggest that when teachers reinforced students' use of words, gave positive affirmations for the recognition of word meanings, and provided opportunities for students to make personal connections to words, there were student gains in vocabulary development.

Semantic density refers to the number of different meanings a word has, how often it is used and how it relates to other words (Rabovsky, Shad & Rhamen 2016). Words with a high semantic density create this as they tend to have various associated synonyms and antonyms. An example of a word with high semantic density would be 'big' as it has several synonyms (large, giant, huge, etc) and clearly associated antonyms (small, tiny, little, etc). Words with high semantic density are also likely to be hypernyms as they are connected to hyponyms, or co-hyponyms and have associations to broader categories of words. An example of this type of word with high semantic density would be the hypernym 'bird' that has every specific type of bird and bird characteristics associated with it.

Several studies have shown that words with high semantic density contribute significantly to vocabulary growth, comprehension skills and reading fluency in young children. The teaching of clusters of words with high sematic density was investigated by Borovsky et al. (2016). In their study of 32 toddlers (average age of 24 months), the semantic organization of lexical items leads to important changes in how word meanings are activated and recognized by the young child. The child's previous knowledge of other words enables the acquisition of meanings of new words that share a similarity or connection with existing lexical items in their repertoire. For instance, a child may be able to identify the words 'sprint' and 'jog' by making associations to the word 'run' when they are presented together. The findings suggest that young children may be able to apply previous knowledge of the category to make connections between words and increase their sematic density.

The use of semantic clusters when introducing new vocabulary has been the topic of several studies. Essentially, a semantic cluster is a group of words that relate to a concept e.g., sink, dishes, detergent, bubbles, cloth, tap, water, etc (Romney 1993). This is also often referred to as 'semantic structure' (Borovsky 2022, p. 607). Neuman and Dwyer (2011) conducted a study of 89 pre-schoolers and found that those who were taught words in concept groups (i.e., in semantic clusters) not only learned more words but were more likely to infer meaning of related words than the control group. The findings strengthened the argument for organising words by conceptual domain when teaching vocabulary.

Semantic clusters and structures can also be referred to as semantic networks. Fourtassi, Bian and Frank (2020) investigated two possible processes for semantic network growth. The first proposed process was that strongly semantically connected words in the emergent lexicon enable learning of related words or words. The second possibility is that learning of new vocabulary is driven by strongly semantically connected words in the peripheral environment. This comparative analysis was conducted in ten languages (English, Croatian, Danish, French, Norwegian, Italian, Russian, Spanish, Swedish and Turkish). A total of 24000 datasets consisting of parent reporting on noun understanding and usage (comprehension and production) in children aged between 6 and 36 months old were analysed. The findings suggests that the use of words that are strongly semantically connected in the learning environment drives positive growth in the comprehension and production of new vocabulary. These findings were consistent across all ten languages included in the study.

Borovsky (2021) conducted a study of 61 infants aged 18 months at the beginning of the study who returned for follow up assessments aged 24 months. The initial study found strong correlations between a child's early vocabulary size and use of a varied semantic structure of vocabulary, with growth in language skills at 24 months. Of the original group of participants, 49 children participated in a follow up assessment aged 36 months, The findings of the follow up study strengthened the findings of the original study and showed that there is a continued connection between early vocabulary structure and word processing skills with continued growth in language proficiencies as a child develops.

Metalinguistics clearly has an important role to play in the successful acquisition and use of a varied vocabulary. This research highlights the impact that carefully crafted learning experiences can have in supporting learners to develop their metalinguistic awareness, strengthen semantic networks and expand vocabulary.

2.2 Oral Language

The study of oral language is undertaken across multiple fields of research including education, linguistics, psychology, psycholinguistics and speech pathology. This review focuses on studies of oral language development in normally developing children in the fields of education, linguistics and speech pathology.

Oral language refers to the ability to communicate with others through speaking and listening (Peterson, McIntyre & Forsyth 2016). It involves a range of skills and knowledge, including vocabulary knowledge, grammar, sentence structure, pronunciation (Honig 2007), and discourse skills such as turn-taking (Donnelly & Kidd 2021). Oral language forms the foundation of literacy and academic success, that supports children to become successful readers (Nation & Snowling 2004), strong communicators, and increase their confidence and overall sense of well-being (Taylor 2017, National Early Literacy Panel 2008). It is well a well-known belief that is supported by curriculum and research that oral language plays an essential part in establishing a basis for success in all learning (Malec, Peterson & Elshereif 2017).

Oral language is a complex system requiring expressive and receptive language skills (Pertursdottir & Carr 2011). Expressive language skills are the use of spoken words, written words or symbols, gestures or actions to express thoughts and feelings. Receptive language is the capacity to understand spoken language that is heard or read. Oral language can be categorised into five domains. These are phonology, morphology, syntax/grammar, semantics and pragmatics (Honig 2007). Phonology refers to the use of sounds to create words or utterances that convey meaning. These sounds begin in infancy with babbling and develop into fully formed words then sentences. The domain of syntax/grammar then develops as children learn the rules that govern correct sentence structure and word usage.

As the morphology domain develops, the child will become more aware of words and the relationships between them (Baumann et al. 2003). The use of metalinguistic based activities to promote vocabulary development is of particular interest in this review. In their study, Nagy, Berninger and Abbott (2006) found that using a metalexical approach of using morphological knowledge assisted students to understand unknown words. This has been corroborated by Goodwin and Ahn (2013) who conducted a meta-analysis of thirty studies focusing on morphological knowledge and found that there was a statistically significant positive effect size on acquisition of many literacy skills for students who received morphological instruction. McKeown et al. (2018) also conducted a two-year study of 192 students in sixth and seventh grade. Their results found that students in the group who received morphological based instruction showed more favourable gains in word knowledge, accessing correct words in context, and morphological awareness than those in the control groups.

Vocabulary growth is an essential component of the morphology domain and follows a developmental trajectory, with infants learning words primarily through association with objects and actions and later acquiring more abstract and complex vocabulary (Fernald 2013). As vocabulary grows, the sematic domain is also developed.

The semantic domain develops as vocabulary knowledge increases, word meanings and connections are made and understanding of the concept of language develops. The importance of the metalinguistic aspect of this area of development has been examined in the previous section of this chapter.

One area of interest to vocabulary researchers is the concept of ‘fast-mapping’ (Carey & Bartlett 1978). This is the method by which an infant will encounter a word briefly for the first time and will hypothesise about the meaning and create a semantic link with other known words or concepts. The word may then be encountered in different ways which then strengthens or changes the understanding of the word in context (Bion, Borovsky & Fernald 2013). During infancy the number of new words encountered is vast, therefore the better a child is at fast-mapping, the more successful their oral language development and overall language development will be (Jackson 2019).

Gray (2006) assessed the fast-mapping performance of 53 children diagnosed with a Specific Language Impairment (SLI) and 53 typically developing children with no SLI. All participants were aged between three and six years old. These participants learned the names for multiple objects during 2 fast mapping tasks. These tasks assessed phonological memory using nonword repetition and receptive vocabulary was assessed using the Peabody Picture Vocabulary Test—III. The researchers reported that the typically developing group with no SIL demonstrated significantly increased receptive vocabulary than those with an SLI. There was further evidence that between-group differences peaked at age six.

These findings were supported by the research study of Jackson et al. (2019) who investigated influences on the learning of words in participants diagnosed with developmental language disorders (DLD). They conducted the study with five year old children, twenty three of whom were diagnosed with a with DLD and 26 who were classified as typically developing (TD) children. All children completed a fast-mapping activity alongside tests designed to measure nonword repetition and receptive vocabulary. The findings of this study suggest that children with DLD had significant difficulty in accurately repeating nonwords compared to those classified as TD. Children with DLD also demonstrated significant difficulties with fast-mapping, which increased with word length.

The process of vocabulary development and fast-mapping of new words begins in infancy and continues throughout childhood and into adulthood as new words are encountered either through incidental learning or instruction. Incidental vocabulary acquisition refers to a complex process by which children learn new words through exposure and repeated encounters with words in various contexts such as conversations, storytelling, listening to others and exposure to varied media. There has been some research conducted in order to ascertain how many words an average child may have in their repertoire. These serve merely as a guideline as each study uses different parameters and measures, so cannot be compared. However, these studies can be useful in indicating the rate at which vocabulary may grow at different ages. By age two, children are thought to have developed an average vocabulary of approximately 260 words, which then grows to around 5000 words by age five (Shipley & McAfee 2015). By age 18 a normally developing vocabulary can expect to consist of between

40000 - 60000 words (McMurray 2007). There is no doubt that an average eighteen year old has a larger vocabulary than an average two year old, and this vocabulary growth is facilitated by an increased ability to generalize and categorize words, as well as a growing understanding of grammatical structures and word relationships. The cognitive processing of this growing vocabulary is an essential mechanism and in a study of 95 children between 8 and 39 months old, Peter et al. (2019) found that there is a complex relationship that connects processing speed, vocabulary size and acquisition of new vocabulary.

Learning of incidental vocabulary is an essential part of language development. It develops naturally beginning at birth through exposure to linguistically different settings, reading, using media (including television, music, and books), and participating in social interactions (Webb 2020). A child's ability to learn new words incidentally is critical for their overall language development and children who have a larger vocabulary in toddlerhood are more likely to excel in the later years of their schooling (Dale 2023). In a ten-year study, Lee (2011) examined the use of expressive vocabulary size at age two to predict future language and literacy skills, with participants between the ages of three years old to eleven years old. She compared sixteen language and literacy outcomes between children with large expressive vocabulary size at age two and those with smaller expressive vocabulary size. The findings indicate that, total vocabulary size at age two can be used as an accurate predictor of language and literacy achievement up to age eleven. Dale (2023), built on these findings and led a study of 2,767 children initially aged sixteen to thirty months old at the beginning of the study. They investigated a number of markers including early expressive vocabulary to predict performance on the Danish Upper Secondary School Leaving Exam (USSLE) at the end of Grade 9. In all compulsory subject areas of the exam, early childhood expressive vocabulary could be used as a predictor of success. The researchers argue that these predictions demonstrate that low early vocabulary is an indicator of students for whom early vocabulary intervention may be appropriate and necessary for longer term academic success.

In a child's early years and throughout their growth into maturity, interactions with others are vital for incidental vocabulary learning (Shonkoff, Phillips & Council 2000). Children are exposed to a wide variety of words and linguistic structures through conversations with family members, peers, and teachers. Children have the ability to acquire nuances through

contextual cues and communication patterns in these interactions, in addition to acquiring new words and understanding how to use them correctly in various situations (Hart & Risley 1995). Incidental vocabulary exposure can have significant effects on incidental acquisition. Children are highly skilled at learning language from the people and things around them, and they often acquire new words inadvertently by being exposed to them in every-day circumstances (Webb & Nation 2017). One primary method for acquiring incidental vocabulary is reading. Children encounter unfamiliar words while they read or listen to books and other written materials. They can infer meanings and add these words to their vocabulary by using the context in which these words have been used as well as clues and evidence from surrounding words and sentences.

Children are highly skilled at learning language in their surroundings, and they often learn new words accidently by being exposed to them in everyday contexts (Webb & Nation 2017). Reading is a key avenue for incidental vocabulary learning. As children read or listen to books and other written materials, they encounter unfamiliar words. Through the context in which these words are used, along with clues and evidence from surrounding words and sentences, children infer meanings and incorporate these words into their vocabulary. Repetitive exposure to words found in different texts, and used in different ways, strengthens understanding and usage of words and allows children to make connections to other known vocabulary (Teng 2020). Parents have long been extolled to read to their babies and young children every day to encourage language development. A study by Logan et al. (2019) found that that children who are read to every day are exposed to a far greater number of words than those children who are never read to. The researchers collected data from sixty commonly read children's books to estimate the number of words that children are exposed to during book reading sessions. They found that a child who is read one book a day from birth to age five, is exposed to an estimated 1.4 million more words during shared book reading than those children who are never read to (Logan et al. 2019).

Media consumption may also contribute to incidental vocabulary learning in varying ways and with varying levels of success. Linebarger and Walker (2005) conducted a study of fifty one infants and young children whose parents logged their child’s television watch time for a specific program. The researchers suggest that babies showed little interest in watching TV

until the age of nine months but that certain TV shows (Dora the Explorer, Blue's Clues, Arthur, Clifford and Dragon Tales) had a more positive effect on vocabulary acquisition at 30 months of age than other children's programs (Teletubbies, Sesame Street and Barney). They suggest that this could be due to the repetitive, dialogic nature of some programs.

However, it is also important to acknowledge that while incidental vocabulary learning is powerful, children also require explicit vocabulary instruction to enhance their word knowledge. Instructional learning occurs during specific times where vocabulary is introduced and examined, usually in an education setting. There has been extensive research into the relationship between vocabulary learning and the development of other literacy skills. This finding is further confirmed in the qualitative review of 33 peer-reviewed studies conducted by Ford-Connors and Paratore (2015). They provide a comprehensive and critical examination of research studies that involved instruction to support vocabulary learning in primary and middle school aged students. They conclude that vocabulary knowledge is closely linked to students' long-term academic achievement, with students who display larger vocabularies performing better on standardised tests and reading comprehension tests.

In their metanalysis of 36 studies exploring this connection, Wright and Cervitti (2017) found that that clear vocabulary instruction can improve comprehension of a text containing words that have been selected from that text and examined in the vocabulary lesson. The analysis also concluded that active processing of word meanings during instruction (during conversation, investigation or discussion) has a larger impact on comprehension than those models that are more passive (such as being given a clear definition). This further strengthens the call for vocabulary instruction to be based on metalinguistic principles to allow active participation and effective synthesis of new vocabulary.

This research highlights that one of the key factors that contribute to children's vocabulary acquisition is the frequency of exposure to new words. The more frequently children encounter a word in different contexts, the more likely they are to acquire it (Hoff 2013). The research suggests that it is important for parents and teachers to provide children with rich language environments that expose them to a variety of vocabulary words (Nagy & Townsend 2012) and create opportunities for new vocabulary to be used in conversation and in social

settings. This leads to the final of the five domains of oral language – pragmatics. This domain centres around the social and societal rules that dictate the use of language and the way in which it is used in society (Honig 2007).

The development of vocabulary is an essential component of cognitive and social development in children which allows the child to express and understand the language around them. A neuro-typical infant is usually able to understand a vast amount of language before they are able to produce it themselves (Honig 2017). Most infants acquire their initial oral language skills and develop a vocabulary through adult–child conversations, interacting with peers and siblings, sharing stories and book reading, and oral story telling traditions (Wasik & Hindman 2011). Conversations are therefore essential to the acquisition of new vocabulary, and when they are purposeful and strategic, they can provide children with highly informative and dynamic verbal encounters where new and novel vocabulary are acquired (Kuo et al. 2013).

A study of 27 infants aged between 19 and 27 months old found that the quality of conversations of parents with their children was associated with the child's vocabulary development (Weisleder & Fernald 2013). Extended recordings of daily interactions were analysed, and the findings suggests that regular conversations that included a variety of vocabulary words and complex sentence structures have a positive impact on vocabulary growth in young children. Cabell et al. (2015) conducted a study of 44 preschool classrooms that investigated the way in which professional development could impact the way in which teachers conversed with students. They also investigated whether teachers used these conversation strategies to elicit talk from students and develop vocabulary acquisition. The researchers concluded that teacher conversations focussed on vocabulary that were well structured to elicit understanding resulted in students showing a higher comprehension of new words. They also found that the professional development opportunities provided increased use of taught strategies leading to increased teacher–child engagement in conversations, the overall number of child-initiated discussions and conversations.

More recently, Donnelley and Kidd (2021) conducted a longitudinal study where they collected LENA (Language Environment Analysis) day long recorded audio data and

vocabulary measurements for each of the 122 participants every three months between the ages of 9 and 24 months. The researchers found a bidirectional relationship between growth in independently measured vocabulary and growth in conversational turn-taking.

Oral language and vocabulary development is not only important for academic success but also for social and emotional development. Children who can communicate effectively with others are more likely to form positive relationships, resolve conflicts, and develop empathy. Chow, Ekholm and Coleman (2018) conducted a longitudinal meta-analysis of 255 eligible studies that included a measure of early oral language and a measure of later behaviour issues. The meta-data analysed represented 31640 participants and found that there was a strong correlation between poor oral language skills as a young child and antisocial behaviours in later years. The research clearly shows the importance on oral language in conversation and social situations.

2.3 Classroom Talk

The research included in this section explores models of communication common to classroom practice and considers the differences in these models.

When learners are given the opportunities to engage in interactive conversations, Perfetti (2007) suggests that they semantically create connections to other words and known experiences that are related to new vocabulary learned during metalinguistic discussions. Opportunities given during learning activities to encourage discussion and metalinguistic conversation allow these connections to form an abstract representation of the meaning of each new word. This opportunity then allows the learner to draw on many associated concepts when the new words are encountered again. (Kame'enui & Baumann 2012). The more students discuss vocabulary, they more they build their understanding of new words and concepts. This leads to a strong argument for a more dialogic approach to the teaching of vocabulary

Dialogic classroom talk emphasises the importance of creating an environment where meaningful dialogue and conversation can occur between teachers and students, and also between groups of students themselves (Kim & Wilkinson 2019).The approach is grounded in

the belief that education is not simply the transfer of information from the teacher to the student, but rather a dynamic process of co-construction of knowledge and meaning. In this approach, students are encouraged to ask questions, engage in discussion and debate and work collaboratively to construct new ideas (van der Veen et al. 2017).

A key feature of dialogic classroom talk is the use of open-ended questions and prompts. By encouraging students to ask questions and express their opinions, the teacher creates a space for dialogue and debate, which can lead to deeper understanding and insight. (Kim & Wilkinson 2019). This approach is particularly effective for encouraging students to challenge assumptions, consider multiple perspectives, and evaluate evidence. Sedlacek and Sedova (2017) developed a teacher professional development program that sought to increase this dialogic approach in lesson design. They worked with eight teachers of early teenage students (lower high school grades) and analysed 220 full lessons recorded over a two-year period. Their findings suggest that not only does a dialogic approach led to an increase in talk, but there were also increased examples of reasoning and critical thinking displayed. They further suggested that conversations with multiple participants were more effective than those with smaller groups. They concluded that the dialogic approach is an effective tool for enhancing learning experiences for all.

One of the key elements of dialogic classroom talk is the focus on creating a collaborative learning environment where students are regarded as thinkers and contributors to the learning process (van der Wilt et al. 2022). In this approach, the teacher works with students to co-create knowledge and meaning through dialogue, discussion, debate and understanding (Cazden 2001). The teacher does not simply impart information, but rather engages with students in a process of questioning, exploration, and discovery. This approach was integral to a study completed by van der Wilt, Bauer and van der Veen (2022). They worked with seventeen early childhood teachers with a combined student cohort of 311 students. Eight teachers were randomly assigned to the control group, with nine assigned to implement the intervention. The findings suggest that the children in the intervention group displayed a higher level of ‘oral communicative competence’ (van der Wilt, Bauer & van der Veen 2022, p.6), when assessed with the Communicative Functions component of the Nijmegen Test for Pragmatics, than those in the control group. The researchers argue that

supporting teachers to implement dialogic classroom talk is a successful in promoting children's capacity to communicate with peers.

In contrast to the dialogic model of classroom talk, the Initiation-Response-Feedback (IRF) exchange structure (Sinclair & Coulthard 1978) is a widely recognized and utilised transmissive framework in classroom discourse used in around 50% of classroom teaching (Mercer et al. 2009). The framework was created as a way to structure interactions between teachers and students and consists of three distinct phases - initiation, response, and feedback. It provides a systematic approach for teachers to engage students, elicit responses, and offer targeted feedback. The first phase of the IRF exchange structure is initiation, where the teacher poses a question, presents a concept, or introduces a topic to the students. These questions can be open or closed in their design. The response phase follows, with students offering answers, explanations, or opinions. The final phase of the IRF exchange structure is feedback, where the teacher provides guidance, affirmation, or correction based on the students' responses. This is considered to be an authoritative model as the teacher directs the communication and usually instigates the dialogue (Lehesvuori, Ramnarain & Viiri 2017)

In a study of nine pre-service teachers (PSTs) and three in-service teachers, Lehesvuori, Ramnarain and Viiri (2017) examined the use of the communication styles used in lessons in South African high schools through video analysis. They focused on two particular cases (George and John) and found that the difference between authoritative and dialogic approaches often difficult to differentiate in the classroom. The researchers argue that it is important for the use of dialogic communications to increase and challenge the prevalence of transmissive frameworks. This work was followed in 2019 by additional research that investigated the interplay between dialogic and authoritarian interactions and posits that instead of looking at these frameworks as rivals, one can use each to suit the needs of students as required (Lehesvuori et al. 2019)

While there is a place for multiple types of interaction in a classroom environment, those that facilitate more opportunities for reflection are considered more desirable and useful (Walsh 2011). The research shows that use of more dialogic interactions can facilitate better oral

language competence and encourage increased talk and opportunities for critical and creative thinking that may not be so prevalent in a more transmissive model of communication.

2.4 Instruction of Vocabulary

There is a large cannon of research available into the instruction, interventions and assessment of vocabulary. The research included in this review pertains specifically to children and teenagers with a focus on using at least one area of metalinguistics to guide the instruction of vocabulary. Implications for the instruction of vocabulary in differing cohorts of students are also examined.

There are multiple different ways that vocabulary instruction can take place in a learning environment. The whole language model approaches vocabulary at text level, as being introduced through shared reading and incidental usage in conversation. Shafira et al. (2019) conducted a study of 22 four-year-old students who undertook a vocabulary pre and post-test. Their teacher implemented a whole language approach to teach students about animals in four sessions. The researchers found that this approach resulted in a statistically significant increase in results and proposed that the whole language approach may be beneficial for young leaners.

This is similar to inquiry and project based approaches that also situate the vocabulary in context and have a more experiential use of vocabulary that is facilitated by the teacher. There is some evidence of this approach having success, especially in the field of science vocabulary. Capraro et al. (2018) undertook a study of 120 students aged 14 – 17 years old, who joined a group in a STEM summer camp for two weeks. They learned the use of Google Sketchup and 3-D printing to design collaborative projects. All activities we project based learning, and the focus was on communicating using technical terms and correct scientific vocabulary. The researchers reported that there was a significant increase in the use of correct language and terminology at the end of the two-week study compared to the beginning of the study. Hicks Pries and Hughes (2012) also describe a successful inquiry approach that they used with a group of eight grade students to introduce unfamiliar scientific vocabulary. They advocate the use of interactive, hand-on stations where students

can utilise associative and indirect learning. They also include an element of explicit instruction within this approach after the inquiry element.

Ford-Connors and Paratore (2015) state that there is insufficient teaching of vocabulary in schools, and that there seems to be a default vocabulary activity of looking up definitions in a dictionary and writing sentence about the definitions. They attest that this is not good enough and that students deserve more. There is evidence of the need to design effective vocabulary instruction in such a way that allows metalinguistic activities to support the learner to gain understanding of the word in context, how it relates to other words, and how words work in general (McKeown 2019). There is also compelling research to substantiate the link between direct vocabulary instruction and vocabulary acquisition (Beck et al. 2012).

In their study of 43 pre-schoolers, Biemiller and Boote (2006) found that there were consistent gains in vocabulary across all year levels when a direct instruction approach was used. Of particular note in this area, is the meta-analysis of research into the effect of vocabulary interventions on oral language for pre-k and kindergarten children by Marulis and Neuman (2010). They concluded that the interventions using explicit teaching of words produced large effect sizes in comparison to studies where words were implicitly learned. Multiple interventions have been designed to address the development of effective instructional vocabulary learning at all stages of education.

Kindergarten Interventions

In their 2011 intervention study of 19 teachers and 541 children, aged between three and four years old, Wasik and Hindman (2011) found statistically significant increases in children's vocabulary when teachers engaged them in conversations and activities that used specific vocabulary introduced during book reading. These results were not evident in students participating in the control group. These findings suggest that the metalexical approach of targeted conversations were effective in increasing children's vocabulary learning acquisition.

Kelley, et al. (2015) implemented a small-scale literary vocabulary and comprehension intervention with a group of 18 four-year-olds who spoke only English. They used an explicit

instruction model to introduce literary words though shared storytelling. The results of the study showed that the children who received explicit instruction on challenging vocabulary showed a greater increase in vocabulary acquisition than those who did not participate.

Orr et al. (2021) conducted a dynamic intervention using a multi-sensory, holistic approach to developing vocabulary with a group of 62 preschool students in Israel. They found that this intervention resulted in increased vocabulary growth and further reported that the results suggested that the intervention mediated the negative impact of low socioeconomic status (SES) factor and a low exposure to books. The researchers theorised that the holistic nature of their intervention approach could be one reason for these results.

School Year Interventions

Greene Brabham and Lynch-Brown (2002) conducted a study of 117 first graders and 129 third graders and found that when teachers used interactive reading styles to instigate a conversation or draw attention to words their students gained more vocabulary acquisition than those who heard the same books read to them with no interaction. An intervention study by McGregor, Sheng and Ball (2007) examined the effect of frequency of exposure and informative context on expressive word learning. A participant group of thirty children aged eight years old participated in a two-week course of specifically designed vocabulary lessons. The findings were reported that alongside opportunities to discuss vocabulary, the use of linguistic forms such as descriptions and synonyms were also successful in vocabulary acquisition.

Silverman et al. (2020) conducted a meta-analysis over 43 intervention studies that focused on language comprehension, namely vocabulary and semantics, morphology, and syntax. All were based in American primary schools and all participants were in grades K-5. Their findings suggest that overall, the interventions had a positive effect on language comprehension. When vocabulary was specifically isolated in the results, the findings indicated that there was a positive effect on vocabulary acquisition but that these results were enhanced when the intervention also focused on morphology. This gives further strength for the argument for a metalinguistic approach to vocabulary instruction.

Socio Economic Considerations for Vocabulary Instruction

There are multiple studies that focus on how children's social and economic contexts are associated with differences in vocabulary development that highlight the importance that literacy can play in the lives of students from lower socioeconomic environments (Hemphill & Tivnan 2008). In their study of 141 students aged between 11-15, Hart and Risley (1995) found a large discrepancy in the vocabulary knowledge of four-year-olds between those who grew up in a family receiving welfare payments compared to a family with one at least one parent working in a working-class job. They found a further discrepancy between these families and those in which at least one parent worked in a professional job. During the first four years of the child's life, children heard on average forty-five million words in a professional family, while children in working-class families heard on average twenty-six million words, and children from welfare households heard on average 11 million words.

Taylor et al. (2013) used the data from 4334 children from the Longitudinal Study of Australian Children (LSAC) to predict attainment in 4–8-year-old students. They concluded that at eight years old there was an average of an eight-month gap in receptive vocabulary growth between children from lower and higher SES classifications. This shows that students from different socio-economic backgrounds may begin school with a very different exposure to vocabulary and that this gap can remain throughout the first years of schooling.

Oslund et al. (2016) conducted a study with 140 middle school students aged 11- 15 from one high school in a lower socioeconomic area. All students qualified for free school meals as their family income was low enough to meet the criteria. The researchers compared their results to a previous study in 2007 that followed similar parameters but did not include participants from lower SES households. They found that socioeconomic factors play a large part in the acquisition of vocabulary, with participants in their 2016 study demonstrating lower vocabularies than those from higher socioeconomic areas in the 2007 study. The authors argue that intervention and explicit vocabulary instruction are therefore essential to ensure that students in lower SES areas have the opportunity to develop their vocabularies.

Students with Language Development Disabilities

The area of education for students with additional needs is vast and for the purposes of this study I have limited the scope to only those additional needs that typically affect the

development of language. In the case of this review, it is limited to intellectual disabilities that specifically affect language development and students who learn English as an additional language and may have limited knowledge of the English language, placing then at a disadvantage to their peers.

There are many reasons why a child may not develop language skills alongside their peers. These students often exhibit low academic achievement due to neurological impairments in the brain in those areas that are primarily responsible for making memory and processing perception/executive functioning (Swanson 2016). These impairments can affect basic cognitive functioning to varying degrees and are often shown through slower processing speed, memory impairment and spatial orientation difficulties (Johnson 2017). A recent study of 84 kindergarteners who were identified as at risk of a SLD was conducted by Brainin et al. (2022). The participants were all enrolled in kindergartens for students with special needs in Israel. They were identified as at risk of a SLD through a testing process using The Illinois Test of Psycholinguistic Ability (ITPA) (verbal ability) and the Test of Non-Verbal Intelligence (TONI) (non-verbal ability). The study investigated the use of simple robots (Beebots) in learning tasks to promote spatial vocabulary use over a period of four months. The findings suggest that the children who participated in the robot-based intervention where they programmed a robot showed greater improvement in their use of spatial vocabulary than those who participated in the control group who used a traditional toy car.

For students with language learning disabilities explicit instruction of new vocabulary is essential (Biemiller 2001). Vocabulary instruction should focus on words that learners are less likely to learn independently but that will often be found in texts or academic vocabulary that is often topic specific (Kame'enui & Baumann 2012). It is also important that teachers utilise a morphological approach when introducing new vocabulary. Morphological approaches use the study of morphemes, often referred to as word parts (base words, root words, prefixes, and suffixes), to determine the meaning of words and their possible relationship to other related words.

Lauterbach et al. (2020) conducted a study where 6 science teachers were given specific professional development in evidence-based morphological awareness practices (specifically

relating to Harris' (2011) word mapping strategy and the implementation of the associated instructional techniques. The findings of the study suggested that all teachers improved their understanding and adapted their teaching to include a morphological focus on exploring vocabulary with students. Furthermore, the 55 adolescent students who were part of this study showed significant gains in comprehension and retention of the academic vocabulary.

Children who are English language learners or who speak English as an additional language may also experience challenges with oral language and with vocabulary acquisition specifically. It is not unusual for Australian classrooms to have students who speak English as an additional language (EAL). Despite a lack of data from each state, the Australian Council of TESOL Associations estimates that there are well over 600,000 students who speak English as an additional language in Australian state and Catholic sector schools, with dramatic growth in the number of EAL students over the past decade.

Liu et al. (2017) found that the expressive vocabulary growth rate during their study of 141 students, aged 4-5 years old, learning English as their second language predicted their success in English word reading. This would suggest that the better the spoken vocabulary is, the greater the impact on reading for EAL students as well as those with English as their only language. Cragg and Nation (2006) found children with low reading and oral language skills to have weak composition skills, suggesting that limited vocabulary may also impact writing ability.

2.5 Descriptive Vocabulary

Although there is little direct research into the use of descriptive vocabulary, researchers in the field of vocabulary development, language development and STEM based literacy have shown an interest in the use of vocabulary for the purpose of description. Research pertaining to use of descriptive language appears in various fields of research, including literature, psychology, linguistics, and education. The research aims to understand the ways in which people use descriptive vocabulary to describe objects, people, emotions, and other experiences. This research plays an important role in our understanding of language learning and education but there are limited research studies available in the field of education at present.

Green (2021) investigated the spoken vocabulary of almost 800 children under the age of five by analysing approximately 3.6 million words uttered by these children. The resulting profile represents bands beginning with highly productive vocabulary known by most children, moving through stages to more advanced vocabulary that will not be part of every child's oral language vocabulary. Green reports that more detailed and nuanced descriptive vocabulary begins to appear at the band of 1000 -15000 words and continues to develop with the child. This indicates that from a young age most children have the ability to use and develop descriptive vocabulary.

House (2007) conducted a study with 21 preschool students aged 4-5 years old to determine if there was an improvement in descriptive vocabulary after participating in a series of lessons using clay, designed to focus on developing frequently modelled descriptive vocabulary. The findings suggest that there was a significant increase in the understanding and use of the descriptive vocabulary across the cohort of participants at the end of the intervention.

The research into descriptive adjectives is also useful in determining the way in which words are used for the purpose of description. Adjectives are words that describe or modify nouns or pronouns. In descriptive vocabulary research, researchers analyse how people use adjectives to describe objects, people, or emotions, and how the use of certain adjectives affects the perception of those things. Rule et al. (2004) conducted a study of six classes of third-grade students, totalling 115 participants, who participated in the use of descriptive adjective object boxes to build descriptive vocabulary or in the control group who did not participate in any of these activities. The control group consisted of three classes at one school with a total of 53 students. The three classes comprising the experimental group had a total of 62 students and used descriptive adjective object boxes as part of their lessons at a different school. The authors suggest that their findings indicate significant increases in use of descriptive vocabulary in the participant group when compared to the control group.

Rule et al. (2007) went on to further study the importance of developing the teacher's knowledge and use of descriptive vocabulary in science classes. Sixty-seven prereservice primary teachers took identical pre-tests and post-tests where they were asked to write

descriptive adjectives for four different objects. During the intervention, they investigated examples of adjective boxes and worked collaboratively with a partner to create original sets of materials to use with their students. Findings suggest that there were statistically significant increases in descriptive vocabulary used and that these words were more sophisticated. There was a very large effect size (1.84) for words generated during discussion, with a medium effect size (0.35) shown for overall increase in the grade level classification of vocabulary.

The role of the teacher cannot be underestimated in the use of descriptive vocabulary during lesson discussions and conversations. Thwaite and McKay (2013) undertook a study with a class of 41 five-year-old students, 3 teachers and 3 teaching assistants in Science lessons observed over nine weeks. Functional discourse analysis was conducted on recorded conversations to ascertain strategies used by teachers to structure conversations in their science lessons. They found that in many of the observed lessons vocabulary was a strong focus of the conversations with teachers explicitly asking questions to elicit descriptive vocabulary. The vocabulary used was frequently labelling words however there were occasions recorded when the teacher did initiate describing and classifying conversations, as well as introducing some higher-level vocabulary.

Expository language is defined as informative and factual and would fall under the category of using descriptive vocabulary as an essential component as it often includes words associated with unfamiliar or abstract concepts (Nippold 2014). This idea is supported by Derewianka & Jones (2023) who state that In the early stages of observation and description there is usually direct observation of tangible objects and specific place, person, or object descriptions. The students then transition onto writing styles used to provide information. As they get more adept at observing and describing, they will require the ability to use and understand terminology that is more abstract and specialised to the topic at hand.

Westerveld and Moran (2011) investigated the expository language skills of children aged 6 and 7 years old. They explored the level of expository language performance of children with typical development and any age-related differences between their current group of 61 participant and a cohort of 22 participants of a previous study aged 11 years old. Expository

discourse was elicited from each child in each group where they spoke about their favourite game or sport. The findings showed that the older group of students recorded higher records of use of accurate grammar conventions and verbal productivity and fluency. This aligned with the hypothesis of the researchers that this would be the case and that most elements of expository discourse develop with age.

Expository discourse is also used to describe the language of the STEM subjects. Factual, descriptive and informative text or oral communications that provide accurate information plays an essential role in the success of a child in the STEM subjects as the curriculum demands for expository texts and presentations increases (Lundine 2020). Guilkey and Wagovich (2022) compared participants' production of two types of expository discourse while participating in a scaffolded note-taking procedure. Twenty-six students aged between 9 – 12 years old participated in the study. Participants generated expository language and gave an explanation of an activity that they enjoyed. They also took part in a retelling activity where they watched a video and provided an explanation of the information they observed in the video. The research findings showed that the activity talks were longer and richer in terms of content, but the retell talks demonstrated more varied vocabulary use. The researchers suggest that these findings provide evidence that using a scaffolded procedure for supporting expository production resulted in talks that were longer than those reported in similar studies that did not provide scaffolding.

2.6 Vocabulary Assessment

Assessing vocabulary in education is an important aspect of measuring this area of language proficiency. Read (2019) has called for vocabulary testing to be reviewed and to ensure that all testing assess breadth (vocabulary size), depth (comprehension) and word association skills.

One of the most common methods used to assess vocabulary is through standardised tests. The primary purpose of these assessments is to measure a student's proficiency in vocabulary, including their ability to understand and use words effectively. The results of these assessments are used to evaluate a student's academic progress, identify areas where

additional support may be needed, and inform teaching practices. A widely used standardised vocabulary assessment in Australia is the online National Assessment Program - Literacy and Numeracy (NAPLAN). This mandatory assessment is administered each year to all students in Australia in Years 3, 5, 7, and 9 and measures their skills in reading, writing, language conventions, and numeracy. Within the language conventions test, students are asked to answer questions to ascertain their understanding of vocabulary, including their knowledge of synonyms, antonyms, and word meanings. The results of the NAPLAN assessment are used by schools and education policy makers to provide an overview of education attainment nationally, identify areas where additional support may be needed and to inform teaching practice (National Assessment Program 2023)

The Australian Council for Educational Research (ACER) have designed a variety of Progressive Achievement Tests (PAT) across many disciples. The ACER PAT suite of online assessments is used by over 6000 Australian schools, with over 1.5 million students participating in online tests each year. (ACER 2023). The PAT Vocabulary and Vocabulary Skills tests measure the breadth and depth of vocabulary knowledge and understanding. Despite the popularity of the PAT suite of tests there is limited research available since the inaugural study presented by Fogarty (2007). He conducted multiple studies into the use of PAT testing in secondary education. In the first study, a group of 513 boys completed the Reading Vocabulary, Reading Comprehension, and Mathematics tests each year from Year 8 – Year 12. The researcher claimed that the results indicated that PAT testing in Year 8 could successfully predict the attainment level of the same subject in later years. The same tests were also administered in a second study of 292 girls aged twelve to eighteen years old, who were tested for three consecutive years. The findings of this study concluded that students who had a higher score at the beginning of the testing schedule were likely to maintain this advantage as they progressed. The same could also be said of students who initially showed a lower score and achieved lower grades overall.

The Vocabulary Size Test (VST) created by Nation (2007), has been formatted into many different versions by researchers and educators. Essentially, the VST is a multiple choice online or paper-based test that focuses on assessing knowledge of the written word, the meaning, and concept knowledge. In a study of 227 students aged between thirteen and

eighteen years old, Coxhead et al. (2015) used the VST to investigate if students had an adequate general vocabulary knowledge to ensure that they could engage with study materials. Their results suggested that most native English speakers at secondary school have enough general-purpose vocabulary to cope with the required reading at school. They recommended that any focused attention to vocabulary instruction should focus on subject-specific vocabulary.

Alongside standardised testing, teachers also assess vocabulary through informal assessments, such as observations and student self-assessments. Informal assessments can provide valuable insights into a student's vocabulary knowledge and use, as they are often more closely tied to real-world situations and contexts. Student self-assessments can also be helpful, as they allow students to have agency in their learning experiences (Harris 2018).

2.7 Vocabulary Instruction Models

Several models of vocabulary teaching have been proposed and researched. The models selected for this review vary in structure, strategies and content but all contain elements of contextualised and meaningful word choices, along with an element of metalinguistic activities. All models refer to the work of Beck et al. (2002, 2007, 2013) who developed the Three Tier Framework for classifying vocabulary. They classify Tier One words as those that are used in everyday speech and pose very little challenge to the user, who will be familiar with both the meaning and the lexical patterns in which the word can be used *(e.g., dog, blue, smile).*

Tier Two words are defined as words that offer more nuanced and precise language in order to convey detailed meaning. They are more often found in written text as they allow the author to build a stronger narrative and are often topic specific. In terms of this intervention, they are the descriptive words that lie outside of everyday language (*e.g., using prowled, strutted or waddled instead of simply walk*).

Tier Three words are very specific or technical language which are often essential to understanding a new concept and whose frequency is quite low and often limited to specific

content areas. For the purpose of this study, they will include scientific words that pertain to animals *(e.g., carnivore, mammal or habitat).*

This study focused on the use of descriptive vocabulary. There are many definitions of what constitutes descriptive language. In metalinguistics, descriptive language can show a deeper understanding of a concept. For example, a child may say that an elephant is big. Although this is true it does not fully encapsulate the size of an elephant and a better word selection would be gigantic, gargantuan or enormous to define their understanding. Generally, it is accepted that descriptive language adds detail, aesthetics, meaning and/or emotion to the spoken or written word. Descriptive language in the context of this study will refer predominately to the use of tier one, two and three nouns, adjectives, verbs, adverbs and prepositions used in oral language. Beck et al. (2007) implemented a targeted explicit instruction model for developing vocabulary acquisition in a group of 119 pre-schoolers. The targeted vocabulary would be defined as Tier 2 vocabulary. They found that students who received more instruction gained a better vocabulary knowledge than those who received less instruction.

Beck et al. (2002, 2013) also designed a model for the teaching of vocabulary and advocate for 'robust academic vocabulary instruction encounters (RAVE)' (Beck et al. 2013, p. 7) and use their system of classifying words into tiers to inform vocabulary selection. Their model begins with using words in the context of a text rather than being given a list of words. They then advise giving definitions that are easy for students to understand, moving away from complex dictionary definitions which are often not well understood by a student. The next step is to provide alternative contexts for the word and investigate how it could be applied to other known concepts or world understanding. This then develops into actively processing word meanings by investigating the unknown word by using strategies such as root words, dictionaries and context clues. The final stage is to revisit the words and recontextualise them regularly. In their initial research using this model with 105 sixth grade students, McKeown et al. (2018) found that every student made significant gains on their vocabulary acquisition when they completed the Evaluation of Academic Vocabulary assessment, which assessed ability to recognise correct uses of specific words. A subsequent two-year study of 192 sixth

and seventh graders also found that those who took part in the RAVE program had higher gains in vocabulary acquisition than those in the control groups.

Graves (2006) proposes a four-step model with an emphasis on providing a rich base of literature, speaking and listening opportunities, broad genre exposure and for learners to discover new vocabulary. He references the earlier work of Beck et al. (2002) in selecting words that would be classified as 'Tier 2' and presenting them in context. An essential element of this model is reading to students and giving them input in the choice of text being shared together. The model then moves into explicit instruction of new vocabulary with the teacher modelling the use of strategies used to analyse words such as using dictionaries, looking at the root of the word or using inferencing and context clues from the text. This model proports to 'foster word consciousness' where students are free to play and experiment with words, using the strategies and knowledge that have been explicitly taught.

Marzano (2020) details a six-step process (explain, restate, show, refine, discuss, play) where the teacher introduces new words, the students then explain their own words and non-linguistic representation such as drawings or diagrams. He draws on the work of Beck et al. (2002) in utilising their tier structure of vocabulary. He also references Graves (2006) research into the importance of vocabulary being taught in semantic clusters and in context. In the Marzano model, over time students engage in activities and learning experiences designed for repeated exposure to the vocabulary, aimed at developing a deeper understanding of the term. In his newest iteration of a vocabulary teaching program, Marzano (2020) advocates for the comprehensive teaching of clusters of vocabulary together. Cockerill et al. (2021) conducted an intervention based on Marzano's six-step model, including sematic clustering of vocabulary, in seven low SES schools in England, with all 104 participants aged from 7-10 years. Their findings showed that students in the intervention group had higher attainment in vocabulary comprehension, sentence structuring and overall reading comprehension at the end of the intervention and that the effect size was greater for students in the intervention group than those in the control group.

Tyson and Peery (2017) have acknowledged the research of Marzano, Beck et al. and Graves and amalgamated elements of the previous models to produce a flexible model called the

Blended Vocabulary model. They recommend a more concise three component parts – modelling, explicit instruction and incidental learning. Modelling takes the form of all adults in the education setting using unfamiliar words when speaking to students, encouraging investigation of vocabulary and modelling an interest in new or unusual words. Explicit instruction is again based on specifically introducing vocabulary and using proven word learning strategies to form an understanding of meaning, appropriate use and context. The use of digital tools is encouraged within this stage of the model, particularly the use of online dictionaries and word-based apps. The final step is incidental learning which was summarized as 'The best incidental word learning occurs in a robust, literate environment across classrooms where print and eBooks, newspapers, word walls, labels, anchor charts, and posters provide rich context and exposure to words' (Tyson & Peery 2017, p. 25).

Spielvogel and Ehren (2021) have built upon the research of Graves (2006) and Beck et al. (2002) in their recent study of vocabulary learning with a participant group of 38 fourth graders. In this study they used the Vocabulary Scenario Technique. This is a method used by speech and language therapists to specifically target the use of Tier 2 words (Beck et al. 2002) and the importance of teaching words in context through the use of text in activities that measure understanding of synonyms and words in context to develop word consciousness (Graves 2006). The findings suggest that students who participated in this targeted intervention had higher attainment in both understanding synonyms and using words in context than the control group. It is important to note that this model is designed for use in one-to-one or small group settings rather than a traditional classroom.

All models have similarities as all contain a direct instruction component and use the tier classification system in choosing and classifying vocabulary. Despite the similarities, each model is also distinctive in its recommendations. Marzano offers a purely direct instruction model incorporating metalinguistic conversations, while Graves offers more indirect opportunities for inquiry-based discovery learning opportunities. Beck's model takes elements of both and combines them to incorporate a strong direct instruction component, with the opportunity to investigate vocabulary through context and real-world texts. The Blended Vocabulary model builds on the previous research and also encourages the use of

digital technologies to enhance the explicit instruction and metacognitive components within their model.

2.7 Digital Technology in Vocabulary Teaching and Learning

Digital technology provides a wide range of tools that can be used to make vocabulary instruction and literacy more broadly, more engaging and effective (Hutchison et al. 2014). A number of recent studies have been recorded that detail the outcomes of various technologies and their use in vocabulary instruction.

Huang (2014) conducted a semester long intervention study of 40 students from two second grade classes. One class was an experimental group who received the intervention and the other acted as a control group. The experimental group experienced vocabulary instruction that included animated PowerPoints and interactive digital games. Both groups were pre and post tested using the Expressive Vocabulary Test (EVT-2) and the findings showed that there was a statistically significant difference in the post test attainment between the experimental and control groups of students, with the experimental group showing significantly higher results on their EVT-2 post-tests.

Baker and Bradley (2021) designed a study to examine the sight vocabulary exhibited by a group of twenty-two first grade students who were identified as low ability readers. The participants used speech recognition (SR) technologies for 4 months in their normal classroom writing context to allow them to use a speech-to-text model to compose pieces of writing. This study found that speech recognition appeared to support students' abilities to use meaningful and culturally diverse spoken language to improve sight vocabulary.

Most recently, Diprossimo et al. (2023) conducted a metanalysis of the digital log files of a large cohort who accessed a digital reading resource. This involved a participant group of 120,000 five- to eight-year-old children in the USA who interacted with the game based digital reading environment. The environment had embedded vocabulary scaffolds that could be accessed by the user when required and, included auditory/visual support for pronunciation

and meaning of target words along with written definitions. They reported that the use of the vocabulary scaffolds was associated with increased comprehension of the texts.

Overall, these studies appear to strengthen the claim of Tyson and Peery (2017) that using a blended model of incorporating technology into the teaching and facilitation of vocabulary learning can help students develop a stronger vocabulary.

While there is evidence to support that the use of technology can be beneficial in supporting learning, there are also some who do not believe that technology should be used so prolifically in education. Excessive screen time is often cited as a reason to avoid technology in schools and there is some evidence to support the claims that screen time is linked to increases in rates of obesity, sleep pattern anomalies and the negative impacts of advertising that inevitably appears on these devices (Domingues-Montanari 2017). Madigan et al. (2019) conducted a longitudinal cohort study of 2441 mothers and young children to ascertain if increased screen time in infants affected developmental assessments at 2 years, 3 years and 5 years old. They found that there was a negative correlation between children with increased screen time and lower performance on these assessments at 3 and 5 years old. The researchers suggest that limiting screen time in young children could be beneficial to improving developmental assessment scores. It is clear that any school use of devices should be carefully considered and purposeful.

2.9 Mobile Technology Use in Education

Mobile technology refers to the use of mobile devices such as laptops, phones, tablets and e-readers, that offer a flexible learning experience that can be tailored to meet the needs and preferences of individual students. Mobile devices offer a variety of learning formats, such as software, videos, podcasts, e-books, and interactive simulations and virtual/augmented reality which cater to different learning styles and preferences.

Research in this area is varied and growing each year but there is evidence to show that technology can be used in a variety of ways to enhance literacy learning experiences and increase attainment. Zhou and Yadav (2017) conducted a study with 72 participants in preschool. They were randomly assigned to one of four groups: multimedia story reading,

multimedia story reading with questioning, paper story reading, and paper story with questioning. The groups were observed, and results showed a significant gain in target vocabulary for the group who received the multimedia story reading and questioning activities. It was also suggested that students who received the multimedia story experiences were more engaged than those in the paper story group. Arens et al. (2019) conducted an action research study in a class of 17 Year 3 students. They evaluated the effectiveness of using iPod to listen and record reading during literacy stations. The A-to-Z Oral Reading Fluency assessment was used to track progress and the findings suggest that the average attainment improved significantly.

Conner et al. (2019) conducted a larger scale randomized controlled trial of 603 students across 25 classes in Grades 3-5, where classes were assigned to either use interactive word knowledge eBooks or traditional paper-based versions of the book. Results revealed a significant improvement in students' word knowledge, word knowledge calibration, and word identification strategy use. The authors propose that these findings suggest that the augmented reading experiences offered by technology could support the development of metacognition, including word knowledge calibration, improved strategy use, and skills required for learning new words. Word knowledge calibration refers to the student's awareness of the ability to judge how familiar they are with the meaning (or multiple meanings) of a word.

As well as an increase in student attainment, engagement and motivation, mobile devices can facilitate improved learning opportunities by providing students with interactive learning tools, such as quizzes, games, simulations and scaffolds. Jesson, McNaughton and Wilton (2015) reported on a long-term study in New Zealand schools that focused on the use of netbooks to redesign curriculum. Six schools were initially in the participation group, and this grew to 12 schools overall. There was a focus on professional development (PD) for teachers, with 27 teachers participating in the first year and 28 in the second year. Collectively their classes comprised of 1869 students. The findings suggested that the teacher PD led to some successful redesign in using digital devices and applications in lessons with the aim of raising literacy levels. In the students were assessed there were multiple gains recorded in student engagement, reading and writing attainment when compared to expected attainment. In a

later publication, Cordero et al. (2018) conducted a study with 51 students aged 8 or 9 years old using an original multimodal tablet tool that they designed interactive, multimodal features. This was then used in a three-phase read to write activity. The key findings reported that the table tool encouraged a broad range of writing practices. They further reported that the touchscreen feature supported co-construction of texts, and that integration of touchscreen features engaged and motivated students in the learning activities.

Mobile technology can also be used to deliver more personalised learning experiences that cater to the individual needs and interests of students. Mobile devices and compatible software/applications are often be used to create adaptive learning environments that adjust to the student's pace of learning and level of understanding. In a recent study of 900 Year 5 students, Campbell et al. (2022) investigated changes in overall, comprehension, vocabulary and reading achievement scores by comparing the results of 450 students who used an adaptive program to supplement their reading instruction to those who did not. The findings suggest that the participants who used the adaptive program showed statistically significant gains in the Istation's Indicators of Progress Advanced Reading (ISIP-AR) assessment in all areas when compared to the control group. The researchers concede that this is an emerging area of research and that further studies should be conducted but that these initial results were promising.

Educators also need to take into account that although children are often engaged by technology use, they can also become distracted by it. This is referred to as cyber-slacking (Taneja et al. 2015) and can take many forms. It can include doing non-approved tasks on laptops, using technology inappropriately or becoming dependent on having technology available. Essentially, cyber-slacking is referred to when the technology provided causes a distraction from the intended learning. Kay, Benrimra and Li (2017) conducted a study of 181 secondary students who were surveyed on their use of their mobile devices in class time. While 80% reported being on task most of the time, all students reported at least one distracted behaviour (emailing, texting, gaming, etc) ‘occasionally’ or ‘regularly’ (Kay, Benrimra & Li 2017, p. 901). The researchers report that the surveyed teenagers regarded school rules and limitations as the most effective way to avoid classroom distractions with technology.

The research indicates that mobile technology can be used to facilitate learning experiences for students that are more personalised to their needs. This allows them opportunities to engage with a variety of activities designed to develop multiple aspects of literacy development. It is essential that the technology is used purposefully and monitored closely to ensure that it is enabling learning and not causing a distraction for students.

Conclusion

Oral language is the foundation of all other literacy skills and there are countless studies to show a correlated relationship between oral language development and success in reading, writing and overall success in school. The research suggests that developing vocabulary and semantic density is essential in developing overall oral language skills; therefore, the development of oral language must be considered an essential part of the literacy curriculum throughout the school years. Alongside this is the importance of metalinguistics in deepening understanding and allowing students to converse with each other about words, play with words and ultimately improve their vocabularies and expressive language. The importance of direct instruction, metalinguistic activities and opportunities to use and experiment with unfamiliar lexicon in the teaching of new vocabulary also cannot be denied and must be at the heart of any endeavour to develop vocabulary instruction (McKeown 2019). The model used in this intervention is a combination of the BVM, with an emphasis on using technology to enhance the use of oral language as well as to develop vocabulary, and an amalgamation of the models advocated by Beck and McKeown, Marzano and Graves. This ensured that well-established explicit instruction components and essential metalinguistic activities were intrinsic in the design of the intervention.

This intervention will use both explicit instruction and opportunities to develop metalinguistic activities. It will also focus on the use of technology as a tool to allow oral language to be easily facilitated and assessed in everyday classrooms but also as a way to engage students.

In this intervention, the technology used is predominately student created videos on mobile devices (iPads and Surface Pro tablets) uploaded to a sharing app rather than ICT based online activities. The activities used were centred more around Nagy's (2007) recommendation of

the use of a metalinguistic approach to learning language as previously discussed. The use of semantic cluster vocabulary lists was also utilised (Marzano & Marzano 1998). All vocabulary was chosen intentionally by the teacher-researcher as advised by Tyson and Peery (2017) in order to develop increased understanding and more complex descriptions of various animals. This was within the relevant context of the year level science topic of animal classifications and habitats as several studies have shown the importance of vocabulary being taught in context rather than in isolation (Harris, Golinkoff & Hirsh-Pasek 2011). Central to the use of metalinguistic language activities is that students will make meaning and connections with the new vocabulary through the use of these activities, designed to facilitate conversations and feedback between peers and with the teacher to allow opportunities to develop concept, meaning and context for each new word.

This study hopes to contribute to the body of research that centres around expressive vocabulary growth using metalinguistic activities and technology as a tool to facilitate engagement in developing oral language. This very specific field of research is small but given the rapid introduction of technology in the education of young people, this area should be expected to grow in the coming years.

Chapter 3

Methodology

This pedagogical intervention study was conducted as a form of practitioner action research; that is, research undertaken by an educator (the author) with her class, in the context of the mainstream curriculum and integrated into the teaching program. Pedagogical interventions, when subjected to inquiry, develop practitioner knowledge which benefits outcomes for students (Campbell & McNamara 2009).

3.1 Practitioner Action Research

Practitioner research is characterised as research conducted by practitioners in their own domain, usually with a view to the evaluation and improvement of a specific area or issue (Campbell & McNamara 2009). There are many types of research that are collectively referred to as 'practitioner research'. These include labels such as teacher research, classroom research, action research, action-learning, evidence-based practice, and practitioner inquiry (Cochran-Smith & Lytle 2009). Cochran-Smith and Donnell (2006) defined practitioner inquiry as 'the array of educational research genres where the practitioner is the researcher, the professional context is the research site, and practice itself is the focus of the study' (Cochran-Smith & Donnell 2006, p. 503).

In this context, practice refers to the implementation of teaching strategies informed by the educator's professional knowledge and knowledge and understanding of the needs of their learners.

Klehr (2012) investigates the contextualised nature of the practitioner inquiry and highlights that teacher researchers work with diverse populations of children, within different educational contexts and with many extenuating factors to consider. No two classrooms will ever be the same and each contain a complex web of socioeconomic, academic and wellbeing issues that shape the cohort and therefore the needs of the class. Klehr further argues that teachers need opportunities to identify and reflect on these 'complex dilemmas, uncertainties, successes, and struggles of their profession' (Klehr 2012, p.127) and develop

research opportunities to address them accordingly within their professional context. The catalyst for this study was an identified struggle and dilemma within a particular school our learners did not have access to robust teaching and learning programs focused on oral language and vocabulary development, despite its emphasis in the Australian curriculum (Australian Curriculum v9 2023). This was especially true of our primary aged learners in Years 3 – 6 where oral language was limited to occasional formal presentations of knowledge and vocabulary learning was incidental at best.

Durrant (2016) states that practitioner research focuses on improving specific aspects of professional practice rather than producing generalised results. In this way the teacher becomes an integral part of introducing evidence-based change. Durrant reiterates the earlier works of Merritt (2003) who defines the characteristics of practitioner research as being undertaken by teachers (either individually or in groups), conducted in the workplace, often supported by an external partner and with the express intention of improving classroom practice and learning opportunities for students. In this study, the external party involved was the University of South Australia which provided academic researchers to support a group of practitioner researchers whose work focused on oral language. Practitioner researchers take the role of being a good teacher to the next level and are intentional in their work of collecting specific data, using this data to inform decisions about their practice and their students' learning, and then sharing their results (Campbell 2013).

Ewing (2007) also attests that practitioner-based research engages teachers in essential reflection on their own practice and provides opportunities for deep professional development. There is a consensus that schools and education institutions can gain many benefits from supporting teachers to engage in practitioner research (Aubusson, Shuck & Burden 2009). This includes, but is not limited to, rich professional development opportunities, teachers reporting greater confidence, classrooms becoming more learner centred with student voice more fully incorporated, higher levels of collegial collaboration and skill sharing, and most importantly, improved classroom practice and student learning outcomes.

Practice-based research develops reflective skills and allows educators to think deeply about the needs of students and devise ways to solve issues and analyse impact. Campbell (2013) summed this up nicely when she stated that, to meet the needs of all learners in our care, '… we need teachers who recognize and know how to raise questions about curriculum, standards, and required testing…' (Campbell 2013, p. 1).

While reflective practice and practitioner inquiry share some common ground, Lankshear and Knobel (2004) define practitioner inquiry as a more systematic processes of analysis where research questions are defined and investigated using specific protocols. Teacher researchers identify areas for study or problems to be solved through their reflections and from that process, a focus for a research study is determined, and the study is designed and implemented. This was the case in this study, where reflection initially led to identification of the issue: limited opportunities for learners to experience rich and robust oral language vocabulary programs. This prompted the development of an intervention which was researched to assess its success. Throughout the intervention I reflected on the progress and success of each element of the intervention through my observations and interactions with each student and by watching the videos that the students made of their weekly talk. At the end of the pedagogical intervention, I reflected on the overall success by analysing the evidence.

One of the main distinctions between reflective practice and practitioner research is that, in the latter, inquiries are informed by the study of literature specific to the field of inquiry to build the knowledge base for systematic inquiry (Lankshear & Knobel 2004). This allows teacher researchers to broaden their understanding of existing research and identify how their body of research may contribute to that cannon. As the previous chapter demonstrates, the extensive study of literature has enabled me to design an intervention based on evidence-based approaches. For instance, gaining knowledge of the importance of metalanguage to student's oral language development influenced me to include metalinguistic activities in my intervention.

Reflexivity is an important part of practitioner inquiry and requires a researcher to acknowledge their role within the research. Clayton (2013) suggests that when reflexivity occurs within practitioner inquiry research it involves an ongoing self-awareness and

questioning by the researcher of the impact of their prior knowledge, assumptions, personal values and preconceived ideas on all aspects of the research study, from researcher action to interpretations of evidence. Further, van Drannan (2017) describes reflexivity as a 'reflection with an understanding of positionality' (van Drannan 2017, p. 517) when discussing her own practice of reflexivity while using a research journal throughout an eight-month participatory evaluation. She describes how the research journal highlighted how her actions, preconceptions, privileged and personal values. Through reflexivity she could see how these matters related to broader evaluation values had the potential to impact her implementation and analysis of the research, concluding that reflexivity increased her competence as a researcher.

As a researcher undertaking practitioner inquiry, reflexivity is very important, especially when we consider the close relationship that class teachers develop with their students and school systems. My own research journal clearly shows that I was challenged in several areas. My own practice changed significantly due to the design of the intervention, and my research journal notes for Week 2 and 3 (found in Appendix 1) show that this change to my practice was an area that initially made me quite uncomfortable. At that time, I was an advocate for inquiry-based teaching practice, which generally shied away from explicit instruction. Through my research I discovered the importance of this element in vocabulary instruction, which meant that it had a vital role to play in the design of the intervention. This was a significant pedagogical shift that not only changed my pedagogy in the intervention but also made me question the validity of a pure inquiry approach in education. This impacted me so much that I eventually moved from an inquiry-based school to one where there is a mix of explicit instruction and inquiry as a pedagogical framework.

My journal also indicates some bias that I had in my preconceived notion that students who generally worked at or above the English achievement standard would be more likely to enjoy the intervention. Although this was the case for most, one student did not follow this pattern and I found myself questioning why. This is explored fully in the case study of IM in Chapter Five where I examine her social context and the impact that this had on her achievement in the intervention.

Practitioner research often takes the form of action research. Action research has been described by Zuber-Skerritt and Wood (2019) as 'a philosophy, methodology, theory and process of learning and development' (Zuber-Skerritt & Wood 2019, p. 34). It is characterised by an aim by a practitioner (or group) to improve practice using cycles of action, evaluation, and critical reflection. Through action research, McNiff and Whitehead (2012) attest that teacher can be active agents in the education system by reflecting on the status quo and advocating for change when the status quo is not in the best interests of their students through gathering evidence through action research. Practitioner and action research share many similarities and the definition of action research is given by Stack and Bound as being focussed on 'change for those involved; change of practice and often change of one's theories of learning, underpinning beliefs and values' (Stack & Bound 2012, p. 1).

Action research, in the context of education, is research that is undertaken in the moment by the teachers and their usual cohort of students. It is different to generalised education research due to being embedded in practice and allows educators to tailor their research to the needs of their student group. As the teacher is the person leading the research, the process can impact on future teaching practice by supporting changes to professional knowledge. When these changes are communicated through a professional network, they can have an impact on the professional knowledge of colleagues and the broader education community (McAteer 2013). This claim is supported by the findings of Peterson, McIntye and Forsyth (2019) who conducted an action research study of twelve teachers, working with children aged three to six years old, who took part in focus groups. These teachers worked in remote areas of Canada with largely indigenous populations. They reported that traditional professional development was not designed for their context, and it often had little impact on pedagogy. In working within an action research model exploring play-based learning, participants reported that the action research was contextually relevant, had positively impacted on their practice and had improved their reflexivity.

This intervention was designed based on the principles of the action research model by Piggot-Irvine (2006) who advises that research be conducted in three cycles of planning acting and reflecting.

The three cycles are

- Analyse the current situation
- Implement Improvements
- Evaluate Improvements

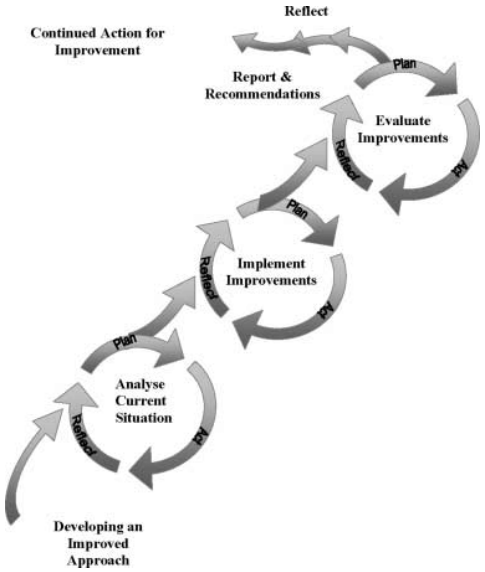

Figure 1 – Action Research Cycle. Piggot-Irvine 2006

In this case, the improvement cycle took the form of a pedagogical intervention conducted over six weeks with a group of fourteen Year 3 students. Opportunities for reflection were built into the intervention design for both the researcher and the participants.

3.2 Pedagogical Intervention

Effective teachers constantly reflect, adapt and try new strategies to enhance their students and enhance their learning experiences (AITSL Teaching Standards 2022). Pedagogical interventions do this in a more systematic and methodical way, with teachers designing an intervention specifically targeting one area of learning. Pedagogical interventions have a focus on changing a specific aspect of instruction or activity that deviates from the existing practice, thus changing the pedagogical context. This is usually in response to a need that the teacher has identified in their student group and the intervention is then designed around this need as advocated by Klehr (2012).

There are many types of intervention available for an educator to implement, with commercial intervention programs available to support learning in literacy. A pedagogical intervention is not simply the implementation of extra time or resources to develop skills, it is fundamentally changing some aspect of the way that something is taught. This particular pedagogical intervention required a significant change in my own teaching practice. At the time of the intervention, I followed my school mandated literacy programs, none of which

specifically focused on the teaching of vocabulary. Explicit vocabulary teaching was a rare occurrence and incidental learning mainly happened during shared reading or spelling. Therefore, this intervention with an explicit instruction and metalinguistic focus on explicitly investigating vocabulary was a major pedagogical shift.

Pedagogical interventions can be used on a one-to-one basis, in small group situations, or delivered to a whole class or group. In the case of this study, the identified area for intervention was vocabulary development in Year 3 students. In my observations I noticed that a large number of this cohort of learners used very little descriptive language in their literacy activities. This is not a new observation and I have noticed over the years that classes seem to have more students who have quite limited vocabularies, making comprehension and discussions a challenge at times. This intervention was targeted specifically based on the needs of the students to have more robust and rich opportunities to develop vocabulary and increase opportunities for oral language to be a focus in the modern classroom. It was also shaped by many years of my observations as a classroom teacher that this was an area that received very little attention, despite overwhelming evidence that a large and varied vocabulary has positive impacts in all other areas of language.

The use of new technology has allowed educators to become more creative and innovative in the design of pedagogical interventions, by utilising technology in ways previously unknown (Schwieter & Beneti 2019). In this inquiry, video technology was an intrinsic tool to the intervention.

3.3 Digital Technology Use in Classrooms

As native users of digital technology, today's children can use multimodal digital technologies simultaneously and with relative ease (Lim & Toh 2020). They interact with devices and interfaces that are fast changing and have been exposed to such technology from birth (Wellings & Levine 2009) meaning that technology use is a natural part of everyday life. Studies in the areas of digital literacies indicate that students bring new and emerging technology skills that often remain underutilised in the average classroom (Pahl & Rowsell 2005). Students of all ages regularly engage with extensive and varied digital media in their home lives and are skilled in using many different types of technology from a very young age.

Yelland (2018) argues that it is essential that young students learn to communicate in the many different multimodal ways that have become the norm in our technology-centric society. In this intervention, digital media was used to record oral language and facilitate peer feedback.

Technology can allow us to rethink our curriculum and the way that this is presented to our students in order to maximise engagement, empower students and utilise their ICT skills. (Sailer, Murböck, & Fischer 2021). Burnett (2016) asserts that digital technology offers possibilities to provide a range of incentives to enhance education such as motivating students and helping educators to utilise technology in assessment. Wellings and Levine (2009) assert that this can personalise assessment to each student and allow for flexibility in demonstrating understanding. Plowman and Stephen (2007) outlined the importance of allowing students access to technology in order to provide 21st Century tools for creating representations of their knowledge and understanding in key curricular areas. This intervention used these skills to allow self and peer assessment in an innovative form of data collection that is rarely used in the modern classroom despite ample access to electronic devices. Burnett concludes that

> while digital technologies may offer new possibilities, what matters is how they get taken up in practice, for example, what children and teachers do with and around them, and how they are used alongside other resources (Burnett 2016, p. 21)

This intervention uses popular classroom technology as a basis of its design in an innovative way. In order for technology to be integrated successfully into a pedagogical intervention, teachers must have a sound understanding of the technology being used and how it might support learning (Koehlar et al. 2014). The SAMR model was designed to guide teachers and curriculum designers to integrate technology successfully in the classroom (Puentedura 2006). In essence SAMR is model that elaborates how technology can enhance or transform learning experiences and opportunities. This model is summarised in the diagram below:

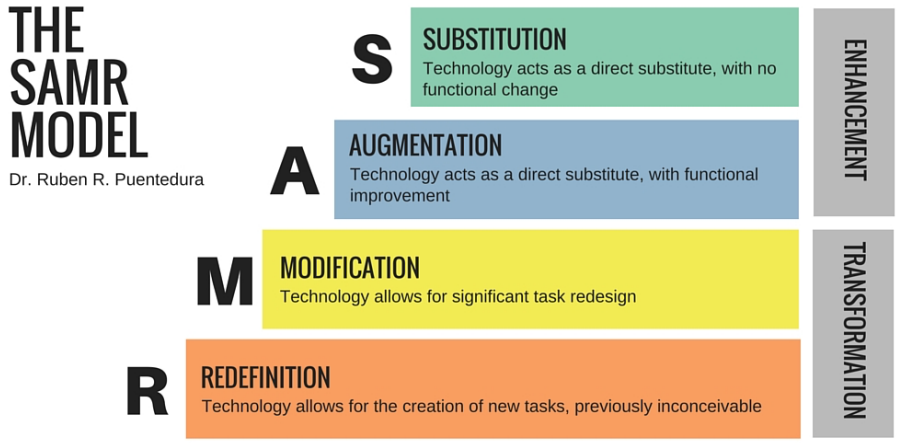

Figure 2 – The SAMR Model, Puentedura 2006

The SAMR model has been adopted by education settings and can be used as a guide to effective technology integration (Puentedura 2014). The first level of integration is substitution, in which technology simply replaces another learning tool, for example a paperback book is replaced by reading a pdf of the exact same book online. The second level is augmentation. This is where some modification is added to the substitution experience. For example, the pdf book is replaced with an immersive e-reader that can read aloud to the learner or provide tools to translate or identify meaning. Substitution and augmentation are the most common ways in which technology is used in schools, however the next levels are where change in pedagogy can take place. Level three is modification which focuses on redesigning tasks. In our example of the book, modification would allow for students to collaborate with each other to create a podcast or video representation of their understanding. These would not be possible without technology and are tasks that are modified to enhance the learning opportunities. The final level is redefinition which allows students to have learning experiences that would redefine what learning looks like. A good example of this can be seen in collaborative online spaces such as OneNote where students can work together in real time without being in the same space or even the same country. Redefinition has a focus on the fusion of technologies, collaboration and global audiences within learning experiences that would be previously inconceivable.

In a primary school context, technology is often used as a substitution for prior non-digital practices, for instance, the use of word processing instead of writing with a pen or a digital

spreadsheet application (Excel) to perform more complex calculations. The second level of the model involves augmentation of a task, such as when teacher uses an online video which further explains concepts covered in class, enabling students to consolidate or extend learning. Such enhancements do not fundamentally change teaching as would occur without the use of technology; essentially the lesson structure remains the same. Modification, the third level of the model, involves making meaningful changes to the teacher's pedagogy. For instance, lessons can be made more dynamic and interactive. Examples include encouraging students use Google Earth to virtually visit foreign countries rather than watch a video or read a book about the area. This use of technology has modified the lesson to allow virtual interaction which would previously only be possible by actually visiting the area. The final level of technology integration, redefinition, is primarily used when learning is collaborative and authentically linked to the wider world, for instance when the educator challenges students to create a multimedia documentary to communicate within a network, gather feedback and share expertise. Here, students are enabled to produce knowledge and create resources which may be circulated beyond the classroom. Technology can be so much more than a clever tool to substitute another, it can transform the experiences of students and teachers no matter where they are located, their socioeconomic status, the resources available or the subject being studied. Buchanan, Pressick-Kilborn and Maher (2018) capture this sentiment in their analysis of technology use in environmental education 'despite their limitations, digital approaches are to be lauded for their emancipatory capacity – the potential to liberate from, liberate for, and liberate through' (Buchanan, Pressick-Kilborn & Maher 2018, p 5).

As the use of mobile digital technology continues to impact education, there is an increasing role for investigating effective ways of incorporating technology into the classroom in authentic contexts that augment or redefine learning opportunities. One of the digital tools that has become popular with educators in recent years is an online app called Seesaw. Seesaw is a learning platform that allows teachers, students and parents to communicate, collaborate, and share their work in a secure environment. It allows students to create videos and upload directly to their private portfolios. This intervention centred around students filming themselves talking about various given topics and then engaging in self and peer analysis. On the SAMR model this would be considered as a modification but combined with

the interactive nature of students and parents watching the videos and giving online real-time feedback, it edges into the realm of redefinition.

3.4 Explicit Direct Instruction

The approach to vocabulary instruction that was selected for this intervention is based on the vocabulary model of Beck and McKeown (2007, 2013) and the Blended Vocabulary model (BVM) (Tyson & Peery 2017). Both these models apply the Explicit Direct Instruction (EDI) approach to introducing new vocabulary. EDI is a way to deliver direct, structured instruction to students, making lessons clear and showing students how to start, develop and succeed on a task or outcome. The concept of EDI was developed by Hollingsworth and Ybarra (2009). They acknowledge that this work builds on the decade's old pedagogy of direct instruction, which has been researched by many and has a large canon of research attesting to its effectiveness in improving educational outcomes for most students (Goldenberg 2006, Sousa 2005, Watkins & Slocum 2004, Rosenshine & Stevens 1986). In their meta-analysis of research into the effect of vocabulary interventions oral language for pre- k and kindergarten children Marulis and Neuman (2010) concluded that interventions using explicit teaching of words produced large effects in comparison to studies where words were implicitly learned.

Hollingsworth and Ybarra (2009) state that EDI is an effective and efficient teaching strategy, especially for students with learning difficulties or those who take longer to understand complex problems. In the context of this study, EDI was applied in the intervention which involved teaching vocabulary in a clear and sequential way. Hollingsworth and Ybarra (2009) set out a series of steps beginning with the identification of a learning objective and followed by the activation of prior knowledge. The instructional component, in this model, consists of the following steps

- **Concept and Skill Development:** Introduce each concept clearly in manageable chunks of information.
- **Explaining:** Teaching by telling and answering questions.
- **Modeling:** Discuss the thinking process and ways to approach a problem, model how to use the new concept of skill effectively.

- **Demonstrating:** Teaching using engaging materials and physical objects to clarify the content and to support kinesthetic learning.

Following instruction, children are supported to engage in guided practice, with the teacher or in groups before moving to independent practice. The intervention applied this model by following these steps, with the aim of improving children's vocabulary learning.

3.5 Design of Pedagogical Intervention

This intervention represented a significant change from prior practice, particularly in the area of STEM. In the past, students were expected to speak and write about STEM topics without any focus on learning the associated vocabulary. The intervention design deliberately used vocabulary that was linked to the Science topic of 'Animal Categorisation' being studied by the group during the term that the intervention took place. The words were thematically selected and adhered to the principle of semantic categorisation as discussed in chapter two. The words were introduced as we were investigating different types of animals and their needs, giving the vocabulary context and purpose.

The new vocabulary was initially introduced by the teacher. Students were then moved into small groups to complete metalinguistic activities where they discussed the words, used their previous knowledge of like words to make educated guesses at new vocabulary. The teacher encouraged students to try using word clues (morphology, semantic connotations, etc) to make meaning from the words that were unfamiliar. The whole class would then reconvene to discuss their conversations and the teacher then led an EDI activity to introduced meaning and context for each new word. The subsequent activities involved students researching their animal, concentrating on the specific focus for the week (e.g. appearance, habitat, etc). Students were free to select any animal that they wished to talk about and could choose the same animal or a different animal each week. They were then required to synthesise their understanding in the form of an oral presentation and video recording about their chosen animal. Finally, students reviewed these videos with their group who discussed language choices and vocabulary used.

The intervention activities were undertaken over a six-week period during term four of 2020. Although this time was briefly interrupted due to an emergency state-wide lock down, this did not affect the intervention lessons or data collection. The six-week intervention model followed the same format each week with different vocabulary chosen to enhance descriptions based on the theme for the week. While the overarching theme was describing animals, the focus question for each week was the basis for the recorded talk. The weekly overview was as follows:

Week One – What does your animal look like?
Week Two – What does it act like?
Week Three – How does it move?
Week Four – What habitat does it live in?
Week Five – How does it grow and mature?
Week Six – How does it get nutrition?

3.6 Vocabulary Word Selection

Metalinguistic activities were an integral component of this intervention. As discussed in the previous chapter, metalinguistic activities are designed to encourage students to explore language, in this case given vocabulary, through making connections, discussions and creating semantic connections.

The first metalinguistic activity each week was an introduction to specific vocabulary for the particular topic that may be unfamiliar to many students. These were be taken from a selection of Tier 2 and 3 words (Beck et al. 2013) focussing on descriptive language, with ten specific words being introduced each week. These words consisted of a mix of nouns, verbs, adverbs and adjectives and were selected from familiar information texts and non-fiction texts shared during reading and research time (including websites, fact files and encyclopedias). Selection criteria are listed below (Beck et al. 2013, p.28):

- Importance and utility: words characteristic of mature language users and are used frequently in a variety of literature

- Instructional potential: words used in a variety of ways so that students build strong connections to other words and concepts.
- Conceptual understanding: Words that provide nuance and detail when describing a concept/idea.

Students were also given an opportunity to record other vocabulary that arose from their conversations. In this way, more vocabulary could be introduced through metalinguistic conversation between peers and assists in making connections to known vocabulary.

It is important to note that although the selected words may be infrequent in oral language generally for a Year 3 student, they were essential to the STEM topic that we were studying as a class. They were valuable additions to expressive vocabulary which were needed to achieve the learning outcome of creating factually correct descriptions of various animals, and topics related to them.

3.7 Participants

Participants in the pedagogic intervention were students in a composite Year 3/4 class of 27 students taught by the researcher. The selection criteria for this intervention were simply that each participant should be a Year 3 student in the researcher's class. The activities were undertaken with the whole class. However, owing to the disruptive impact of extra activities including sport, choir and an environmental project on the Year 4 students, data was collected only from the Year 3 students. This decision was made to ensure consistency in participation as far as was possible and secure the integrity of the results.

Therefore, the participant cohort comprised of fourteen students, eight boys and six girls. Three students had diagnosed disabilities and five had imputed learning difficulties but with no formal diagnosis. All eight participants with imputed or diagnosed needs had a Personal Plan for Learning (PPL) to assist them in acquiring literacy skills. No participants spoke English as a second language although two could understand other language spoken by their families but had limited abilities when speaking the home language.

The cohort represented the spectrum of academic achievement. The table below summarises their general academic achievement based on previous grades in English and literacy assessments, along with aspects of diversity.

Initials	Academic Ability in English Curriculum	Additional considerations
AA	Below standard academic performance	Imputed SLD Understands some DInka but does not speak the language.
AB	Above standard academic performance	
AY	Above standard academic performance	Understands Farsi but does not speak the language.
BN	At standard academic performance	
CP	Below standard academic performance	Imputed SLD (based on difficulties observed in spelling, reading and writing by multiple teachers)
CS	Below standard academic performance	Imputed SLD (based on difficulties observed in spelling, reading and writing by multiple teachers)
CT	Below standard academic performance	Diagnosed SLD (Dyslexia).
FC	Below standard academic performance	Diagnosed SLD (Dyslexia)
IM	Above standard academic performance	
IT	Above standard academic performance	
LC	Below standard academic performance	Imputed SLD (based on difficulties observed in spelling, reading and writing by multiple teachers)
TL	Below standard academic performance	Diagnosed SLD (Dyslexia) Complexities from an ABI (Acquired Brain Injury at two years old)

TW	Below standard academic performance	Diagnosed Autism Spectrum Disorder (ASD) Diagnosed Attention Deficit Hyperactivity Disorder (ADHD non-medicated), Diagnosed SLD (Dyslexia)
ZV	Above standard academic performance	

3.8 Weekly Structure

Pre-Lesson

The teacher researcher would add the ten focus vocabulary words to the class work wall. This wall was added to each week and the bank of words grew as the intervention continued. Students were encouraged to use the word wall as a point of reference during other lessons such as writing and Science, as well as during the intervention lessons. Some students were familiar with word walls being used to introduce vocabulary due to prior exposure, however many were not.

Lesson one (45 mins)

Firstly, I presented a variety of new words to learners and asked them to work in small mixed-ability groups (3-4 students) to categorise words into two piles ('Words that I Know' and 'Words that I Don't Know'). 10 minutes was given to allow students to talk to their group members about the words, share knowledge of words and use them in inventive sentences. Prompts to facilitate conversation were designed to specifically foster analysis of words and investigation:

- Have we heard any of these words before?
- Do we recognise any parts of the words?
- Do any words remind us of other words?
- What words do we already know well?
- Do we know any other words that mean the same thing?
- Can we work out what the words mean?
- How can we use these words in sentences?

During this time the teacher acted as the facilitator and used these questions to prompt students to engage in the conversation so that all students were participating as best, they could.

- The new vocabulary was discussed as a whole class for ten minutes using a Power Point which was designed to be fun and engaging. For example, when the word aggressive was discussed, the slide contained images of monkeys baring their teeth and snarling and a gif of kangaroos boxing each other. The visual representation was intended to facilitate semantic connections.

  When appropriate, students were encouraged to discuss or act out the word to allow further exploration of word meaning and create semantic connections using a kinaesthetic approach. The teacher would then ask for other examples, for example if the word was 'aggressive' and the example was a lion, students could suggest other similarly aggressive animals such as tigers, bears, etc.

- Students were asked to highlight any words on the vocabulary list that could describe their chosen animal, add other appropriate descriptive words, and share these words with their group members. Students were encouraged to compare their animal vocabulary and find any words that were common, e.g., synonyms or antonyms. This strategy was designed to strengthen semantic connections, develop semantic categorisations and deepen understanding of words in context.

- Finally, any new words that their groups had discussed were collated on the whiteboard and students were encouraged to add words to their own lists.

Lesson Two (30 minutes)

- Students read over their word lists from the previous lesson, did some additional research on the area of focus for describing the animal, and considered how they could talk about their animal to inform their audience. Students could record ideas

using words, pictures or simply by thinking about what they wished to say. These options ensured students could synthesise information and prepare for their talk in the way best suited to their learning. Practicing their talk was encouraged but optional.

I acted as facilitator, ensuring students were engaged and focusing on learners who needed additional support. It is important to note that although I used the given vocabulary in conversations, and referred to them regularly with the students, they were not directly instructed to include them. This was a deliberate choice as I wanted each student to use the given words only if they had decided to independently.

- 15 minutes was then allocated to filming their talk about their animal on their personal device, uploading it to Seesaw and writing a caption to explain which animal they were discussing. Students were encouraged to watch their video before uploading and to refilm their talk if they wished.

- In the last five minutes, the students came back together as a whole group to check that all videos had been successfully uploaded and to offer feedback about their filming experience. This allowed essential feedback on technical aspects of the process and any other issues. For instance, if a student had difficulty uploading, the problem could be remedied quickly with teacher support.

Lesson Three (30 mins)

- Students shared their videos with their small groups They then discussed the use of word choices. Students were provided with the following feedback prompts:
    - I really like the word ……..
    - What does ……. mean?
    - The most interesting word you used was …….
    - I think you could have used……. because it means…….
    - The word _____ helps me to make a picture in my head

Scaffolding these metalinguistic conversations was essential to the intervention. It supported students to reflect on the word choices used and to discuss possible alternatives or additions. To continue their metalinguistic conversations outside the classroom, students were encouraged to engage with their parents and discuss their word choices. This was enabled by the Seesaw application; as the videos were uploaded to the student's personal channel, parents were automatically invited to watch it by the app.

Following the lesson, I watched each video and left a written or spoken comment on the post highlighting interesting word choices and offering suggestions such as 'choose a quieter place to film' or 'try to add more detail next time'. I identified students who used minimal vocabulary or had very short talks and made a note to provide more support during Lesson 1 and 2 in the following week.

3.9 Ethical Considerations

Safeguarding the rights and wellbeing of students was paramount throughout this research intervention. To ensure this, measures were taken in accordance with the National Statement on Ethical Conduct in Human Research 2007 (Updated May 2015). The relationship between researcher (teacher) and students were based on respect, honesty and compassion. The rights and agency of each child were central to the research protocol outlined (Farrel 2005). Ethical approval was granted to the research team by the University of South Australia, protocol number 202264.

Parents/legal guardians were made aware of all aspects of the intervention delivery, activities, data collection. analysis and storage of data. This allowed fully informed consent to be collected from parents in the form of a signed document allowing their child to participate. All parents and students had the option to withdraw from the intervention at any point. One method of data collection used was the uploading of video to Seesaw. All students had existing parental permission to do this, but specific permission was sought for the purposes of this intervention. As Seesaw is a parent communication platform, all parents had access to each video uploaded. All other audio recordings were stored on secure school servers. Within the proposed research participants, all students spoke English as their first language. No

parent required the research information to be translated into a language other than English, but this option was available.

The purpose and details of the intervention were described to students in child friendly language and all students were encouraged to discuss their participation in the study with their parents. Students were made aware that they were free to withdraw from an activity or the intervention at any point and were encouraged to express their views or opinions throughout the intervention. Consideration was given to the anxiety levels of students and monitored closely throughout the intervention. Any student displaying signs of stress or anxiety was given the option of discontinuing the intervention in consultation with their parents (Graham 2016). Students with Personalised Plans for Learning (PPLs) continued to receive their additional support and this intervention did not interfere with their PPL in any way. There were no penalties to students who withdraw from the intervention and all students were treated equally within the learning environment.

No incentives were used to encourage participation outside of standard classroom norms of behaviour management. The intervention did not impact on the amount of work that each participant was required to do and took place within school hours. Intervention activities took place during allocated Literacy time so that no other subjects were impacted. The activities took place in the usual classroom learning environment, with the same class teacher leading all activities in order to make participants as relaxed and comfortable as possible (Farrel 2005).

During data analysis each student was referred to by their initials to protect their identity and all personal data collected remains confidential within the confines of the research team and school. The results of the intervention will be shared on an individual basis with parents in a child friendly format to allow for discussion between parents and children, should the parents decide to share the information.

3.10 Data Collection

Examples of talk were collected in two ways. First, children's oral language production was captured using a standardised interview in which each child was invited to talk about an

animal in as much detail as they chose to. Interviews were conducted pre, mid and post intervention by the same researcher, following the same script each time, and audio recorded. The second data collection activity was a weekly video filmed by each child. This was an outcome of the learning activity and involved each child recording a verbal presentation about an animal. Each week, this video was required to focus on a particular aspect of the animal. It was hoped that the child's oral language would incorporate relevant vocabulary focus learned that week. These videos were uploaded to a digital sharing platform, Seesaw, to be shared with myself, parents and fellow class members. Students also completed weekly self-assessment feedback into how they felt about their participation and confidence levels.

Additionally, a research journal was used to record notes and reflections to develop reflexivity. Verbal feedback was elicited from participants during whole class discussions with notes from many of these conversations being recorded in the research journal (Appendix 1).

Some adaptations to the data collection method were made in response to student feedback. Responsiveness to learners was consistent with this teacher-researcher's usual approach to educational practice. For instance, many participants requested longer discussion times when given new vocabulary. This suggestion was implemented from week two onwards, with discussion time increased from 10 to 15 minutes. This meant students had more time to discuss and brainstorm new words. The students also gave feedback that they would like to have more access to quiet spaces in order to record their videos. This proved to be an issue in an open plan school, but we made accommodations to our timetable in order to use an empty learning area. The lack of quiet space continued to be a consideration, with participants indicating negatively impact on their ability to record their videos successfully. This should be a consideration for future use of this intervention.

Students feedback on learning was an integral component of the pedagogical beliefs of the school. To gather data about how students felt about the intervention activities they completed self-assessment feedback, indicating how confident they felt in producing their talk, how confident they felt using the new vocabulary and if they felt that the new vocabulary words would be useful to them. This took the form of a simple graphic where students

coloured or circled their chosen feedback at the pre, mid and post time points. This self-assessment did not take place during intervention lessons and instead took place during the class weekly Reflection Time where students would select a piece of work to share with parents via Seesaw and complete any reflections or self-assessments required for that particular week. This decision was made to fit in with the class schedule and allow all students time to reflect on all three intervention lessons during a time that they were familiar with using for such activities.

3.11 Data Analysis

Both quantitative and qualitative data analysis methods were employed. Quantitative analysis was undertaken on the individual interviews conducted pre, mid and post intervention. After transcription, I developed a macro for Microsoft Word that analysed the text. A macro is a series of commands and instructions that can be run together as one single command to accomplish a task automatically. The macro I made for this purpose analysed the typed transcription and listed all words or utterances (vocal sounds that did not form distinct words such as 'erm' and 'uh') in order of how frequently they were used. This allowed me to easily calculate how many total words and original words were contained in each transcription. (See appendix 4 for macro and example).

The words were then manually categorised according to the tier system (Beck et al. 2013). In this system words are classified into the following categories: tier one, common everyday words; tier two, more advanced descriptive and literary type words; tier three, technical and topic-specific vocabulary. Using tier categorization allowed me to examine changes to each participants lexicon at different levels of vocabulary acquisition. The subjects in the area of STEM are characterised by technical or scientific words that would be classed as tier three. For example, in our animal topic, tier one words could be 'big', 'brown', 'fast'. These words are commonly used and can apply to a multitude of different concepts. Tier two words could be more advanced words such as 'enormous', 'aggressive' or 'miniscule'. Again, these are common and can be applied to many concepts but are more literary and nuanced in their meaning. Tier three words could be 'carnivorous', 'marsupial' or 'herbivore', and are words

specific to the animal kingdom that are not commonly used in everyday language for the average person.

This study focused on the use of descriptive vocabulary. There are many definitions of what constitutes descriptive vocabulary. Generally, it is accepted that descriptive vocabulary are words and phrases that describe an idea, concept or item. Therefore, it adds detail, aesthetics, meaning and/or emotion to the spoken or written word. The Australian Curriculum encourages Year 5 and 6 students to identify and compare descriptive vocabulary as part of their Language Structure curriculum (Australian Curriculum v9 2023). In metalinguistics, descriptive vocabulary can show a deeper understanding of a concept and the semantic network and associations that the word is understood within (Jordan & McLaughlin 1976). For example, a child may say that an elephant is big. Although this is true it does not fully encapsulate the size of an elephant and a better word selection would be mammoth or gargantuan to define their understanding that the elephant is very large. The use of a shared metalanguage and understanding of metalinguistic strategies can also support students to use more descriptive vocabulary and phrases in their own speech and writing (Humphrey & Feez 2016)

Descriptive vocabulary in the context of this study will refer predominately to the use of tier one, two and three nouns, adjectives, verbs, adverbs and prepositions used in oral language. Although in the STEM context, the pedagogical intervention aimed to extend children's vocabulary beyond everyday words, it was necessary to include the tier 1 category for analytical purposes. For instance, I could see whether children had progressed over time by adding more tier 2 and 3 words to their lexicon. Also, examining overall descriptive language used allowed me to determine if a participant had included words that were not in the given vocabulary.

After analysis and categorisation, measures were taken of eight different categories. Measures at each of the three time points could then be plotted to determine any change over time at the individual level. Analysis at the whole group level involved calculating the mean, and standard deviation of each data category:

- Total Words
- Interview Time (seconds)
- Original Words
- Given Vocabulary words used
- Tier One Words used
- Tier Two Words used
- Tier Three Words used
- Descriptive Vocabulary used

The large standard deviations recorded showed that the data was widely spread. Z tests confirmed this when used to establish skewness and kurtosis. A Repeated Measures ANOVA was then used on data from the pre, mid and post intervention interviews. A post hoc pair wise comparison was also conducted between all three permutations to establish where significant results had been produced.

The data was also categorised according to the use of objective or subjective language within the pre, mid and post testing. As previously discussed, objective language is defined as fact-based, measurable and observable, verifiable and unbiased. Subjective language reflects the perspective, opinions, interpretations, points of view, emotions and judgment of the writer or speaker (Australian Curriculum v9 2023)

Two tailed t-tests were used to ascertain the change In the number of recorded objective and subjective language in each recorded talk. Two tailed T tests were also used to ascertain any change in the pre and post data sets.

Qualitative data was collected in the form of observations of student conversations during metalinguistic discussions, teacher-perceived and student self-reported confidence levels in developing oral language skills, and observations of how students implemented feedback from peers and the teacher. Feedback data was compiled into tables and collated to show changes over time.

Observation notes underwent thematic analysis where items were coded by theme to evaluate interactions and engagement in metalinguistic activities. Thematic analysis is a popular and effective method for analysing qualitative data in research studies. It involves identifying and analysing patterns, themes, and categories within the data in order to gain a deeper understanding of the experience and perspectives of the participants (Xu & Zammitt 2020)

3.12 Case Studies

Adding a dimension of case study to a practitioner inquiry can allow researchers to examine a particular phenomenon or issue in-depth within a specific context. Case studies provide a detailed account of an event or situation and enable researchers to explore the complexity of the educational context, identify factors that affect student learning and success, and understand the influence of differing variables on teaching and learning within a specific context. The use of differing perspectives given in a case study can also be considered as a more democratic and inclusive approach to research (Ward & Erikson 2021). In a pedagogical intervention, case studies can focus on how individuals have responded to the intervention (Stake 1995). This is an important consideration as the way individuals or groups respond to a situation or an event can provide insights into their attitudes, beliefs, and behaviours during the intervention. Understanding these responses can help researchers to identify factors that have impacted on individual achievements and also how an intervention can influence learning for a wider group or in a wider context.

In a reflective case study, the perspective and interpretations of the researcher inform the interpretation of data (Hamilton & Corrbett-Whittier 2013). In this approach, the findings of the quantitative and qualitative analysis were augmented by the researcher's observations of how particular students engaged with the intervention during learning activities. Four students were selected for the case study phase of analysis. The principle for selection was that the student fell outside the norm of the attainment displayed by the cohort. These cases merited more in-depth analysis to investigate why the intervention was very successful or less successful for these individuals. Three of these students were selected as they showed results that lay well above or below the average attainment recorded for the group which

merited further investigation. One participant showed results that were far below the cohort and also significantly below her expected capabilities.

The case studies are designed to investigate individual students, their circumstances and their engagement and attainment during the intervention. In this way the case studies offer an opportunity for those outside the research to appreciate some of the complexities that exist in the classroom (Yin 2005). All evidence was analysed for each individual. Anomalies in attainment from the group average were recorded and investigated, along with notes and observations from the research journal and student self-assessment and feedback.

Each case study is a descriptive analysis and involves a detailed description of the case, including the context, the individuals involved, the events or situations that occurred, and any relevant factors that may have influenced the outcome. Interpretive analysis was employed to consider possible meanings for the data and develop explanations for the observed phenomena. Elements of comparative analysis were used, as all cases were compared to the group norm data to identify similarities and differences and to draw conclusions about possible reasons for discrepancies. This process also allowed opportunities for reflection and reflexivity for the researcher.

Chapter 4

Outcomes of Intervention

This six-week pedagogical intervention involved the explicit teaching of vocabulary, followed by metalinguistic activities to allow students to investigate and synthesise new vocabulary. Students then created a short talk about an aspect of an animal that interested them, which they self-recorded using the Seesaw app. Opportunity was then given for students to view these videos in small groups and offer feedback to each other. This chapter will be structured in two parts. The first will present the analysis and findings of the quantitative data. The second part will present and discuss the analysis of the qualitative data. A more detailed discussion of case studies will follow in Chapter Five, while a discussion of all outcomes will be presented in Chapter 6.

4.1 Quantitative Data

The quantitative data was collected and analysed at a whole group and individual level. This section of the chapter is organised as such. Analysis of whole group data allowed for investigating wider patterns that emerged across the cohort and gave opportunity to investigate the overall success of the intervention in a population of learners with diverse needs.

Analysis of individual data follows and allows for examination of each participant's learning, to their particular level of success in the intervention. Types of words used during spoken language interviews were transcribed from audio files of each interview. The words were classified using the classification system outlined in chapter three. Words spoken were transcribed and then were initially sorted into the total number of original words, meaning that for repeated words, only the first utterance of the word was counted. The original words were then classified into Tier 1, 2 and 3 vocabularies, with the total descriptive words calculated and recorded.

This data provides an average of achievement across all classification criteria at each of the three interview time points (pre-intervention, mid-intervention and post-intervention).
The collected data is presented in the table below to align with the classification system used along with the total interview time and total word count. The standard deviation (SD) was then calculated for all data sets. This is shown in brackets in Table 1 below:

Table 1 - Whole Group Data

Week	*Average Total Words*	*Average Interview Time*	*Average Original Words*	*Average Given Vocab*	*Average Tier One Words*	*Average Tier Two Words*	*Average Tier Three Words*	*Average Descriptive Words*
0 Pre	88.6 (35.4)	109.5 (35.1)	52.6 (17.4)	0	49.7 (17.6)	2.6 (1.6)	0.1 (0.4)	42.1 (15.1)
3 Mid	108.4 (59.9)	114.5 (37.3)	60.9 (25.4)	1.4 (1.7)	55.4 (25.5)	3.4 (3.3)	0.4 (0.5)	51.6 (23.1)
7 Post	114.2 (79.6)	109.1 (39.9)	63.8 (33.1)	1.7 (1.8)	59.3 (27.9)	4.1 (5.5)	0.5 (1.0)	56.2 (31.7)

All values are reported as a mean (SD)

Each assessed aspect of oral language saw an increase in the average from one time point to the next. Average total words increased from 88.6 to 114.2. Average original words increased from 52.6 to 63.9. Average Tier Two words increased from 2.6 to 4.1 and average Tier Three words showed an increase from 0.1 to 0.5. Descriptive words showed an increase from 42.1 to 56.2.

The large values of each standard deviation showed that the data was widely spread and therefore less reliable. This was confirmed when z tests were conducted for skewness and kurtosis. When normalised to time, the results were classified as falling into a normal distribution. The results of these analytics are presented in Table 2 below.

Table 2 – Whole Group Data Normalised to Time

Week	*Average Total Words*	*Average Original Words*	*Average Tier One Words*	*Average Tier Two Words*	*Average Tier Three Words*	*Average Descriptive Words*
0 Pre	49.6 (16.5)	30.1 (10.6)	28.3 (10.7)	1.6 (0.9)	0.1 (0.2)	24 (9.4)
3 Mid	56.6 (22.1)	32.4 (8.8)	29.3 (10.1)	1.7 (1.6)	0.3 (0.3)	27.4 (8.1)
7 Post	58.8 (20.7)	34.2 (9.2)	32.2 (8.3)	1.8 (1.6)	0.3 (0.5)	29.8 (8.6)

All values are reported as a mean (SD)

Over the course of the intervention an increase was recorded in each area of oral language that was assessed. Average descriptive words per minute at week one was 42.1 which increased to 51.6 at week three and 56.2 at week seven. A Repeated Measures ANOVA was conducted on the three sets of data (pre, mid and post) which returned a P value of 0.041 indicating that there was a statistically significant difference in the data. In order to determine where this difference occurred, a post hoc pair wise comparison was conducted. The results were as follows and recorded as 'descriptive words per minute of talk time' (dwpm):

- Pre vs Mid p = 0.219 not significant (average of 2.6 dwpm)
- Mid vs Post p = 0.235 not significant (average of 2.5 dwpm)
- Pre vs Post p = 0.031 significant (average of 5.8 dwpm)

When assessed as number of words per 60 seconds, Repeated Measures Anovas demonstrated no significant differences across the three time points for total words, total original words, given vocabulary, Tier 1, 2 or 3 words. All returned a value of $P > 0.05$. The only significant difference was in the number of descriptive words used. Post hoc pair wise comparisons revealed that the number or descriptive words significantly increased between the pre and post intervention interview data.

This indicates that there was a statistically significant increase in the number of descriptive words used pre and post intervention across the whole group of participants. There was no statistically significant increase in any of the individual tiers of word classification across the cohort, however taken as a whole sample of spoken language, there was an increase in descriptive words used.

The data was used to investigate the use of the given vocabulary that was provided as a stimulus each week. Given vocabulary describes any of the focus vocabulary words used throughout the intervention as detailed in Figure 3 below. This vocabulary formed the basis of the weekly metalinguistic activities and was designed to systematically build vocabulary pertaining to the class science topic of animals and their habitats based on the recommendations made in the research of Harris et al. (2011) and Christie and Roskos (2006) to teach vocabulary in context that is relevant to the students. Words were analysed and any

of the vocabulary given throughout the intervention was counted so long as the word had already been introduced and students had explored it through the planned activities.

Figure 3 – Weekly Vocabulary Lists

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Size and shape descriptive words	***Behaviour descriptive words***	***Movement descriptive words***	***Shelter and environment descriptive words***	***Growth and development descriptive words***	***Food and nutrition descriptive words***
colossal microscopic hefty similar fragile athletic vibrant slick camouflage muscular	skittish intelligent humorous quirky aggressive sluggish lively cautious mellow cunning	pounce darts bolt amble glide canter creep slither waddle ricochet	cosy scorching secure hazardous frosty region climate concealed sturdy sheltered	mature unique weak miniature powerful solitary rapidly gradually dependent independent	predator prey herbivore omnivore carnivore scavenger forager ambush adapt nutrition

The average use of given vocabulary words per week can be found in the table below

Table 3 – Weekly Average Use of Given Vocabulary

	Average Given Vocabulary
Week 1	1.1
Week 2	1.9
Week 3	2.2
Week 4	3.1
Week 5	3.3
Week 6	3.3

The data was also analysed to ascertain the quality of the descriptive words by investigating if there was any change to the use of subjective and objective language used to describe the animals. Objective language was that which pertained to accurate information about the animal, while subjective language were defined as that which contained opinion. Table 4 below shows the data collected and the accompanying graph (Figure 4) clearly shows that

while correct objective language usage increased, subjective language use decreased throughout the intervention.

Table 4 – Subjective and Objective Language Whole Group Data

	Average Total Words	*Average Interview Time*	*Average use of objective language*	*Average use of subjective language*
0 Pre	88.6 (35.4)	109.5 (35.1)	6.7 (1.3)	4.6 (3.2z
3 Mid	108.4 (59.9)	114.5 (37.3)	9.2 (3.6)	3.4 (2.7)
7 Post	114.2 (79.6)	109.1 (39.9)	9.8 (2.9)	1.4 (1.4)

All values are reported as a mean (SD)

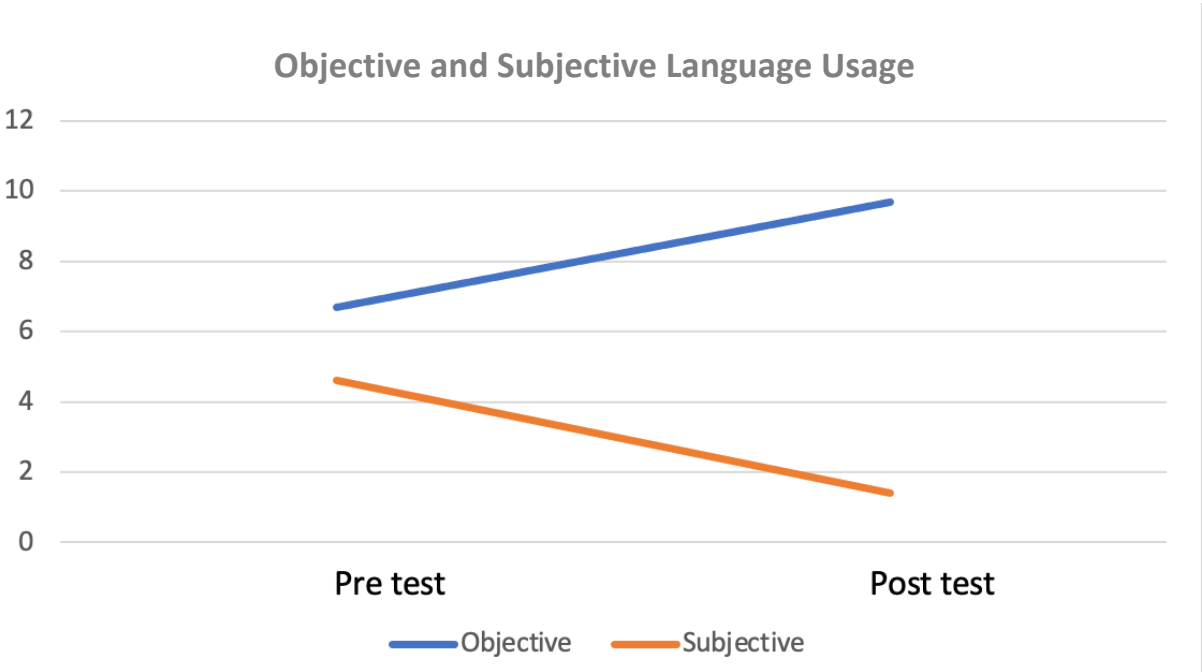

Figure 4 – Objective and Subjective Language Whole Group Data

A two tailed t test was conducted on the pre and post data recording the number of objective language choices each participant used. This showed that there was an increase between the beginning and end of the intervention, with a statistically significant increase in objective language across the participant group, returning a P value of 0.0018. The same test was conducted on the pre and post data recording the number of subjective language uses and

recorded a statistically significant decrease across the cohort in the use of subjective language, returning a P value of 0.0031.

This indicates that the use of objective descriptive vocabulary increased by the end of the intervention while subjective language decreased.

4.2 Qualitative Data

The qualitative data presented was collected throughout the intervention and includes observations notes from the research journal, student perceptions in the form of feedback to the teacher researcher and to peers, along with self-assessment data collected at three time points (pre, mid, post intervention). A thematic analysis was conducted to analyse research notes and is included in this part of the chapter.

4.2.1 Feedback from Students

Student voice and agency were both integral to the normal running of the research learning space. It was the norm of this teacher's practice to elicit feedback and adapt lessons accordingly. A large part of the intervention design was to encourage students to talk about words and words choices in talk by giving and receiving feedback from their peers. In week one of the intervention the students fed back that they found it difficult to find a quiet space to film their talk on Seesaw. This was due to the open plan nature of the school design. We therefore changed our lesson schedule slightly to maximise the use of empty learning spaces in order to create a quieter filming environment. Students also requested that they have longer to discuss the new vocabulary in their groups, so this was increased from the initial 10 minutes to 13 minutes from week three onwards.

After the intervention time was over, the students participated in a voluntary survey on their 'best and worst' aspects of the activities and experiences involved in the intervention during a whole class discussion. They also had the option to give feedback anonymously by writing it on a piece of paper and putting it in the class post box. Again, these measures were very standard practice for the school and allowed students to give honest feedback. Feedback offered verbally and from written papers is collated into appropriate categories in Table 5 below. All language is verbatim as spoken or as written in the students' own words:

Table 5 – Student Feedback Comments

Intervention Activities	
Best	**Worst**
Cool animal gifs on the power point. (TW) Finding out what big words mean. (FC, CP) I love talking about animals. (BN) Investigating animal words that are weird. (AB) Looking for new words like detectives. (ZV) Playing with words and trying to figure out the clues. (AY)	Some of the words were too hard. (Anon) We talked about things too much and I wanted to draw the animals more. (AA, TW)
Collaborative Group Activities	
Best	**Worst**
Getting to talk to my friends about new things. (AB, CT, AY, IT) Helping my friends. (IT) Talking to my friend about if my talking was good. (BN) Teaching my mum new words. (CT)	I didn't like people telling me what I was supposed to say because I talked the way I wanted to. (ZV) My group sometimes annoyed me. (TW, LC, AY, AA, Anon)
Using Video to Record Talk	
Best	**Worst**
Being like a Youtuber. (TW, FC, LC)	Talking on video was embarrassing. (IM) It was hard to find a quiet place to talk on the video. (AB, AY, CT, CS, TL) I did not like talking on the video AT ALL. (Anon)

When the survey responses were analysed, it became clear that they fit into three distinct categories. The first area being the intervention activities which were generally observed to be well received and this was reflected in the positive comments from the survey results. The

second category was collaborating with a peer group. There was a large number of responses that indicated that participants found some elements of the group work to be annoying. There were also several participants who reported that they enjoyed working with their peers. The final category that emerged was the use of the video to record talk. Many participants reported that finding a quiet spot to record was difficult. Two participants did not seem to enjoy the video experience at all and three were excited to participate in the video recordings.

4.2.2 Feedback to Peers

At the end of each week students assembled in their groups to give feedback to each other about their video recorded talks that had been uploaded to Seesaw. Many used the given prompts that were displayed on screen to offer both positive and constructive feedback. Most students were initially quite hesitant to give feedback and/or suggest words, although BN did suggest to IT that she should include more descriptive words so that he could 'imagine your animal better in my head'. Many students did ask for clarification of words that they were unsure of and congratulated their peers for using some of the newly introduced words for Week One. All students fed back that some of the videos had been very difficult to hear clearly as there had been lots of background noise.

The students felt very strongly that there were too many people in their groups and asked to have less so that they could concentrate on listening to the talks without rushing to finish before lunch. AY suggested that the last person to be discussed was unfairly disadvantaged and didn't get 'decent feedback because we were all a bit bored of doing it then.' The groups were subsequently adapted to groups of three, with two groups working together during lesson one but only giving feedback to two classmates on their talk.

During observations and conversations with the groups, student participation was noted each week and focussed on the giving of either positive praise or constructive feedback. Expectations were shared with students that they were expected to offer at least one piece of positive praise feedback and one piece of constructive feedback to their group members. For clarity we defined constructive feedback as that which could support peers to develop and improve their talks in subsequent weeks. Results of these observations and conversations are collated in the table below:

Table 6 – Student Observation Data

	Week 1 Offered positive feedback	Week 1 Offered constructive feedback	Week 2 Offered positive feedback	Week 2 Offered constructive feedback	Week 3 Offered positive feedback	Week 3 Offered constructive feedback	Week 4 Offered positive feedback	Week 4 Offered constructive feedback	Week 5 Offered positive feedback	Week 5 Offered constructive feedback	Week 6 Offered positive feedback	Week 6 Offered constructive feedback
AA	✓	x	✓	x	✓	✓	ABS	ABS	✓	x	✓	x
AB	✓	x	✓	x	✓	x	✓	✓	✓	✓	✓	✓
AY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BN	✓	x	✓	x	✓	✓	✓	x	✓	x	✓	x
CP	✓	x	✓	x	✓	x	✓	x	ABS	ABS	✓	✓
CS	✓	x	✓	x	✓	x	✓	x	✓	x	✓	x
CT	✓	x	✓	x	✓	x	x	x	x	x	✓	x
FC	x	x	x	x	✓	x	✓	x	ü	✓	✓	✓
IM	✓	x	ABS	ABS	✓	✓	x	x	✓	x	✓	x
IT	x	x	✓	x	✓	x	✓	✓	✓	x	ABS	ABS
LC	x	✓	x	x	✓	x	✓	x	✓	x	✓	x
TL	✓	x	✓	x	✓	x	RFT	RFT	✓	x	✓	✓
TW	✓	✓	RFT	RFT	✓	✓	✓	✓	✓	✓	✓	✓
ZV	✓	✓	✓	✓	✓	✓	ABS	ABS	✓	x	✓	x

The data shows that students were initially more able to provide positive praise feedback than constructive feedback to help to guide peers to improve their talks. An increase in participation in providing constructive feedback was recorded for most of the participant group.

Student feedback was acted upon and from week two onwards, an additional slide was added to the PowerPoint used during each session. This prompted the group to discuss any changes they made based on feedback that they had previously received. Notable quotes recorded by researcher during observation of group activity are as follows:

"TW told me my video was too noisy, so I changed the place I filmed it. I think it's better to be talking in the quiet places. CP told me before that my voice was too quiet, so I tried to fix that a bit." AB Week 4

"Everyone said that mine was too short but that was all I had to say about meerkats. I like bulldogs more, so I talked longer cos I knew more things to say." CT week 3

"I was really annoyed with IT because she said she liked my three describing words, but I thought I'd used six describing words. I looked at my video and she was totally right, so I added loads more words this week to make sure I had lots." AY Week 4

"I felt scared showing my video to everyone, but they were super nice to me, so I wasn't scared this week, I made it a bit longer cos CS said it was a bit short." TL Week 3

"It is so hard to say all the things that I want to, so I know that people think my videos are too short or just boring to watch. I think I need to write it down first." IM Week 5

This data shows that participants became more likely to give feedback to peers as the intervention continued. Furthermore, most participants seemed receptive to constructive feedback and made some efforts to improve their talks based on peer feedback.

4.2.3 Observations of Metalinguistic Conversation

Participation in metalinguistic based conversations was integral to the intervention. This type of conversation encourages metalinguistic skills and assists students to develop the ability to reflect on and consciously consider oral and written language, how it is used and how it can be adapted. These conversations took place each week in a peer group with scaffolding supports in place to guide the conversation.

When the observation notes were analysed, several distinct areas became apparent. The notes were coded, and a thematic analysis model used to identify patterns and themes. The strategies that students used to make sense of the new vocabulary emerged in the observations and were notable as a way in which they engaged in the intervention to make sense of the unfamiliar words. These were not surprising as Strategy One, Two and Three are strategies that were encouraged during normal spelling lessons when unfamiliar words were encountered. Strategy Four was also part of the design of the intervention where conversation and debate could be used to enhance understanding. In this way the study could be described as inductive as the themes emerged from the observations.

Four key themes related to different strategies used by students during the conversation activity emerged. Most groups quickly started to sort the words into two piles 'Words We Know' and "Words We Don't Know'. This began in week one and continued for the remainder

of the intervention. Evidence of various other strategies being used to decode the unfamiliar words are collated below:

Strategy One: Real World Connections

Real word connections were made in multiple ways, with participants drawing on their lived experiences to assist with understanding new vocabulary. One example was a student (TL) comparing the word 'colossal' to a superhero called Colossus and deducing that 'colossal' must mean 'massive' because the superhero was 'ginormous'. There was also some debate about whether 'hefty' was more about being 'big', 'fat' or 'heavy', with TW arguing that 'hefty' has more to do with size and weight, as some things can be very heavy without being bigger and 'they wouldn't count as hefty'. When AY asked him for an example, he said that a cannonball is 'super heavy but a bit small so it's obviously not hefty like a massive heavy rhino'.

The word 'skittish' was new to all students and they tried to work out what the word meant. ZV suggested that it might mean colourful because it 'sounds like Skittles and those are very colourful'. Most students agreed with this and were surprised to discover the true meaning during the class discussion. TL seemed very confused, so I spoke to him afterwards. He said that the word 'skittish' still didn't make sense to him, so we searched for some examples in gif form on the Internet. He then stated that his cat was skittish when she met new people and sometimes, he felt like that too but he 'didn't know it had a name to be like that'.

IM confidently told her group that the word 'concealed ' was like make-up concealer that 'hides things you don't want people to see like spots on your nose'. Her group agreed that a concealed area could mean hidden and that this would be beneficial for animals to keep them safe.

BN was insistent that 'sluggish' meant to move like a slug and looked like an animal moving 'super slowly and lazy like a sloth'. CS suggested that it might mean leaving slime behind as an animal moved but the group couldn't think of any examples of animals that did this so agreed that BN probably had the closest description.

Strategy Two: Using connections to texts and games

The word 'cunning' was frequently referred to as a word describing a fox, but no one knew why this word was often attributed to foxes. During the group discussion AB shared that she thought it might mean 'sneaky in a clever way' because she had read *Fantastic Mr Fox* by Roald Dahl, and this is what Mr Fox was like. This caused some debate with her group about whether foxes were actually clever or if this was just part of the story. We then discussed the word cunning during our whole class discussion and the debate about the intelligence of foxes continued. When I pointed out that the intelligence seemed to be important to them, all students agreed that they thought it was an important part of being cunning and that foxes must be cleverer that they thought.

The use of scientific vocabulary such as 'herbivore', 'omnivore' and 'carnivore' were largely familiar with all students aware of a carnivore and herbivore meanings. IT and AY guessed that an omnivore might eat different types of things, and this was supported by ZV who knew the work 'omnipresent' from a book that she had read about God. She suggested that omni at the start of the word might mean 'every' as omnipresent meant everywhere.

Strategy Three: Peer-to-peer support to enhance understanding

The word 'athletic' started an interesting metalinguistic conversation between FC, CT and IM. The discussion centered around FC being unfamiliar with the word 'athletic'. CT said ' it's like what an athlete is'. FC still seemed confused, so IM added, 'You know, like a high-level sports person, like a footy player'. FC then began listing various sports people and the girls agreed that he knew what an athlete was. IM then stated that athletic means 'being good at sports.' CT disagreed and argued that it means something different because animals are athletic but don't play sports. FC then suggested that being athletic was more about being fit and healthy and able to move the body quickly. A year four member of the group added that being athletic involves some skill in whatever is happening and gave the example of a lion chasing prey and a runner moving their body in the best way for what they are trying to achieve. The girls agreed that this was a better description.

LC insisted that he knew that 'ricochet' meant 'bouncing off of things because bullets do a ricochet on tv shows and that means they bounce off a wall and hit things they are not

supposed to'. His group debated which animals would be bouncy enough to have this description and decided that fleas, frogs, kangaroos and 'the springy animals from Africa' would fit this descriptor. LC came to tell me that he had taught his group something about a word and was very excited to have been able to do so. The students were encouraged to act out the movements and participation and engagement was high.

There was great interest from LC and TW about the word 'solitary' as they knew this word from the computer game Fortnite. They were very excited that they understood a word that some of their peers didn't know and started to share the meaning before we had started the vocabulary lesson, after seeing the word on the word wall. Both seemed very proud that they knew this word and also told other teachers and support staff about their achievement. During the lesson the word caused some conversation about whether solitary animals would be lonely. IT and IM were adamant that solitary meant alone and feeling lonely while the majority of the class felt that it meant to simply be alone.

<u>Strategy Four: Peer debate to enhance understanding and definitions</u>

There is clear evidence in the observation notes that some words caused very robust debate about their definition, leading to some opportunities for metalinguistic development. The word 'sturdy' caused some debate in all groups. Two groups defined the word's meaning as 'strong' with BN stating that 'strong things like cars aren't always stable though, so sturdy means strong and not moving around'. We discussed this further as a whole class and AY stated that sturdy just meant 'something that was built well and wouldn't fall apart so it didn't always have to be strong'. BN and AY then started to argue about the need for strength to be included in the definition. The class agreed that for an animal's home to be sturdy it had to be strong enough that it wouldn't fall down easily and that it would last for a long time.

All students knew the word 'cosy' but there was robust debate in all groups about what it meant to be cosy. Some suggestions included, 'warm', 'safe', 'secure' (another word from our vocabulary list) 'comfortable', 'happy', 'snug', 'cuddle with family' and 'wrapped up in blankets'. In our class discussion we looked at what must be included to count as cosy and agreed that an animal can't be cosy if it is not warm, safe and comfortable.

On the last day of the intervention some students suggested that we play a fun activity where each group selected up to ten words to describe an animal and the others had to guess what the animal might be. During this game CT chose the word 'masculine' to describe her animal. She had inadvertently chosen the wrong word and actually meant 'muscular'. A member of the group asked me for the definition of masculine as the group didn't know and couldn't decode the word. Her group quickly realised that CT had chosen the wrong word by asking questions such as 'You said its athletic and strong so is it only a boy?' and 'Do you mean masculine like a man or muscular like a muscly strong animal?' Once CT realised that she had used the wrong word she started to laugh and said that masculine would also fit her animal as she was describing a lion with a mane so it 'would be a boy lion anyway'. The whole group found this very funny and proceeded to tell the other groups and explain the joke. The metalinguistic connections made during this exchange were notable and will be further discussed in future chapters.

These examples of conversations suggest that students were making metalinguistic connections to the new vocabulary throughout this activity each week.

4.2.4 Self-Assessment

Another aspect of feedback that was sought from students was a self-assessment check in conducted before the researcher led interviews pre, mid and post intervention. This was an opportunity for students to regularly reflect and evaluate. Self-assessment has been shown to be a successful learning tool for students older than 6 years old (Kaderavek et al. 2004) and has been positively associated with self-regulation and achievement (Harris et al. 2015). Self-reflection and evaluation are also categorised as high efficacy teaching and learning strategy, as noted by Hattie and Yates (2017).

The assessment format used is shown in Figure 5 below:

Week 1 Animal Vocabulary Topic Self Assessment	
I learned some new words this week.	
I used some of the new words when I talked to other people	
I shared some new words with my family	
I felt confident talking on video about my animal	
I felt confident using Seesaw to make and upload my talk video	
I am enjoying learning about new words with my friends	

Figure 5 – Student feedback form

This format was well established as a means of providing feedback to teachers within the Year 3/4 cohort and allowed me to track how confident students were feeling about using new vocabulary, understanding new vocabulary and participating in the intervention in general. Each student coloured or circled a facial expression to represent how they felt about a particular aspect of the intervention. A score of one to five was attributed to each facial expression, with the sad face on the left representing one point and the smiling face on the right representing five points. Any student that reported a one or two-point reaction was offered support by the teacher to develop the area of dissatisfaction.

The table below shows the feedback provided by each student at each feedback opportunity pre, mid and post intervention. As described above, each student was asked to decide on a scale of 1- 5 (with one being the lowest and five the highest) how positive they felt about each of the statements. The areas involved were:

- I learned some new words this week
- I used some new words this week

- I shared some words with my family
- I feel confident talking on the video
- I feel confident in using Seesaw
- I enjoyed working with others

Students completed the self-assessment each week pre, mid and post intervention to track if their self-assessment of the areas changed over the course of the intervention.

Table 7 – Student Self-Assessment Data

Student	Learn words Pre	Learn words Mid	Learn words Post	Use words Pre	Use words Mid	Use words Post	Family Pre	Family Mid	Family Post	Conf Talk Pre	Conf Talk Mid	Conf Talk Post	Conf SS Pre	Conf SS Mid	Conf SS Post	Enj Int Pre	Enj Int Mid	Enj Int Post
AA	2	4	4	1	4	5	2	3	4	3	3	4	4	5	5	NA	3	4
AB	3	5	5	2	5	5	2	3	4	3	3	4	4	5	5	NA	5	5
AY	3	5	5	2	5	5	2	4	4	4	5	5	4	5	5	NA	5	5
BN	2	5	5	2	5	5	1	5	5	3	5	5	5	5	5	NA	5	5
CP	2	5	5	2	5	5	1	2	3	2	3	4	5	5	5	NA	4	5
CS	2	4	4	2	3	4	2	2	2	2	3	3	4	5	5	NA	3	4
CT	2	5	5	1	5	5	1	3	4	3	3	4	5	5	5	NA	5	5
FC	1	4	5	2	4	4	1	1	3	3	3	4	5	5	5	NA	4	4
IM	3	5	5	3	5	5	2	3	4	1	2	3	4	5	5	NA	3	3
IT	3	5	5	1	5	5	3	4	4	3	3	5	5	5	5	NA	5	5
LC	2	4	5	2	5	5	2	5	4	2	3	4	5	5	5	NA	3	3
TL	1	3	3	2	4	4	2	4	4	2	2	3	3	5	5	NA	4	5
TW	1	5	5	1	5	5	1	1	4	4	5	5	5	5	5	NA	4	5
ZV	3	5	5	3	5	5	2	2	4	2	2	3	5	5	5	NA	5	5

All students reported that they felt more positive that they had learned new words by the end of the intervention, with most self-assessing themselves at the highest end of the scale. All students further reported that they had used some of the new words in their conversations with others. The use of discussing new words with family members also increased. Confidence in using Seesaw started high and remained high throughout the intervention, with all students reporting that they felt very confident using the technology for the purpose of recording their talk. For the purposes of this study, confidence in using the technology and speaking on camera was deemed to be an essential aspect of the intervention as students were working with this technology independently.

Overall, levels of confidence in talking on camera increased for all students, however there were two who did not increase in confidence about speaking on camera at the end of the

intervention. At the midpoint most students were enjoying the intervention activities and learning new words. By the end of the intervention all students reported an increase in enjoyment of the activities except IM.

In summary, the qualitative data showed evidence that metalinguistic connections were made and that students reported high levels of engagement and enjoyment of the activities, with the exception of some individuals who reported that the video recording made them uncomfortable. The quantitative data shows that there was a statistically significant increase in the use of descriptive words in the whole cohort, however the large standard deviations suggest that the experience was quite different for each participant. The next chapter discusses three case studies where the results were very different from the reported mean and explores in more depth the experience that each participant had in the intervention. This is followed by a discussion of all findings in Chapter 6.

Chapter Five

Case Studies

This chapter includes a thorough examination of a number of carefully chosen case studies within the framework of the intervention. The intention of each case study is to gain insightful information, examine the complexity involved, and add to the body of knowledge in this field by thoroughly examining certain cases. In each of the case studies used in this analysis, a participant deviated from the norm in some way throughout the intervention, providing a rich and notable illustration of how differently the same intervention can be experienced by different students in our classrooms.

Each case study starts with a brief introduction that summarises the participant's history and explains its importance and contextual relevance to the larger research setting. The events, interactions, and contextual elements that influenced each participant's experience are then presented in detail for the case.

5.1 Case Study One – IM

Background

IM, nine years old at the time of the intervention, is a girl recognised by all teachers as being very academically able in all areas of the curriculum. She had a record of being very articulate and spoke well on any given question, frequently asking her own questions to deepen her understanding of a topic. In class discussions she was a leader and often encouraged her peers to contribute ideas and join the discussion whilst making her own views evident. In every way she was considered to be a child with advanced oral language skills and a good level of confidence in her ability to converse and convey information through speech.

IM spoke only English and some basic Japanese that was taught as part of the school language program. She had a distinctive Southern English accent and had recently relocated from the UK.

Intervention

Before the intervention started, I conducted a pre - interview with each of the participants. During this interview IM was very quiet and seemed to find answering the questions difficult. She was very subdued and answered with very little detail which was surprising given her usual level of oral language description. The interview ended and at the end of the day I checked that she was okay. She cried and told me that she didn't want to do the interviews because 'it freaks me out and I don't like the recording because my voice will sound silly'. IM is a recent migrant who had relocated from London to Adelaide the previous year and had previously expressed that she felt very different to her peers because of her accent.

I spoke to her mother by telephone to highlight IM's distress and her mother assured me that this was very normal behaviour when IM felt out of her depth. I offered to remove IM from the intervention or modify the use of video and recording technology, but her mother refused. She was insistent that IM continue to participate in the research intervention in the same way as her peers. IM also insisted that she wanted to do the same activities and try to take part. IM then joined the other participants in the first week on intervention activities.

During the first activity IM was confident, talkative and seemed to know many of the chosen vocabulary words. She made strong connections with other known words and in my observations, I recorded the following exchange between IM and her group who were discussing what the word 'athletic' might mean:

FC: I don't know what to say for that one. Is it a type of animal?
IM: I think it sounds like an athlete…you know like a famous sport person.
FC: Like Usain Bolt?
IM: Yeah, like that so maybe it means sporty and like fast or you know like really being a great athlete. That fits in for an animal too cos it could be really fast and good at running or jumping too. Yeah, I think it means talking about how it is good at using its body to move fast or go high.
FC: Like a lion can run and jump on the other animal to catch it.
CH: That's a good word to describe a monkey cos they are like gymnastics.

IM: They are athletes too. I think we got it.

The second activity consisted of using what we learned in the first activity to describe the way an animal looked, focussing on describing their appearance. Although IM did exceptionally well when working with the new vocabulary, she struggled to speak about her animal in any detail. In fact, her talk time was one of the lowest in the cohort and she looked very uncomfortable on her video. The final activity of the week was to give feedback to others on their videos and the language used to describe the animals. IM participated fully and with confidence. She gave very helpful feedback to her peers, including telling FC that he should 'make his voice louder' and IT that 'your description was so good, and I loved your confidence when you were talking.' This pattern repeated itself every week of the intervention, with IM participating confidently and very successfully in activity one and three but recording a very short video that lacked detail and certainly didn't represent her knowledge and understanding of the topics covered. As shown in her self-assessment feedback below, IM reported increases in learning and using new words, talking to her family about new words, and in using the Seesaw app. Her confidence appeared to increase but her enjoyment of the overall experience never changed.

Table 8 – IM Individual Self-Assessment Feedback Data

Student	Learn words Pre	Learn words Mid	Learn words Post	Use words Pre	Use words Mid	Use words Post	Family Pre	Family Mid	Family Post	Conf Talk Pre	Conf Talk Mid	Conf Talk Post	Conf SS Pre	Conf SS Mid	Conf SS Post	Enj Int Pre	Enj Int Mid	Enj Int Post
IM	3	5	5	3	5	5	2	3	4	1	2	3	4	5	5	NA	3	3

Week three was a very interesting week as IM appeared to increase her word count in the video that she recorded on the Wednesday of Week 3 and included 16 more descriptive words than the previous week (including a Tier 3 word). However, in the mid-intervention interview with me on Friday of Week 3, IM continued to be very shy and reserved, obviously finding it a very uncomfortable experience. She had a very low word count that was less than half of the word count from her video recorded two days previously. She also used no Tier 2 words in comparison to the six words from her video. It is worth noting that in the interview IM had the option of talking about any animal that she wanted to. IM chose to record herself talking about penguins on Wednesday but spoke about turtles on Friday. She appeared to

know very little about turtles, so this was an unusual choice as all other participants generally spoke about animals that they were familiar with or had researched.

I was concerned that IM did not want to be part of the intervention and spoke to both IM and her mother and again offered the option of withdrawing IM from the intervention if she was uncomfortable with participating. IM informed me that she loved the intervention activities but hated speaking on camera or being recorded in any way. She became upset and again said that it was her accent that bothered her. IM told me that she 'really wanted to finish the activities so I will just do my best'. I spoke to her mother again and she agreed that IM should continue in the intervention. Again, the offer to remove the recorded element was refused. IM participated in all activities and completed every aspect of the intervention with no absences. Her results are below.

Table 9 – IM Individual Results Data

IM Data								
	Total word count	Total talk time	Total original words	Use of given vocab	Use of Tier 1 words	Use of Tier 1 words	Use of Tier 1 words	Use of descriptive words
wk1	77	45	50	1	47	3	0	38
wk2	59	32	38	5	32	6	0	33
wk 3	88	30	56	3	49	6	1	49
wk4	75	36	34	5	27	5	1	29
wk5	91	40	59	3	54	5	0	50
wk6	70	37	31	3	47	1	3	43
pre	61	103	42	0	38	3	1	32
mid	38	90	34	1	33	0	1	26
post	60	104	45	1	43	2	0	39

In the final sessions the pattern repeated itself, but there were occasional weeks where IM showed more confidence and gave more detailed descriptions. When I analysed her use of objective and subjective language in her talks, it became clear that IM had increased her us of objective language and used no subjective language by the end of the intervention.

Overall, the pre, mid and post data would suggest that the intervention had little to no impact on IM's use of descriptive vocabulary but that despite her limited talk time, she did show an improvement in the quality of objective description.

Table 10 – IM Subjective and Objective Language Usage

IM	Correct objective language	Incorrect objective language	Subjective language	Off topic language	Classification provided	Comparisons
Pre	7	0	1	0	1	0
Mid	7	0	0	0	0	0
Post	9	0	0	0	0	0

However, these measurements do not represent the whole picture of IM's attainment and use of vocabulary. Through observations and face to face discussions I was able to ascertain that not only did she understand the meaning of all new vocabulary, but she could also apply it in her own speech with great confidence when there was no recording device. The recordings were very different to her actual ability in orally describing her animal and this gives rise to a consideration for the design of this intervention.

Implications

In using technology to record video and audio files there may well be students who do not enjoy using this medium and so it could adversely affect their performance in assessments. IM was the only child in the cohort who felt this way, but we can assume that in each cohort of children there would be at least one child who had a similar reaction to being recorded. The information derived from this case study suggests that although this individual responded to the intervention activities, the evidence collection method was not a suitable medium to ascertain a true assessment of her descriptive ability through oral dialogue.

Part of the design of this intervention was to use technology to allow students to speak without teachers having to be with them throughout the whole process. The idea being that students record their speech and teachers can assess it when convenient as we understand that a teacher may find it difficult to assess each child within class time. Should this intervention be implemented in another classroom then consideration must be given for

alternative assessment formats for students who do not respond well to audio/visual methods of data collection, to ensure that achievement results are accurately recorded.

Another important consideration is the impact that having an accent that differs from the peer group can have on participants. IM's poor self-concept of her accent could mean that the climate of cultural inclusion in the classroom was not supportive enough to enable a sense of acceptance. It could also suggest that IM perceives her accent as being regarded as inferior in some way or simply she did not like being marked as different while she was already adjusting to a radical period of change in her life.

Accent is an element of cultural and linguistic diversity, and this case highlighted the importance of cultural awareness and sensitivity in this context. Any use of oral language in student learning activities relates to their speaking voices, and thus to aspects of cultural-linguistic identity. As identified by Cruz-Ferreria (2018), some dialects, accents and language can be considered more or less desirable depending on the bias of the system in which learning is taking place. This may be because the country has a first language that is mandated to be used in places of education or it may refer to conscious or unconscious bias from educators, researchers or the students themselves. In a multicultural society, such as is found in most metropolitan cities in Australia, this must be a consideration in any intervention that involves the use of oral language.

5.2 Case Study Two – BN

Background

BN, nine years old at the time of the intervention, is a boy who performed at an 'at standard' level in most subject areas, however he had some struggles with spelling and written grammar. He had a reputation as a confident and articulate student who enthusiastically contributed to conversations and was working on developing listening skills. In class discussions he could be quite dominant when sharing ideas. He was definitely considered a confident orator by all teachers and could comfortably contribute to a conversation on most classroom topics.

BN spoke only English and some basic Japanese that was taught as part of the school language program. He had an accent typical to the local area of metro Adelaide and was born and raised in the local area for the entirety of his childhood.

Intervention

It is no overstatement to say that BN loved participating in the intervention activities. He was very enthusiastic when new words appeared and engaged fully in every activity. He enjoyed making the videos of his talks and this was often evident in his demeanour and his feedback to myself and his classmates.

In his feedback BN initially reported that he was uncertain about being able to learn and use new words or share them with his family. His self-reflection indicates that by then end of the intervention he felt very confident in learning and using new vocabulary as well as sharing with his family. This was corroborated by BN's parents, who often commented on how he regularly shared the new vocabulary at dinner and expressed that he was proud of knowing new words that he could teach his older sibling.

BN also reported that he felt more confident in giving his talk as well as having an overall enjoyment of the intervention throughout.

Table 11 – BN Individual Self-Assessment Feedback Data

BN	Learn words	Learn words	Learn words	Use words	Use words	Use words	Family	Family	Family	Conf Talk	Conf Talk	Conf Talk	Conf SS	Conf SS	Conf SS	Enj Int	Enj Int	Enj Int
	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
	2	5	5	2	5	5	1	5	5	3	5	5	5	5	5	NA	5	5

The raw data from the transcriptions showed that, although there was an increase in descriptive words used in week five, overall BN's post-test results were similar to his pre-test results, suggesting minimal growth.

Table 12 – BN Individual Results Data

BN Data								
	Total word count	Total talk time	Total original words	Use of given vocab	Use of Tier 1 words	Use of Tier 1 words	Use of Tier 1 words	Use of descriptive words
wk1	77	45	50	1	47	3	0	38
wk2	59	32	38	5	32	6	0	33
wk 3	88	30	56	3	49	6	1	49
wk4	75	36	34	5	27	5	1	29
wk5	91	40	59	3	54	5	0	50
wk6	70	37	31	3	47	1	3	43
pre	61	103	42	0	38	3	1	32
mid	38	90	34	1	33	0	1	26
post	60	104	45	1	43	2	0	39

However, when his transcripts from the pre and post-tests were analysed, it was evident that BN had significantly increased his use of objective language and correspondingly decreased the use of subjective language in his scientific talks about animals.

Table 13 – BN Subjective and Objective Language Usage

BN	Correct objective language	Incorrect objective language	Subjective language	Off topic language	Classification provided	Comparisons
Pre	5	0	7	0	0	0
Mid	9	0	8	0	1	0
Post	14	0	4	0	1	1

This resulted in a talk that was factually relevant, correct and informative, meaning that although BN was using the same number of descriptive words, he was choosing his words far more carefully to include the language required of a scientific description. The results clearly show that for this participant, the intervention activities allowed him to develop skills to convey the message he wished to impart using effective descriptive vocabulary.

Implications

This case is significant as it highlighted the importance of examining the vocabulary used closely for context, meaning and effectiveness. By one measure, this participant appeared to have made little progress, but by analysing the use of appropriate scientific objective language it became clear that his progress had been significant. In comparison to the participant group, BN showed the largest increase in the use of objective language.

BN also requested to use video talks in future as a mode of alternative assessment when a written piece of work was required. This was honoured by all year three teachers who worked with BN, and all noted that this mode of assessment better allowed him to articulate his understanding of a topic. Although a video-based assessment option had been available as an assessment option, BN had never before engaged with it.

5.3 Case Study – IT

Background

IT, nine years old at the time of the intervention, enjoyed academic success across the curriculum, achieving above year level standard in all subject areas and had an avid interest in reading, vocabulary and language. She was very interested in the intervention and presented as engaged and enthusiastic throughout. I hypothesised that IT would show an increase in her use of descriptive words as she had previously shown an interest in learning new vocabulary.

IT had an American mother and Australian father. She had lived in both countries for prolonged periods of time throughout her childhood. Her accent was distinctly West Coast American. IT spoke only English and some basic Japanese that was taught as part of the school language program.

Intervention

Although she described herself as shy, IT participated well in all activities, frequently leading conversations and supporting her peers to contribute. In my observations, I frequently noted that IT had assisted a classmate to investigate an unknown word or had helped a classmate to identify a word to describe what they wanted to say. One such occasion from Week 3 (activity one) is detailed below:

FC: My monkey will like swing across but soft
IT: Like slowly?
FC: Well yeah but more like this (mimics a monkey gracefully reaching from tree to tree)
IT: So not in a hurry and being careful
FC: Well yeah so, I can just say that
IT: You could use sway, that kinda means those things
FC: Does it?
IT: Yeah, people use it when trees are sorta moving around slowly you know like a dancer (mimics swaying)
FC: Sway …… so …… the monkey sways to the tree…. does that sound right?

IT: Uh huh it sounds good cos now I know the monkey is moving slowly and a bit carefully and not just like throwing itself around the trees.
FC: Ok (giggling) sway…. sway……sway…. (mimics swaying and reaching for branches around the classroom)
IT: (giggling) swayyy…. oo oo oo…. swayyyyy (mimics same movements as FC and makes monkey noises)

This exchange is indicative of the way in which IT would assist her classmates in extracting meaning and understanding through the use of humour and gentle explanations. This is a very good example of the ways in which students collaborated to decode unfamiliar words or to give constructive feedback to peers.

IT also showed a keen interest in participating in the whole group discussions about the new vocabulary after the metalinguistic conversations in activity one. Each week she would be very active in describing words or acting out movements or facial expressions to describe the meanings. Her mother visited the learning space to drop her off one morning and made a point of telling me how much IT was enjoying the vocabulary lessons and that she frequently spoke to her parents and siblings about the new words. Her mother also reported that IT had developed a new interest in researching, drawing and mimicking different animals and challenging her parents to help her come up with the most descriptive ways to describe their movements or actions.

IT's data shows that she made consistent progress and responded well to the intervention week on week. Her overall attainment level was excellent, and her final post intervention interview was full of interesting details, with IT discussing many aspects of cats including feline history, funny facts about unusual cats, and various cat breeds that she had researched. Her results show that her use of descriptive words had more than doubled from week one to week six in the intervention. These results were also seen in her pre and post intervention interviews.

Table 14 – IT Individual Self-Assessment Feedback Data

IT Data								
	Total word count	Total talk time	Total original words	Use of given vocab	Use of Tier 1 words	Use of Tier 1 words	Use of Tier 1 words	Use of descriptive words
wk1	29	13	27	3	24	3	0	22
wk2	63	28	45	2	41	4	0	40
wk 3	65	29	45	1	41	4	0	38
wk4	99	38	64	3	59	4	1	52
wk5	71	31	51	2	47	4	0	40
wk6	87	36	61	3	56	2	3	53
pre	147	148	81	0	78	4	0	64
mid	171	157	87	1	83	4	0	74
post	335	211	146	5	125	21	0	139

In her self-assessments at the pre, mid and post interviews, IT reported increasing confidence and enjoyment of the intervention as well as showing an increase in her use of new vocabulary words. She also displayed a large increase in her talk time, total word count and use of original words.

Table 15 – IT Individual Results Data

Student	Learn words Pre	Learn words Mid	Learn words Post	Use words Pre	Use words Mid	Use words Post	Family Pre	Family Mid	Family Post	Conf Talk Pre	Conf Talk Mid	Conf Talk Post	Conf SS Pre	Conf SS Mid	Conf SS Post	Enj Int Pre	Enj Int Mid	Enj Int Post
IT	3	5	5	1	5	5	3	4	4	3	3	5	5	5	5	NA	5	5

IT enjoyed the use of technology and showed that she was confident in using SeeSaw from the beginning of the intervention. Although she was initially slightly uncomfortable on camera, she grew in confidence as the intervention progressed as shown in her self-assessment. IT was far more comfortable in speaking to me in a one-to-one situation and this was where her extensive vocabulary was shown.

When the use of subjective and objective language was analysed, it became clear that IT increased her use of objective language and decreased the use of subjective language when

the pre and post- test data was compared. Interestingly, in her post-test IT went off topic on a number of occasions, increasing her use of off topic talk. This was predominately to explain about various notable cats that she read about as part of the additional research that she did at home. Although she was still explaining about cats, and the facts were objectively true, this did not form part of the scientific description of an animal and so these comments were classified as 'off-topic'. These additional details contributed to the overall increase in descriptive words.

Table 16 – IT Subjective and Objective Language Usage

IT	Correct objective language	Incorrect objective language	Subjective language	Off topic language	Classification provided	Comparisons
Pre	8	0	7	0	0	0
Mid	14	0	3	0	0	0
Post	11	0	1	8	0	0

Implications

The information derived from this case study suggests that this individual responded well to the intervention activities and significantly increased their use of descriptive words. IT was an ideal participant who enthusiastically took part in all aspects of the intervention and even did extra research at home. She had very supportive parents who encouraged her in this. This was not the norm and although other participants reported discussing the vocabulary and activities at home, no one reported additional research or study. It is therefore unclear how much impact this additional exposure and study had on the overall results.

Despite having an American accent, IT didn't mention feeling self-conscious about this and although she described herself as shy, she appeared to participate in all activities and videos with confidence. This suggests that not all students with an accent that differs from the majority of their peers will have a negative self-concept in this regard. Cultural sensitivity is still very valid in the classroom but may not be an issue for some students. This should therefore be noted on a case-by-case basis with accommodations made as required.

5.4 Case study – TL

Background

As a toddler TL obtained a Traumatic Brain Injury when a cancerous tumour was removed. He has subsequently been diagnosed with a Specific Language Disorder. His attainment in literacy was significantly below grade level and he received additional support in Literacy and Mathematics to develop his basic skills. TL struggled to read, spell, write in sentences and had a very quiet demeanour. Before the intervention began, I highlighted TL as a student who might find the emphasis on oral language beneficial. He generally didn't instigate a conversation, but he would contribute if directly asked questions. He also had a love of technology which I felt may help him to engage with the intervention. One of the questions I had for this research was that I was keen to discover was if the technology aspect could help to engage students who were reluctant talkers, or who perhaps experienced shyness.

TL found many subjects difficult but had a very positive attitude and would generally give all experiences a try so long as he was well supported. He struggled with independent activities, and it was often difficult to engage him in activities where he worked alone.

Intervention

In my observations I noted that TL was very enthusiastic about checking the word wall each Monday morning to see the new words that had been added as the focus words for the intervention activities. He would then ask his peers to help him to read words that he could not decode and used the speech search Google function to research each new word. One exchange that I observed showed this enthusiasm well:

TL: (speaking to AY) What is that long word? It says mus- ca -lor
AY: I think it says 'mus-cu-lar'. Mrs B, is that right?
AB (teacher): Yep, IT that is exactly what it says. Good decoding effort TL. Can you think about what it might mean?
TL: I dunno really. Do you know what it means AY?
AY: It's another weird one I think

TL: I'm gonna go ask Google! Maybe I'll …. I think I can write it down so I can spell it cos I don't remember how to say it properly now

His enthusiasm for the new vocabulary lasted for the duration of the intervention and he was very interested in learning the words. In contrast, the rest of the cohort did not display this behaviour and generally showed little interest in the new words on the word wall until they were asked to discuss their meanings during activity one.

In the table below it is clear that TL improved his use of descriptive words each week and also increased his use of original words, showing less repetition and more new detail and ideas in his speech. It is also clear that his results in his mid-intervention interview were greater than that of his post-intervention interview.

Table 17 – TL Individual Results Data

TL Data								
	Total word count	Total talk time	Total original words	Use of given vocab	Use of Tier 1 words	Use of Tier 1 words	Use of Tier 1 words	Use of descriptive words
wk1	24	14	17	0	17	0	0	13
wk2	25	16	19	0	19	0	0	11
wk 3	43	27	28	1	27	1	0	19
wk4	48	31	34	0	33	1	0	25
wk5	39	25	29	1	27	2	0	25
wk6	44	32	34	0	32	2	0	28
pre	30	104	18	0	17	1	0	12
mid	48	96	35	0	33	2	0	29
post	40	86	26	0	26	0	0	24

When his use of objective and subjective language was analysed, the data revealed that TL increased his use of objective language over the course of the intervention. Again, his use of objective language was higher in the mid-intervention interview than in the post-intervention interview. He also showed a decrease in subjective language at the midpoint and an increase post intervention.

Table 18 – TL Subjective and Objective Language Usage

TL	Correct objective language	Incorrect objective language	Subjective language	Off topic language	Classification provided	Comparisons
Pre	6	0	1	0	0	0
Mid	9	0	0	0	0	0
Post	7	0	2	0	0	0

TL showed improvement in all areas across the six-week intervention and his self-assessment feedback was increasingly positive showing that TL felt more confident speaking, felt much more confident using Seesaw and that he reported increases in enjoyment of the activities and use of new words.

Table 19 – TL Individual Self-Assessment Feedback Data

Student	Learn words Pre	Learn words Mid	Learn words Post	Use words Pre	Use words Mid	Use words Post	Family Pre	Family Mid	Family Post	Conf Talk Pre	Conf Talk Mid	Conf Talk Post	Conf SS Pre	Conf SS Mid	Conf SS Post	Enj Int Pre	Enj Int Mid	Enj Int Post
TL	1	3	3	2	4	4	2	4	4	2	2	3	3	5	5	NA	4	5

Throughout the intervention TL's feedback suggested that he was increasing in enjoyment of the activities, and he told me that he 'loves doing activity two because I'm a laptop genius!'. TL would also assist his peers in using the laptop and Seesaw app as he was proficient in using both. For TL this was a new situation as he could rarely support his peers in their academic endeavours. When the intervention activities ended, he told me he was sad that this would be the last video that he would make. When questioned about why this made him sad, he said, 'Videos are easy for me and for me to talk about what I know and the words we learn help me explain things better.' When asked if he would like to use self-made videos in other subjects, TL was very enthusiastic.

Implications

The information derived from this case study suggests that TL responded well to the intervention activities and increased his use of descriptive words, use of original words and overall word count. His talk time didn't change significantly and was actually lower in the post

seconds, indicating that TL was using richer language in more concise descriptions to impart meaning.

As his teacher as well as the researcher, the biggest impact that the intervention had was that it gave TL confidence in his ability as a learner that was not present before the intervention. This is evidenced in his self-assessments, my observations and in verbal feedback from his mother who reported that TL spoke enthusiastically about using new words and technology. School was generally not a topic that TL instigated conversations about at home, so his mother made a point to tell me when she dropped him off in the final week of the intervention. She also asked if it was possible to continue a similar type of activity and for TL to use assistive technology in his learning. Although there had always been a recorded option for assessment TL had never opted to use it, but his new-found confidence meant that this was now a viable option. This enthusiasm for technology was also indicative of the attitude of most of his peers who reported that they enjoyed using the Seesaw app to record themselves. This indicates that the use of available technology, and the opportunity for students to explore its capabilities in their learning, should be an area of focus in modern classrooms.

Finally, there is no doubt from the data that TL showed an improvement in all areas during the intervention. Nonetheless, it should be noted that TL achieved a higher score in all areas in his mid-intervention interview than in the post-interventions. This could indicate that for this participant the length of intervention could be optimised at 4 weeks rather than 6 weeks and deserves further study into the ideal duration of such interventions. However, this outcome could also have been influenced by external factors as this pattern of peaking mid-intervention was found in several participants and is explored further in the next chapter.

Chapter 6

Discussion

My first research question in this intervention was to investigate if a BVM approach of explicit direct instruction and metalinguistic follow up activities improve the use of descriptive vocabulary in Year 3 students.

The data clearly showed that there was a statistically significant improvement across the pre and post intervention data when normalised for time to descriptive words per minute. The data gathered from the whole group shows that there was a statistically significant increase in the number of descriptive words per minute used in the cohort when the pre and post intervention interviews are analysed. There was no significant increase in either the TTT (total talk time) or the total word count so it can be surmised that the quality of talk improved, with more descriptive words being used within the same time frame.

Therefore, it can be deduced that overall, the intervention was successful in improving the use of descriptive language in the cohort of participants. This then adds to the growing bank of evidence that supports the position that vocabulary instruction using an EDI based approach will be successful for most students withing a rich literacy program.

The design of this study further adds to the canon of evidence that found that use of the Blended Vocabulary Model (Tyson & Peery 2017) along with metalinguistic activities that develop focus on the metalexical and metasemantic aspects of 'word consciousness' (Nagy 2007) is effective in improving vocabulary in a typical school setting. It is interesting to note that within the whole Year 3 intervention cohort, very few of the given vocabulary words were used in the weekly recorded talks or pre, mid, post interviews, However, students did use more descriptive language in their conversations with each other and this was reflected in their recorded talk. This could be interpreted to support Wasik and Iannone-Campbell's (2013) assertation that simply being given the opportunity to discuss vocabulary through conversation and a degree of metanalysis has an impact on expanding the variety of words that a child may use.

A further interesting insight from the data is that the students identified as having generally high academic achievement in literacy showed varying degrees of growth in the use of descriptive words. There was no consistent correlation between high achieving students and greater rates of improvement in descriptive word use. The average increase of 10 descriptive words in the cohort was mainly due to the huge increase in descriptive words used by IT, which skewed the average growth considerably. In fact, when IT is removed from the average values it shows that the remaining cohort in the group of students with no SLD had an average loss of 3 descriptive words when comparing the pre and post data. The mid-point data shows more encouraging growth, but the trend shows that the academically average to above average students did not all enjoy huge gains in the overall growth of their use of descriptive language. Although there was statistically significant growth, when the individual results are analysed, it is clear that some students enjoyed huge growth whilst others had little to no growth in their use of descriptive vocabulary.

In contrast, the students identified as having low academic achievement in literacy showed consistent levels of growth (in use of descriptive words and showed a larger increase in their comparative use of descriptive words from Weeks 1 and 6. Those students identified as having a diagnosed or imputed Specific Learning Disability such as dyslexia, responded well to the activities and showed an average of growth of 5.6 words from the pre to post data. This is in line with Biemiller (2003) and Hollingsworth and Ybarra (2009) who's research suggests that students with an SLD find structured lessons with an explicit teaching component beneficial. The result of this intervention also adds further credence to the findings of Wasik and Iannone-Campbell (2013) that the use of peer conversations and a reliance on spoken rather than written language during the metalinguistic activities could also be of benefit to students with an SLD.

To answer the initial research question, it would be fair to say that there was a statistically significant increase across the cohort as a whole, with certain students responding very well to the intervention activities and enjoying high levels of growth. However, there were also students who did not show growth in this area and in order to ensure success for all it is

important to now look at some of the factors that may have influenced the success of each participant.

6.1 Given Vocabulary

Despite an overall increase in the use of descriptive words across the participant pool at the mid and post interviews, the use of the given vocabulary did not show the same increase. This could suggest that although the participants used more descriptive words, they were not the same as the words studied throughout the intervention. Retention and use of the given vocabulary was minimal in most participants with CS and TL never using any given vocabulary in their interviews. The most given vocabulary recorded was five words used by AY, CT and IT in their mid or post Interview.

The weekly data shows an upward trend where the average number of given vocabulary words used within the participant cohort shows an increase from 1.1 in week one to 3.3 in weeks five and six. It should be noted that this average has high standard deviations as often one or two students would use a larger number of given words while the majority of the participants used no given vocabulary words.

Each student showed an increase in overall descriptive words, however not always using any of the vocabulary that had been studied that week or indeed through the previous weeks of the intervention. Many students used descriptive words that would be considered common Tier One words in the lexicon for this age group such as colours, size descriptors, etc. (Beck & McKeown 2014). This can be interpreted to show that the metacognitive activities and opportunities to talk encouraged the use of more and varied vocabulary throughout the intervention. Perfitti (2007) explained that this occurs as students make connections to their own experiences and previous exposure to create their own abstract understanding of the new vocabulary. In this interpretation, the given vocabulary acted as a discussion stimulus which led students to make connections to other words. This also supports the research findings of Nagy (2007) who found that students who were given time to explore and investigate words would become interested in learning vocabulary and would therefore naturally add to their repertoire of available words in their oral language.

The projected hypothesis of this study was that the participants may be inclined to use the vocabulary given to them based on the research outcomes of Biemiller and Boote (2006) Ford-Connors and Paratore (2015) and Marulis and Neuman (2010) who found that an EDI model led to increased use of vocabulary. The work of Beck et al. (2007) also showed that students who received an EDI approach to teaching tier two vocabulary retained more of the given vocabulary than the group who received no EDI instruction. In the participant cohort of this intervention, the data showed increased use of the given vocabulary during the weekly activities, but minimal use in the pre, mid and post interview results. This could also indicate that although new words were used, they were not retained or applied to describe other situations. Further investigations would be required to ascertain the veracity of this claim.

6.2 Objective vs Subjective Language

Analysis of transcripts showed that the context in which the descriptive and given vocabulary were used changed significantly over the course of the intervention. That is, as the talks focused more on scientific descriptions of the animals, less subjective language choices were used. Subjective comments like 'it is cute' were eliminated by the end of the intervention. It was very clear that all students had changed their talks to become more objective, in line with expectations of the use expository language in STEM subjects. Every participant used more objective language and reduced the number of subjective language in their recorded mid or post-test interviews. This indicates that a positive outcome of the intervention is that the language used became more appropriate for the topic – that is, a scientific report requires more objectivity in order to convey information and meaning effectively.

One of the aims of this intervention was to introduce children to be use language appropriate for the STEM subjects. My understanding of what this means linguistically developed over the course of the intervention, from an initial focus on words (vocabulary) to a focus on how words are deployed in description, to a distinction between two kinds of descriptive language - objective and subjective. The use of scientific language naturally lends itself more to objective language so it is not surprising that a focus on topic specific language in a STEM area resulted in more objective talks. Further, objectivity is a key value of science (Osborne 2014) and topic specific vocabulary aids in ensuring the veracity of descriptions and precise

explanations of observed phenomenon. For example, where a participant may have described a dog with a subjective descriptive word such as 'cute' at the beginning of the intervention, they were more likely to describe the dog with an objective fact at the end of the intervention such as 'furry mammal'. Although the specific given vocabulary was used sparingly, the focus on the vocabulary appears to have encouraged participants to use more appropriate objective choices in their oral presentations.

This data was discovered after the intervention ended when I discussed a particular child's transcripts with my supervisor, who pointed out that his language had changed dramatically in terms of using objective language. This led me to further investigate the transcripts for each child to ascertain if this was applicable only to him, or a trend that affected the cohort. The transcripts clearly showed that this was a trend within the cohort. This trend is not surprising as a change towards more objectivity can be expected when focusing on developing skills in scientific reporting. Throughout the intervention I modelled how to use the Tier 3 words appropriately and so the change in focus to objective language is a natural progression. However, what was surprising was that the objectivity remained even though the given vocabulary was not often used. This infers that the participants understood the importance of remaining objective in their descriptions and applied this to a broader use of vocabulary.

6.3 Interruptions to Learning

The nature of school life is that there will always be interruptions and a degree of flexibility is required in all classrooms to accommodate these. Overall, there were very minimal disruptions to the intervention schedule in Weeks 1-4. However, during the intervention period of six weeks there were two very significant events that impacted the intervention activities. The first was that on Wednesday morning of Week 5, all students were informed that the principal of the school would be taking leave to undergo a life-threatening surgery and would not be returning until the next year. This news was quite shocking for the intervention cohort and their scheduled videos were filmed 2 hours after hearing this news. Across the intervention participants there is a noticeable decrease in the use of descriptive words in Week 5 in comparison to the week before. The most significant of these was TW whose recorded word count and descriptive words were lower than his week one results despite showing a week on week increase beforehand. TW was quite distressed when he

heard the news, and his mood was very sombre for most of the day. Although it cannot be proved conclusively that this contributed to his oral language activities, it is worth consideration. Another student who showed a dramatic change in Week 5 was AA. He found out that his father would not be returning from overseas due to COVID restrictions and was absent from school. His engagement in all school activities (including the intervention) and he was not at his usual level of enthusiasm when he did present so this may have had an impact of his results.

The intervention was interrupted in Week 6 by a snap state-wide lockdown due to a local outbreak of COVID -19 cases. We had to finish the school week on Wednesday which meant that the intervention cohort did not engage in their usual discussion and feedback session on Friday of that week. Instead, they did this when they returned to school the following Monday after the lockdown restrictions were lifted earlier than anticipated, three days later than the scheduled activity. The group as a whole were very unsettled by these dramatic changes to their usual routines. There is marked decline in word count and use of descriptive words in almost every member of the cohort. Again, it cannot be definitively stated that the lockdown disruptions caused the changes in the data, but we can assume that it contributed to this as every other aspect of the intervention remained the same as the previous weeks.

When analysing the data, it became clear that the relatively uninterrupted Weeks 1-4 showed steady growth of descriptive words used. AY showed a continuation of growth in her number of descriptive words used in Weeks 5 and 6, as did CP and CS. Every other participant showed a decrease in descriptive words used when compared to the preceding weeks. The upward trend of growth on these students plateaued or even fell. This has implications for the use of assessments that are conducted at one time point as there are many aspects of school life that can affect daily achievement. Further investigation into the impact of disruptions to learning programs would also be of benefit.

The post intervention interviews conducted one week post intervention, showed that all students showed growth in the use of descriptive words from their pre-intervention interview. However, many had a higher score for use of descriptive words at their mid-intervention interview and then appeared to decline in the post intervention. This could

suggest that the disruptions of the previous two weeks had an impact or could suggest that the intervention was too long and that optimum achievement for some students was achieved at the three-to-four-week mark. Further investigation would be required to ascertain which (if any) of these statements would be true.

6.4 Self-Assessments

Self-assessment was an integral part of daily school life for the participants in this intervention. All participants were familiar with the 'sad to smiley face' range of options when assessing various aspects of their schoolwork in all subject areas. This was a school wide practice designed to increase student self-efficacy and facilitate successful goal setting as part of a Visible Learning environment (Hattie & Yates 2013).

The self-assessments completed by each student at the pre, mid and post intervention interviews showed that there was a positive impact across all areas for most students. As a cohort there was an overall increase in confidence in speaking on video, with students self-assessing themselves as an average score of 2.6 for confidence in this area in the pre-intervention interview. This increased to an average score of 4 at the post intervention interview. This was particularly interesting as the results clearly showed that although most students enjoyed using the video technology there were three students (IM, TV and CP) who started the intervention feeling very under confident about using video recordings to record their oral language. As the intervention continued their levels of self-reported confidence did also increase, however ZV and IM recorded a final score of 3 indicating that they still felt less comfortable with recording than their peers who all score 4 or 5. This was previously explored in the case study of IM and deserves consideration when planning a similar activity in the future.

This level of self-reported confidence remained higher even at the end of the intervention when many students had a decline in their use of descriptive language. This data implies that the participants gained confidence in their oral language abilities throughout the intervention. This was further reflected in the confidence levels reported in using the Seesaw app with every participant self-assessing themselves as a 5 by the end of the intervention.

All students reported an increase in their perception of whether they had learned any new words in the previous week. At the pre-intervention interview the average score for this category was 2,14. This raised to 4.7 at the post intervention interview, suggesting that all participants felt that they had learned new words during that time.

All students also reported an increase in sharing new words with their family. Only one participant identified that this is something that they would do at the pre-intervention interview. By the end of the intervention all participants indicated with a score of 3 or above that they did share new words with their families. One notable participant in this area was BN who went from a score of 1 to a score of 5 and indicated that he enjoyed teaching his parents new words and making games with them at dinner. This data shows that not only did the participants engage with new vocabulary during lesson time, but there was also interaction with at least some of the new vocabulary outside of the classroom environment. This was aided by the fact that parents could watch the recorded talk videos on their child's Seesaw account and participants were encouraged to show these videos to their families.

The final aspect that each participant self-assessed was their enjoyment of learning new words in with their peers. No data was gathered in the pre intervention interview as peer group metacognitive activities had not started. There is however a marginally increased score from an average of 3.58 in the mid intervention interview to 3.86 at the post intervention interview. This indicates that the level of enjoyment remained consistent until the end of the intervention. This adds further weight to the theory that inconsistent results from weeks five and six had less to do with student participation and more to do with external factors, however further investigations would be required to prove this conclusively.

From the perspective of the participants, this data clearly reports that the use of video technology was successful in terms of producing recordings of oral language independently. Most students felt confident and enjoyed the experience and all were very capable of recording their talks and uploading to their Seesaw accounts. Most students became more confident of their abilities as the intervention continued and their levels of enjoyment and engaging family with new vocabulary increased.

6.5 Technology as a Tool for Oral Language

Two of the initial research questions centred around using technology

- Can common classroom technology be used to facilitate a successful oral language program?
- Can student made videos be used effectively in the design of an oral language program?

The technology used was familiar to students but its use in the classroom was unfamiliar. As attested by Burnett (2016) familiar technology was utilised in an innovative way to facilitate assessments. Some students were very engaged by the technology aspect of the intervention (TL, TW, LC, FC, CS). Others were indifferent to the use of technology (AB, CT, IT, AY, BN) and one student (IM) actively disliked the use of video to record talk time. While the overall success of this intervention goes some way to add to the position put forward by Somak (2006) that the curriculum can be reimagined, it does not support their theory that technology will maximise engagement for all students.

It is worth noting that through my observations that boys predominately seemed to be very engaged and confident with the technology to create video while girls were less so. The boys reported an average of 4.83 for being confident using the SeeSaw over the three data points, and the girls reported a similar result of 4.78. However, the boys reported an average of 3.38 for being confident using video to record their talks over the three data points, and the girls reported an average of 3.22. In my observations, all boys are noted as being engaged with technology in all sessions and there were no complaints from any boy about using technology. This suggests that the technology aspect may well be beneficial for gaining engagement for most boys and that they remained engaged by the technology throughout the intervention. Although most girls rated their confidence using technology as high by the end of the intervention period, some of the girls opted to use other ways of representing understanding before making a video. My observation notes show that in the final two weeks some girls used drawings, diagrams and text to record their ideas and had to be reminded to produce a talk.

The data suggests that while the technology did initially engage the girls, the novelty of this may have worn off for some as the intervention continued.

As discussed previously, students were more than capable of creating and uploading videos of recorded talks to their online Seesaw account, with many enjoying this experience. This indicates that that common classroom-based technology, including making videos, can be used successfully by primary aged students to facilitate oral language. It would be fair to say that many students may have been just as engaged during a group experience or individual talk with an educator. More in depth investigations would be needed to ascertain where the primary motivator for engagement came from for individual participants.

From the perspective of the educator/researcher, the use of video technology allowed them to assess oral language in a completely new way. Previously oral language was assessed predominately through individual and small group presentations. This did not allow the educator to effectively analyse word choice, vocabulary or oral language skills in any depth and was quite often a rushed and impersonal experience. In a mainstream middle to upper primary class there are very few opportunities to meet with students on a one-to-one basis. As discussed in chapter one, oral language is often a neglected part of literacy development in the primary years so coveted opportunities to meet with students individually would seldom be used to assess oral language.

Using the student created videos allowed the educator to assess the quality of the talk when they had time to do so properly, generally after the school day had ended. They could take their time to listen carefully, rewind if required and take notes. Using the online platform, they could provide feedback either verbally or in written form and then ensure that students requiring support received it in the next lesson. Parents and students were also watching their videos, often discussing them at home. This opportunity was unique to the use of the video sharing technology and could not have been easily achieved without it.

The process was not perfect, with one major factor being the lack of quiet spaces for students to record their talks. Schools are very busy places, with more and more choosing to become open plan in their design. The school that hosted this intervention was entirely open plan and

had been designed to encourage inside/outside learning. This meant that there was often noise from other classes or year groups. The participants found this very frustrating as there were occasions where they had to rerecord their talk due to background noise. It often made it challenging for the educator and peer groups to hear each talk clearly, thus making effective feedback more difficult.

In terms of data management, the Seesaw platform allowed the videos to be created, uploaded and stored securely on a platform that was easily accessible to the student, teacher and parents. The ease with which the students could do this certainly supported the views of Wellings and Levine (2009) and Pahl and Rowsell (2005) that students who have been born into a technology rich society are natural users and have underutilised skills that can be capitalised on within the classroom.

The use of voice recordings would also be an effective alternative source of data collection. This was the mode of collection used in the pre, mid and post interviews and it was designed this way to ascertain whether there was any inherent benefit to one mode of recording to the educator. Both examples of recording were equally as effective in providing the educator with an assessment piece that allowed rich analysis. Although this is just the opinion of one educator it could be argued that any type of voice recording would be effective from their perspective. For schools who experience challenges in accessing technology this could be a viable alternative. However, when the students were polled, twelve participants preferred making the videos over making voice recordings. This supports the advice from Plowman et al. (2007) that students should be given every opportunity to use technology to create representations of their knowledge and understanding. The remaining two participants did not have any preference and did not like any type of recording, being equally as uncomfortable with voice only recordings as they were with being on video. Again, this is a very small sample and may not be indicative of the preferences of their peer population.

This thesis drew on the research of prominent researchers in the fields of oral language, literacy development, technology integration and vocabulary instruction to investigate a new possibility of using common classroom technology to facilitate a successful oral language program. Overall, there was a statistically significant increase in the use of descriptive words

across the cohort and all participants showed their maximum growth in the use of descriptive vocabulary at different stages of the intervention. This supports the findings of Ford-Connors and Paratore (2015) Marulis and Neuman (2010) and Biemiller and Boote (2006). Feedback from participants and the teacher researcher showed that the weekly activities were highly engaging and that all participants enjoyed the first weekly activity of investigating new vocabulary and discussing in small groups and then as a whole group with the educator.

The use of basic classroom technology (laptops and the Seesaw app) was easy to implement and used well by all participants as they were very familiar with both the laptops used and had developed the skills required to create videos and upload to the Seesaw sharing platform independently. It allowed the teacher researcher to conduct in depth analysis and assessments without the need to meet with each child individually. This proved to be a very successful way to address the problem that all primary school teachers have of rarely having enough one-to-one time with each student to conduct individual oral language assessments. Given that the Seesaw app is widely used in classrooms around the world, this is a viable way of redesigning assessments to utilise this technology. The technology was also used to allow parents and peers to watch the videos and provide feedback on the vocabulary used. This type of feedback would not normally be viable in an oral language program.

The oral language intervention program was based around the use of technology and could not have been facilitated without it. This was an innovative new way of both using the technology available to most educators and implementing an oral language program in a Year 3 classroom. To date, this has not been documented in any other literature and as such was the first of its kind. Feedback from participants and the teacher educator were overwhelming positive and indicate that this was a very successful way in which to facilitate a focus on oral language in a busy classroom. The results of this thesis support the recommendations of Hamilton et al. (2016) who proport that the SAMR model of technology integration in modern pedagogical design, must be used in conjunction with robust teaching and assessment design. These findings show that technology can be successfully utilised to reimagine the curriculum and the learning needs of students within the context of the proven successful educational practices of EDI and metalinguistics. However, the findings of this study should not be taken as a representation of all Year 3 students, given the very small number of participants but

does offer an insight into the way in which this intervention affected students who each had very diverse needs.

The use of student made videos was considered successful in the implementation of the oral language program and allowed for feedback to be given from multiple sources. This study found that participants enjoyed the creation of their oral language videos and found the process of filming and uploading very simple to do independently. The quality of their talks showed improvement with more scientifically objective language being used alongside more varied descriptive vocabulary. The quality of the recordings could be compromised by background noise, and this was a real issue in week one and two due to the learning environment being open plan, however the researcher founds solutions to alleviate this, and noise pollution was minimal in the remaining weeks of the intervention. This would be a consideration for future development of video-based assessments of learning programs.

The overall findings of this study suggest that the implementation of a structured oral language program in Year 3 that focuses on metalinguistic activities to introduce new vocabulary, and encourages the use of technology to record talk, can increase the use of descriptive language. This supports the argument for more time to be allocated to quality teaching and learning activities that support vocabulary development and offer students the opportunity to develop oral language skills. Not only did descriptive word use develop significantly, so too did the increase in the use of objective language. The use of subjective language significantly declined across the participant group. This indicates that not only was the vocabulary used more diverse and descriptive, but the language was also more suited to the context of a scientific report. This resulted in a much richer use of language to convey meaning.

Implications

Given the volume of research that supports the view that increased vocabulary and expressive language proficiency assists in developing reading skills (McKeown & Beck 2014), and academic achievement across all subject areas (Ford-Connors & Paratore 2015), a major implication of this research must then be a recognition of the need to prioritise the teaching of vocabulary and oral language skills in all year levels of primary education. In order to

maximise the pedagogical and curriculum design changes required to facilitate this, appropriate training and development should be offered to all teachers, and included in pre-service training, to ensure that all educators have adequate knowledge and understanding of this area of literacy development. This would also be beneficial to ensure that oral language becomes as valued a part of the curriculum as reading, writing, listening skills, spelling and grammar conventions.

The multicultural context of the education setting must also be considered when designing any oral language-based program or intervention. Cultural sensitivity to those who speak English as a second language and those who have different accents must be considered and accommodated for.

A further implication of this study is that common classroom technology can be used to reimagine how the curriculum is delivered and assessed. This area is ever emerging, particularly during pandemic times when online learning has been the norm for millions of children and teachers around the world. Educators should be encouraged to be creative in their application of technology and explore the professional development opportunities that are available in the field of STEM.

A final implication is that practitioner inquiry can be used by teachers to implement and assess changes in pedagogy as espoused by Aubusson and Burden (2012). It provides rich opportunities to explore changes to practice, read others' research and analyse evidence and can support educators to enact change that is research based and well informed. Teachers should be encouraged to engage in practitioner inquiry and action research as a means to develop the expertise and capabilities of the profession and add to the body of valuable classroom-based research.

Limitations

The first limitation for this study is the small cohort of fourteen participants. This sample size deems that the results of this study are therefore exploratory. Future studies would benefit using a larger group of participants to further investigate and increase confidence in these findings. The participants were also from a very small geographical area, representing only a

small percentage of Year 3 students. Future studies should widen this pool of participants to includes students from different parts of South Australia and the other states in order to increase the representativeness of the results.

A second limitation would be the large range of results within the participant pool. Although it would be tempting to take the statistically significant increase in the use of descriptive words and declare the intervention fully successful this must be tempered by the fact that the data set was varied and that not all students enjoyed the same growth. Within the group there were students who recorded much higher growth of their use of descriptive words than others. The growth of tier two and three words was minimal across the majority of the cohort, indicating that although the vocabulary intervention encouraged the investigation and use of tier two words, this was not represented in the oral language recorded by the participants. Instead, they used more tier one words, indicating that they used more of the language that was more familiar to them. This data is not supported by previous research by Beck et al. (2014) who found that tier two words also increased after EDI learning experiences. Further investigation with a larger pool of participants would be beneficial in ascertaining whether this result is indicative of the broader Year 3 cohort in Australia.

A further limitation was that the use of technology was not successful for all participants. Within the cohort, two participants did not enjoy the technology use in the intervention and these students did not show significant growth despite their general high levels of academic achievement. The structure of the activities and the use of video technology did not assist them in engaging in the learning opportunities. However, the majority of the cohort did enjoy the use of technology and were actively engaged in all activities. Any further development of a vocabulary instruction model using student created recordings at its core would need to take this aspect into account in order to accommodate the needs of all students. This is an essential aspect of successful tech integration as advised by Hamilton et al. (2016).

An important limitation of this intervention design is that it requires use of reliable technology that is accessible to all students regularly. It also requires a fast internet connection that allows for uploading large video files, often with multiple people uploading simultaneously. This may not be possible in all learning environments. It also demands a certain level of

technological skills in both students and educators. This would need to be cultivated beforehand to ensure that students are familiar with the video recording technology and the requirements to upload and interact online by learning comments, etc. Burnett (2016) expounds that cultivating these skills is essential in the modern classroom however some students will not have the necessary skillset and may require additional support. This was an area of concern before the intervention began as there was uncertainty as to whether participants would be skilled or mature enough to take this activity seriously and try their best to record a quality piece of recorded language. However, in this study all participants did produce videos of their talks without any behaviour issues. This was particularly surprising given that three of the participants had behaviour management plans indicating that self-regulation and independent work was not their areas of strength. This should be a consideration when using this method of oral language assessment with students who are unable to work independently and or self/regulate their behaviour.

A final limitation is that the intervention was interrupted twice. The second interruption necessitated a school closure due to a state-wide lockdown and so slightly altered the intervention schedule. It became apparent during the intervention that external interruptions to learning were incredibly disruptive to the learning of the students across all areas of the curriculum. Both major interruptions that occurred during this intervention period were completely unavoidable and it would not be common for two such large events to occur within a fortnight of each other. However, it is indicative of the nature of school life and emphasises that routine is essential for some students. Whether these interruptions contributed to lower-than-expected results in these weeks cannot be conclusively argued but it would be a fair assumption that two major events would contribute in some way for some students.

Recommendations for future research

The mixed method approach of the BVM and metalinguistic activities appears to have been successful in improving oral language in this context and aligns with the theories of Tyson and Peery (2017) and Nagy (2007). However, it is unclear if a purely metalinguistic approach or a purely explicit instruction approach would have yielded a higher rate of growth. Further

investigations would be required to validate the effectiveness of the mixed method approach used.

The use of technology appeared to encourage most students to engage, however it would be interesting to repeat this study using a more traditional approach, with the same activities but the student talking to an adult. This is not practical in a classroom setting where 1:1 time with students is very difficult to achieve, however it would allow a comparison to be made.
It became very clear that large, unexpected interruptions to leaning have an impact on all students.

The final recommendation is that this intervention be repeated on a much larger participant pool, across multiple schools with diverse contexts. This would allow a more in-depth statistical analysis of growth in descriptive vocabulary and objective language in a cohort who would be representative of primary school aged students across Australia.

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Appendix 1

Research Journal

Intervention Journal Notes – WEEK 1 **A Barr 2020**

Participation	Observations
AA T1 ✓ T2 ✓ T3 ✓	Focus area: Animal Appearance.
AB T1 ✓ T2 ✓ T3 ✓ A little shy.	(T1) EDI ppt lessan was interesting. Students enjoyed it and didnt seem bored at all. They loved the PPt - especially when the gifs moved. I think having discussion before EI part made it more relevant as all were invested. Conversations went well but TL, AA and CP need support to join in. Confidence? The groups were mixed well. First activity completed successfully - lots of words to describe appearances!
AY T1 ✓ T2 ✓ T3 ✓ Very confident	
BN T1 ✓ T2 ✓ T3 ✓ Very chatty! Enjoyed participating	(T2) Filming day - some successes + a few issues. All made a talk video and uploaded. Same issues reported by students ① Too noisy to film properly. No quiet spaces (open plan) ② Not long enough to film. Discussed and decided to allocate more time next week. IM + ZV not happy about filming. ZV going to try next week. Will contact IM's mum as I am concerned.
CP T1 ✓ T2 ✓ T3 ✓ Needed support	
CS T1 ✓ T2 ✓ T3 ✓	

CT T1 ✓ T2 ✓ T3 ✓	(T3) Interesting + mixed response to this task. AY, IM, IT, BN participated well as expected. TL very quiet. Gave some support to use question/feedback prompts. Checked in as concerned he didn't enjoy the task but he assured me he did. Great conversation between CP and TW about camaflage - both very interested to research animals with this attribute. Boys don't usually talk much so nice for them to interact.
FC T1 ✓ T2 ✓ T3 ✓ very excited all week!	
IM T1 ✓ T2 ✓ Reluctant to film T3 ✓	
IT T1 ✓ Quiet but interested T2 ✓ T3 ✓	
LC T1 ✓ T2 ✓ T3 ✓	General Obs LC, TW, FC - all enjoying + participating without <u>any</u> behaviour issues. AY - excelled in volume of talk. Content needs to develop. Support after watching videos - TL, FC, CP, (ZV, IM) surprising that they are still not keen to film.
TL T1 ✓ Needed support T2 ✓ T3 ✓ Very shy	

TW ✓ ✓ Very excited to film. ✓ Not so exited for feedback.	Did not take th FB from peers well. Disussed why they may have struggled to hear. Choose quieter spot next time.
ZV ✓ ✓ Not keen to film ✓ Great interaction	IM's mum called. She would like her to continue to record. IM agreed to continue. Will keep a close eye on her - warned that the video record is not letting her show her true ability -

Week 1

The word 'athletic' started an interesting metalinguistic conversation between FC, CT and IM. The discussion centered around FC being unfamiliar with the word 'athletic'. CT said ' it's like what an athlete is'. FC still seemed confused, so IM added, 'You know, like a high-level sports person, like a footy player'. FC then began listing various sports people and the girls agreed that he knew what an athlete was. IM then stated that athletic means 'being good at sports.' CT disagreed and argued that it means something different because animals are athletic but don't play sports. FC then suggested that being athletic was more about being fit and healthy and able to move the body quickly. CB added that being athletic involves some skill in whatever is happening and gave the example of a lion chasing prey and a runner moving their body in the best way for what they are trying to achieve. The girls agreed that this was a better description.

TL compared the word 'colossal' to a superhero called Colossus and deducing that 'colossal' must mean 'massive' because the superhero was 'ginormous'.

Debate about whether 'hefty' was more about being 'big', 'fat' or 'heavy', with TW arguing that 'hefty' has more to do with size and weight, as some things can be very heavy without being bigger and 'they wouldn't count as hefty'. When AY asked him for an example, he said that a cannonball is 'super heavy but a bit small so it's obviously not hefty like a massive heavy rhino'.

Intervention Journal Notes – WEEK 2

A Barr 2020

Participation	
AA T1 ✓ T2 ✓ T3 ✓	
AB T1 ✓ T2 ✓ T3 ✓	less shy – more willing to talk.
AY T1 ✓ T2 ✓ T3 ✓	
BN T1 ✓ T2 ✓ T3 ✓	So enthusiastic this week! His talks are becoming more confident.
CP T1 ✓ T2 ✓ T3 ✓	Very short talk – additional support next week.
CS T1 ✓ T2 ✓ T3 ✓	Good interactions in T1

Observations

Focus area – How do animals act?

(T1) So much amazing conversation'. I could hardly keep up. Additional notes added (typed from my post its). Amazing conversation about meaning of athletic. (Wk1 word) So great to see how students are helping each other to solve word puzzles. They like to be described as 'word detectives'. Suits the task at hand. Interesting that they return to the previous week words too.

All students very enthused and happy to participate. Observed more 'acting' as a means to describe meaning. (IT, AH, AB) Great wonderings too.

Very interesting conversation about the word 'cunning' (on additional page) Group discussion was excellent. The SDI aspect seems to centre & consolidate understanding. All love being part of this part of the task to share their ICU. Maybe novelty of the structure. Not sure if this time would be better spent on more inquiry tasks. Trust the research

*Students requested more time to discuss new words – alter timings next week

CT T1 ✓ T2 ✓ T3 ✓	Very engaged in T1+T3
FC T1 ✓ T2 ✓ T3 ✓	Focused on task well.
IM T1 ✓ T2 ✓ T3 ✓	Not happy to film. Did so but reluctant.
IT T1 ✓ T2 ✓ T3 ✓	Enjoying all tasks. Mum told me she has been discussing words at home + researching new words
LC T1 ✓ T2 ✓ T3 ✓	
TL T1 ✓ T2 ✓ T3 ✓	Much larger talk and seemed more confident. Still required support.

will call mum again.

(T2)

Filming was allocated more time as requested. Noise still an issue. School is open plan so very few quiet spots. We don't have a class set of microphones. Requested but unlikely. Looking for ways to minimize noise in the background. A4, AB, CT and ZV quite annoyed about it.

IM still a concern. Can't quite understand why she is reluctant to film and she won't explain. Will check in with her mum and offer alternatives to recording. ZV also surprising as normally very high achieving in Lit. Students feedback was better but still frustrated by noise.

(T3)

Beginning to see some discussion about previous feedback being implemented. Much of this centred around the background noise - much improved but needs to be clearer was the main opinion. Will investigate spaces to use next week - maybe music rooms?

More use of ~~text~~ prompts this week. LC used successfully + contributed well for the first time

TW T1 ✓ T2 ✓ T3 ✓ Very exated. Need to use calming strategies before filming.	IM+ IT great discussion about discription of horses moving in different ways & suggesting words 'gallops', etc.
ZV T1 ✓ T2 ✓ Reluctant again T3 ✓	

Week 2

The word 'cunning' was frequently referred to as a word describing a fox, but no one knew why this word was often attributed to foxes. During the group discussion AB shared that she thought it might mean 'sneaky in a clever way' because she had read *Fantastic Mr Fox* by Roald Dahl, and this is what Mr Fox was like. This caused some debate with her group about whether foxes were actually clever or if this was just part of the story. We then discussed the word cunning during our whole class discussion and the debate about the intelligence of foxes continued. When I pointed out that the intelligence seemed to be important to them, all students agreed that they thought it was an important part of being cunning and that foxes must be cleverer that they thought.

BN was insistent that 'sluggish' meant to move like a slug and looked like an animal moving 'super slowly and lazy like a sloth'. CS suggested that it might mean leaving slime behind as an animal moved but the group couldn't think of any examples of animals that did this so agreed that BN probably had the closest description.

The word 'skittish' was new to all students and they tried to work out what the word meant. ZV suggested that it might mean colourful because it 'sounds like Skittles and those are very colourful'. Most students agreed with this and were surprised to discover the true meaning during the class discussion. TL seemed very confused, so I spoke to him afterwards. He said that the word 'skittish' still didn't make sense to him, so we searched for some examples in gif form on the Internet. He then stated that his cat was skittish when she met new people and sometimes, he felt like that too but he 'didn't know it had a name to be like that'.

Intervention Journal Notes – WEEK 3 **A Barr 2020**

Participation	Observations
AA T1 ✓ T2 ✓ T3 ✓	Focus - how do animals move? (T1) Lots of links being made between words from last week. IM & IT excited as they had discussed aspects of horses moving and the word 'canter' is used this week. Good connections. Great conversation IT + TL about the word 'sway' (typed on next page) Lots of fun acting words such as 'slither' and 'waddle'. Extra 5 mins based on fback. Conversations are lively and all engaged. Great to see and lots of connections being made to prior knowledge. TW + LC + FC all v. excited as they know what richochet means (Fortnite game) Described to peers. LC told me he felt very clever. Interesting that students with an SLD are engaged in these activities. Higher lit achievers not so much – IM + ~~RV~~ still not enthused and their talks don't reflect their class chat.
AB T1 ✓ T2 ✓ T3 ✓	
AY T1 ✓ T2 ✓ T3 ✓	
BN T1 ✓ T2 ✓ T3 ✓ Excellent participation.	
CP T1 ✓ T2 ✓ T3 ✓	
CS T1 ✓ T2 ✓ T3 ✓ Excellent effort to record talk. 3x attempts as he wanted it 'perfect'	

CT T1 ✓ T2 ✓ T3 ✓	
FC T1 ✓ T2 ✓ T3 ✓	Great interaction with IT 'Sway'
IM T1 ✓ T2 ✓ T3 ✓	
IT T1 ✓ T2 ✓ T3 ✓	Great interaction with FC – 'Sway'
LC T1 ✓ T2 ✓ T3 ✓	Happy to teach others meaning of richochet.
TL T1 ✓ T2 ✓ T3 ✓	

T2

Filming went well. Altered timetable to max the use of quieter spaces. Music rooms, small group rooms + 4r1 neighbourhood as it is empty. Feedback much better from students. No issues with filming this week & students appear more confident with the tech.

T3

Good feedback from CP - suggested correct synonym to LC. TW much better at receiving feedback this week. No behaviour issues. CS quite vocal - nice to see him joining in and offering praise. Use of prompts in all groups.

TW T1 ✓ T2 ✓ T3 ✓ Excellent focus during T1	
ZV T1 ✓ T2 ✓ T3 ✓	

Week 3

LC insisted that he knew that 'ricochet' meant 'bouncing off of things because bullets do a ricochet on tv shows and that means they bounce off a wall and hit things they are not supposed to'. His group debated which animals would be bouncy enough to have this description and decided that fleas, frogs, kangaroos and 'the springy animals from Africa' would fit this descriptor. LC came to tell me that he had taught his group something about a word and was very excited to have been able to do so. The students were encouraged to act out the movements and participation and engagement was high.

The word 'darts' also caused debate with no one quiet knowing what it meant so there was lots of guesswork and looking for words that sounded similar. TL suggested dashes might be a close meaning. AB suggested 'flying fast like a dart to a dart board'. We ended up discussing at length and using acting to help al understand the meaning.

Intervention Journal Notes – WEEK 4 **A Barr 2020**

Participation	Observations
AA T1 ✓ T2 ✓ T3 ✓ Quiet this week.	Focus- Describe habitats (T1) Conversations were very interesting this week. Multiple students offered their expertise who haven't really done so before. TL, LC, FC, TW, BN and AB all contributed to solve words based on previous knowledge. The word that they all focused on was 'region'. These students have all attended regional sporting events so knew what it meant. The word sturdy caused a bit of argument about it's exact meaning strong vs well built. [redacted] BN + AY argued about strength being important and ultimately agreed on a definition during the whole class discussion. EDI aspect was excellent for cementing this understanding. I do think that the mix of EDI and inquiry is working very well for these students. The structure suits TW + FC very well.
AB T1 ✓ T2 ✓ T3 ✓ Explained 'frosty' and 'waddle' well (penguin).	
AY T1 ✓ T2 ✓ T3 ✓	
BN T1 ✓ T2 ✓ T3 ✓ Great info about the axolotl.	
CP T1 ✓ T2 ✓ T3 ✓ Space well about birds again	
CS ✓ T1 T2 ✓ T3 ✓	

CT T1 ✓ T2 ✓ T3 ✓	Good use of word 'hazardous'
FC T1 ✓ T2 ✓ T3 ✓	
IM T1 ✓ T2 ✓ T3 ✓	Mum insisting she finishes the activities
IT T1 ✓ T2 ✓ T3 ✓	
LC T1 ✓ T2 ✓ T3 ✓	
TL T1 ✓ T2 ✓ T3 ✓	More confidence today.

(T2)

Videos were filmed calmly & without incident. This element is quite strange as I feel slightly redundant! It is hard to give over all control & allow students agency to decide exactly how their talk will take place. Usually I am fine to facilitate but it feels like the EDI is working so well that perhaps some additional structure may be beneficial. I will offer to TW as he does need support to stay on track. As an inquiry practitioner the use of EDI has been new, especially in this school context. It really does seem to benefit the students.

(T3) The conversations in this task were a little lack lustre this week. I had to really work the room to keep things on track. When I asked for feedback the students told me that some were feeling

TW T1 ✓ T2 ✓ T3 ✓	bored as the feedback was 'always the same' (AA, AB) We discussed how to make the feedback more interesting and implemented a 'no pass' rule. Revised prompts.
ZV T1 T2 T3 ABSENT ALL WEEK	

Week 4

The word 'sturdy' caused some debate in all groups. Two groups defined the word's meaning as 'strong' with BN stating that 'strong things like cars aren't always stable though, so sturdy means strong and not moving around'. We discussed this further as a whole class and AY stated that sturdy just meant 'something that was built well and wouldn't fall apart so it didn't always have to be strong'. BN and AY then started to argue about the need for strength to be included in the definition. The class agreed that for an animal's home to be sturdy it had to be strong enough that it wouldn't fall down easily and that it would last for a long time.

All students knew the word 'cosy' but there was robust debate in all groups about what it meant to be cosy. Some suggestions included, 'warm', 'safe', 'secure' (another word from our vocabulary list) 'comfortable', 'happy', 'snug', 'cuddle with family' and 'wrapped up in blankets'. In our class discussion we looked at what must be included to count as cosy and agreed that an animal can't be cosy if it is not warm, safe and comfortable.

IM confidently told her group that the word 'concealed ' was like make-up concealer that 'hides things you don't want people to see like spots on your nose'. Her group agreed that a concealed area could mean hidden and that this would be beneficial for animals to keep them safe.

Intervention Journal Notes – WEEK 5

A Barr 2020

Participation	Observations
AA T1 ABSENT ALL WEEK T2 (only attended 2 mornings) T3	Describe development. (T1) AA, CT, TW all away sick at nurse for part of the lesson. CT sent home. AA + TW returned but missed most of the conversations. The word 'miniature' was especially contested this week. AB and CP were trying to define the difference between something being 'small' and 'mini' Class conversation – we agreed that a miniature is a smaller scale of something bigger. AB wasn't happy with that though and wanted to do more research. TW contributed that he knew what sentary meant – as did LC, FC, CS. This is from the fortnite video game. Despite feeling ill he was happy to share this with his group.
AB T1 T2 T3	
AY T1 T2 T3	
BN T1 T2 T3	
CP T1 T2 T3	
CS T1 T2 T3	

CT T1 ABSENT ALL WEEK MON – FRI T2 T3	T2 Video making today was deeply affected by some very bad news that was shared at assembly before recess. All students very upset. TW not feeling well but was sent home after the news as he was so distressed. We delayed videos until the afternoon but this affected us all. I anticipate that the recorded talks may not be of the highest standard.
FC T1 T2 T3	
IM T1 T2 T3	
IT T1 T2 T3	T3 Some good conversations mainly centering around offering synonyms or alternative words. ZV was more active than usual and gave TL some lovely feedback saying 'your talks get more detailed every week'. He was delighted. The feeling of shock has stayed with the students and they have been noticeably subdued. AA + TW have also been away at times so this might also make a difference.
LC T1 T2 T3	
TL T1 T2 T3	

TW T1 ✓ ABSENT ALL WEEK T2 ✓½ AFTER NEWS ON [redacted] WED. T3 X	AA also found out that his dad might be stuck in Africa because of restrictions. Only here two mornings but he is very worried about that too.
ZV T1 ✓ T2 ✓ T3 ✓	

Week 5

There was great interest from LC and TW about the word 'solitary' as they knew this word from the computer game Fortnite. They were very excited that they understood a word that some of their peers didn't know and started to share the meaning before we had started the vocabulary lesson, after seeing the word on the word wall. Both seemed very proud that they knew this word and also told other teachers and support staff about their achievement. During the lesson the word caused some conversation about whether solitary animals would be lonely. IT and IM were adamant that solitary meant alone and feeling lonely while the majority of the class felt that it meant to simply be alone.

The word 'weak' was very interesting as everyone knew what it meant but they found it very difficult to describe. We had to discuss as a group and research definitions as the debate ran and no consensus could be found!

Intervention Journal Notes – WEEK 6 **A Barr 2020**

Participation	Observations
AA T1 ✓ T2 ✓ ½ T3 x ✓ Partially absent (Dad not coming home)	Focus – food + nutrition (T1) Great discussion about how animals get food – predator/prey or both. Omnivore caused interesting conversation with AY and BN correctly guessing the meaning by using clues from ZV. She knew 'omni' from a book she read about God. omnipresent meaning all around so omnivore eat everything. Good logic! (T2) Videos made without incident. All students seem very confident except IM + ZV. ZV makes an effort but does not enjoy it. IM has talks but with little effort. It's a shame as she is normally so literate.
AB T1 ✓ T2 ✓ T3 X ✓	
AY T1 ✓ T2 ✓ T3 X ✓ Good guesswork in (T1)	
BN T1 ✓ T2 ✓ T3 X ✓ Good guesswork in (T1)	
CP T1 ✓ T2 ✓ T3 X ✓	
CS T1 ✓ T2 ✓ T3 X ✓	

* No T3 due to lockdown – hoping to do it on Monday *

CT T1 ✓ T2 ✓ T3 X ✓	(T3) Another interruption. School has been locked down (as has SA) possibly until Monday. We will not get to do the regular session for feedback until then. Students very insecure and some are scared of covid. Monday All students finished the feedback session (3 days later than usual) Fair to say that their heart's were not in it and all they wanted to talk about was the lockdown. I do wonder if the feedback sessions are as engaging as the other aspects. The students love the discussions & most enjoy the videos. The feedback has been more & more difficult to facilitate over the past few weeks.
FC T1 ✓ T2 ✓ T3 X ✓	
IM T1 ✓ T2 ✓ T3 X ✓	
IT T1 ✓ T2 ✓ T3 X ✓	
LC T1 ✓ T2 ✓ T3 X ✓	
TL T1 ✓ T2 ✓ T3 X ✓	

TW T1 T2 T3 ABSENT ALL WEEK	CT played ✓ funny game and mixed up meanings of words. Typed up on next page. Excellent group discussion and a fun way to end the intervention activities
ZV T1 ✓ T2 ✓ T3 X ✓ Great interaction in (T1)	

Week 6

On the last day of the intervention some students suggested that we play a fun activity where each group selected up to ten words to describe an animal and the others had to guess what the animal might be. During this game CT chose the word 'masculine' to describe her animal. She had inadvertently chosen the wrong word and actually meant 'muscular'. A member of the group asked me for the definition of masculine as the group didn't know and couldn't decode the word. Her group quickly realised that CT had chosen the wrong word by asking questions such as 'You said its athletic and strong so is it only a boy?' and 'Do you mean masculine like a man or muscular like a muscly strong animal?' Once CT realised that she had used the wrong word she started to laugh and said that masculine would also fit her animal as she was describing a lion with a mane so it 'would be a boy lion anyway'. The whole group found this very funny and proceeded to tell the other groups and explain the joke.

IT and AY guessed that an omnivore might eat different types of things, and this was supported by ZV who knew the work 'omnipresent' from a book that she had read about God. She suggested that omni at the start of the word might mean 'every' as omnipresent meant everywhere.

Appendix 2

Macro Code for Analysing Words in A Microsoft Word Document, followed by example of use.

The macro below was used in order to isolate original words and organise by frequency of use of each word. This macro was written by myself with support from my husband, using adapted source code found here https://www.wordbanter.com/showthread.php?t=133264

```
Sub WordFrequency()
    Const maxwords = 9000          'Maximum unique words allowed
    Dim SingleWord As String       'Raw word pulled from doc
    Dim Words(maxwords) As String  'Array to hold unique words
    Dim Freq(maxwords) As Integer  'Frequency counter for unique words
    Dim WordNum As Integer         'Number of unique words
    Dim ByFreq As Boolean          'Flag for sorting order
    Dim ttlwds As Long             'Total words in the document
    Dim Excludes As String         'Words to be excluded
    Dim Found As Boolean           'Temporary flag
    Dim j, k, l, Temp As Integer   'Temporary variables
    Dim ans As String              'How user wants to sort results
    Dim tword As String            '
    Dim aword As Object            '
    Dim tmpName As String          '

    ' Set up excluded words
    Excludes = "[um][uh]"

    ' Find out how to sort
    ByFreq = True
    ans = InputBox("Sort by WORD or by FREQ?", "Sort order", "WORD")
    If ans = "" Then End
    If UCase(ans) = "WORD" Then
        ByFreq = False
    End If

    Selection.HomeKey Unit:=wdStory
    System.Cursor = wdCursorWait
    WordNum = 0
    ttlwds = ActiveDocument.Words.Count

    ' Control the repeat
    For Each aword In ActiveDocument.Words
        SingleWord = Trim(LCase(aword))
        'Out of range?
        If SingleWord < "a" Or SingleWord > "z" Then
            SingleWord = ""
        End If
        'On exclude list?
        If InStr(Excludes, "[" & SingleWord & "]") Then
            SingleWord = ""
        End If
        If Len(SingleWord) > 0 Then
            Found = False
```

```
        For j = 1 To WordNum
          If Words(j) = SingleWord Then
            Freq(j) = Freq(j) + 1
            Found = True
            Exit For
          End If
        Next j
        If Not Found Then
          WordNum = WordNum + 1
          Words(WordNum) = SingleWord
          Freq(WordNum) = 1
        End If
        If WordNum > maxwords - 1 Then
          j = MsgBox("Too many words.", vbOKOnly)
          Exit For
        End If
      End If
      ttlwds = ttlwds - 1
      StatusBar = "Remaining: " & ttlwds & ", Unique: " & WordNum
    Next aword

    ' Now sort it into word order
    For j = 1 To WordNum - 1
      k = j
      For l = j + 1 To WordNum
        If (Not ByFreq And Words(l) < Words(k)) _
          Or (ByFreq And Freq(l) > Freq(k)) Then k = l
      Next l
      If k <> j Then
        tword = Words(j)
        Words(j) = Words(k)
        Words(k) = tword
        Temp = Freq(j)
        Freq(j) = Freq(k)
        Freq(k) = Temp
      End If
      StatusBar = "Sorting: " & WordNum - j
    Next j

    ' Now write out the results
    tmpName = ActiveDocument.AttachedTemplate.FullName
    Documents.Add Template:=tmpName, NewTemplate:=False
    Selection.ParagraphFormat.TabStops.ClearAll
    With Selection
      For j = 1 To WordNum
        .TypeText Text:=Trim(Str(Freq(j))) _
          & vbTab & Words(j) & vbCrLf
      Next j
    End With
    System.Cursor = wdCursorNormal
    j = MsgBox("There were " & Trim(Str(WordNum)) & _
      " different words ", vbOKOnly, "Finished")
End Sub
```

Example of Transcript Text Before Macro Use	Same Transcript Text After Macro Use for Frequency of Use
Ok. So um I was thinking of about a red panda. Yeah they're like fluffy and they pounce to play and they're red and black and they're they have like sharp claws to climb trees and that's all. Um it lives in like trees in bamboo forests and that's all. That it's like is part of the raccoon family. Yeah, that's all.	6 and 4 like 3 they're 3 that's 3 all 2 of 2 red 2 yeah 2 they 2 to 2 trees 2 in 1 so 1 fluffy 1 ok 1 thinking 1 pounce 1 panda 1 play 1 black 1 have 1 sharp 1 claw 1 climb 1 about 1 i 1 was 1 it 1 lives 1 a 1 bamboo 1 forests 1 that 1 its 1 is 1 part 1 the 1 raccoon 1 family

Appendix 3

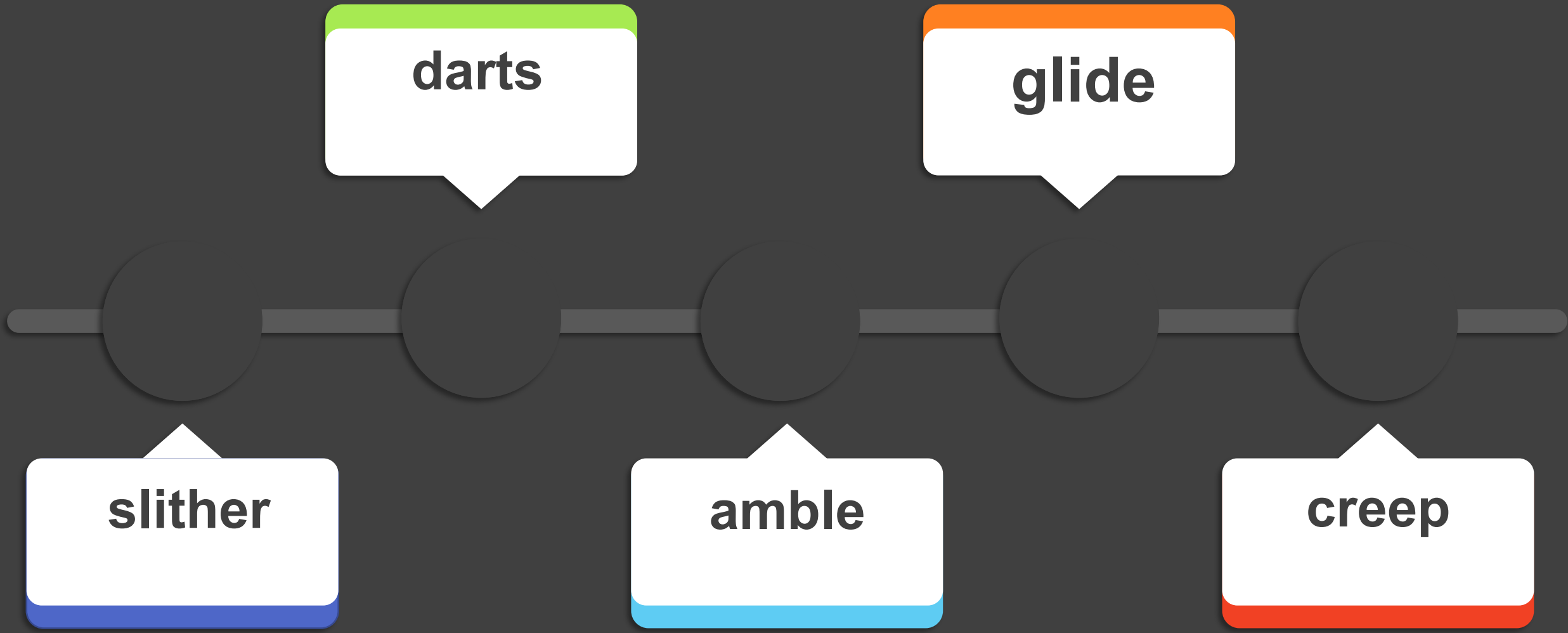
Example of Weekly PowerPoint

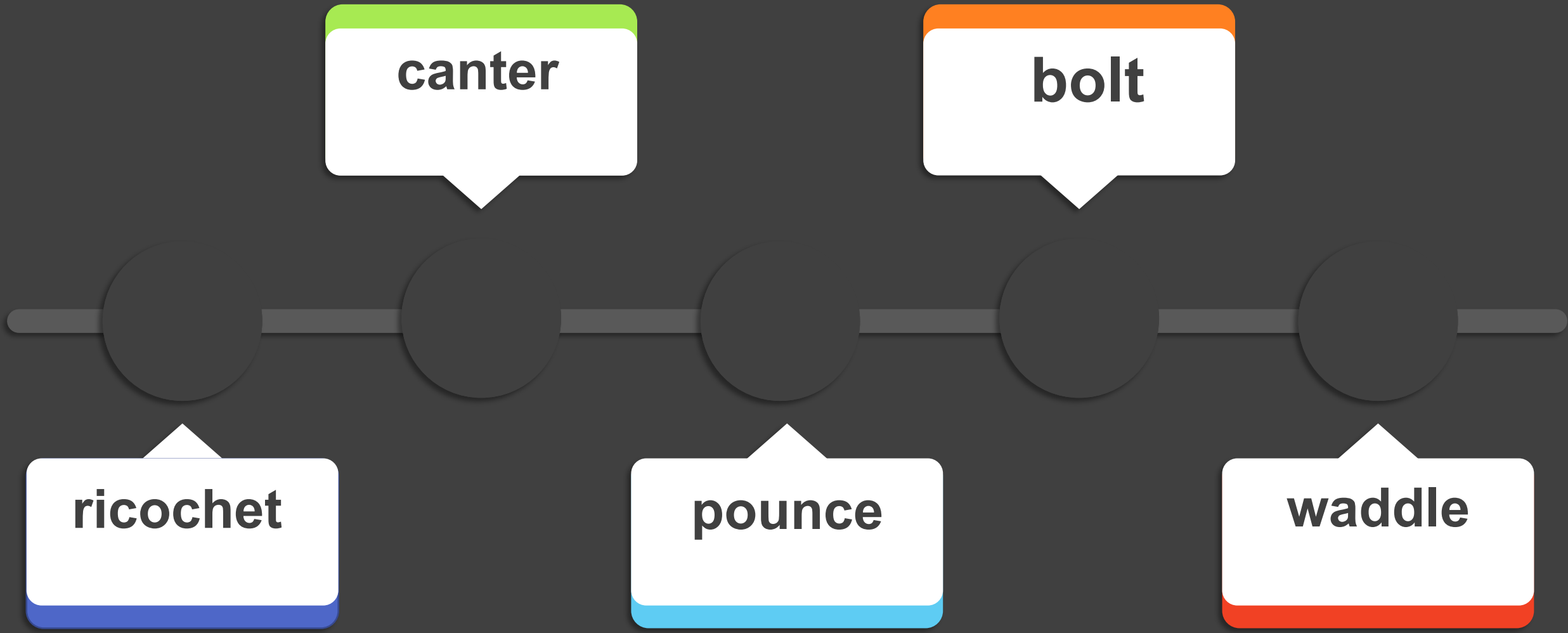
Third Week

Year 3/4

Oral Language Vocabulary




darts
glide
slither
amble
creep


canter
bolt
ricochet
pounce
waddle

move or run somewhere suddenly or rapidly

darts









glide

move or fly with a smooth, continuous motion





slither

- move smoothly over a surface with a twisting or oscillating motion





creep

move slowly and carefully so you don’t get heard or noticed





amble

walk or move at a slow, relaxed pace.





canter

A medium fast run speed





bolt

Move very very quickly





Bounce around

ricochet





waddle

Walk in a side to side motion





pounce

Jump suddenly to catch prey

Seesaw Posts

Task One

Think about an animal that you like. How many words on your page can describe how your animal moves around? Highlight them.

Task Two

Think of more describing words for how your animal moves in different situations (happy, sad, eating, hunting, etc.) Discuss your animals in your groups and help each other to think of more words. Add these to your list.

Task Three

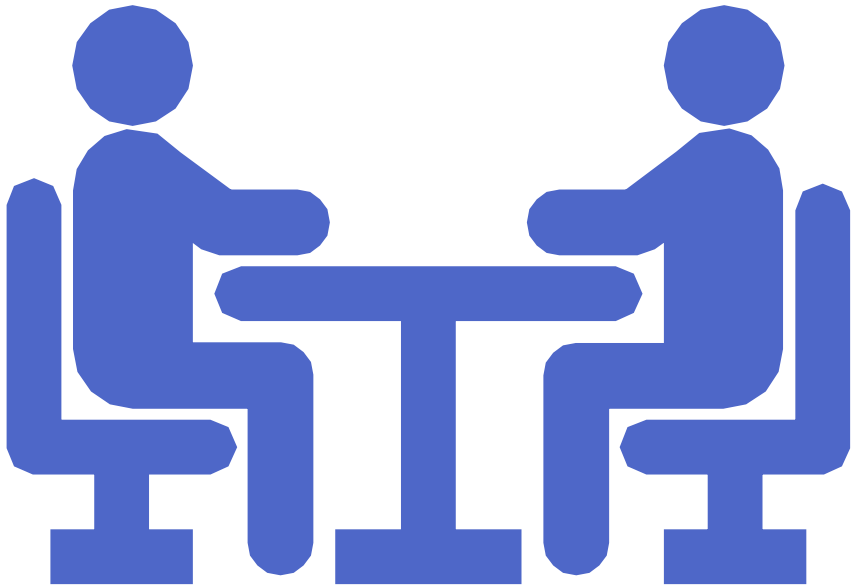
Work with a partner to record a description of how your animal looks. Upload to Seesaw with the following caption

Today in our Oral Language topic we described how animals move using descriptive language.

Seesaw Video Discussion

Watch each video from your group members together.

Add comments, using the comment box, to give feedback on the descriptive language used.



Positive Feedback Ideas



I liked that you used the word/phrase……



You described _____ really well.



I didn’t know the word _____ until today.



_____ is a great word to describe…



My favourite word that you used was _____

Costructive Feedback Ideas

You could also use the words _____

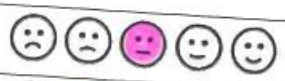
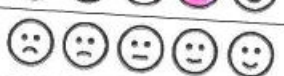
What did you mean when you said….

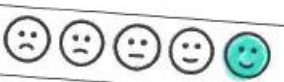
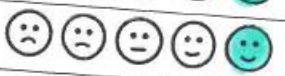
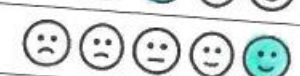
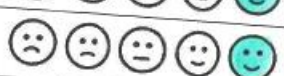
What does _____ mean?

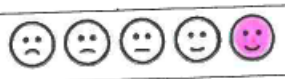
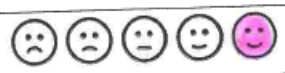
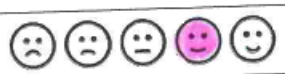
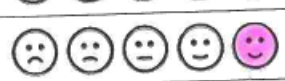
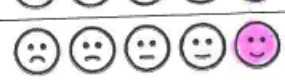
Appendix 4

Example of student weekly feedback, gathered at the end of pre mid and post week during the intervention. The template is below along with scanned pictures of AB's feedback.

Week 1 Animal Vocabulary Topic Self Assessment	
I learned some new words this week.	
I used some of the new words when I talked to other people	
I shared some new words with my family	
I felt confident talking on video about my animal	
I felt confident using Seesaw to make and upload my talk video	
I am enjoying learning about new words with my friends	

Week 1 Animal Vocabulary Topic Self Assessment	
I learned some new words this week.	
I used some of the new words when I talked to other people	
I shared some new words with my family	
I felt confident talking on video about my animal	
I felt confident using Seesaw to make and upload my talk video	
I am enjoying learning about new words with my frien~s	

Week 3 Animal Vocabulary Topic Self Assessment	
I learned some new words this week.	
I used some of the new words when I talked to other people	
I shared some new words with my family	
I felt confident talking on video about my animal	
I felt confident using Seesaw to make and upload my talk video	
I am enjoying learning about new words with my frien~s	

Week 6 Animal Vocabulary Topic Self Assessment	
I learned some new words this week.	
I used some of the new words when I talked to other people	
I shared some new words with my family	
I felt confident talking on video about my animal	
I felt confident using Seesaw to make and upload my talk video	
I am enjoying learning about new words with my friends	

Appendix 5

Presented below are all results collected for each student during weekly and pre, mid and post talks. Each was transcribed and analysed after using macro in Appendix 2.

All Year 3 level participants (8 males and 7 females) completed the initial and mid point interviews. One child (LC) did not complete the final interview due to absence from school. Ten students completed the full intervention program, whilst four experienced absence during one of the intervention weeks.

AA participated in all activities and had no absences from Week 1- 5. He was then absent due to a family matter in Week 6. He returned to school the following week and completed the post intervention.

AA Data	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	57	37	34	1	33	1		30
wk2	46	29	33	1	32	1	0	29
wk 3	51	43	49	3	43	5	1	43
wk4	114	73	48	4	44	3	1	43
wk5	51	31	28	3	25	3	0	22
wk6	Absent							
pre	92	93	51	0	48	3	0	41
mid	90	111	53	1	49	3	1	43
post	50	72	32	1	31	1	0	26

AB participated in all activities and had no absences during the intervention period.

AB Data	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	59	43	39	0	37	2	0	36
wk2	56	56	38	1	37	1	0	30
wk 3	107	50	58	3	53	5	0	48
wk4	111	74	56	6	50	4	2	49
wk5	138	81	71	7	61	10	0	61
wk6	98	51	55	4	45	6	4	48
pre	108	145	55	0	49	5	1	44
mid	60	91	39	1	36	3	0	30
post	93	128	52	0	49	3	0	43

BN participated in all activities and had no absences during the period of intervention.

BN Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	73	47	44	0	41	3	0	33
wk2	69	30	50	3	47	3	0	41
wk 3	70	25	48	2	41	7	0	39
wk4	88	35	59	4	53	6	0	37
wk5	91	38	61	5	54	7	0	51
wk6	100	39	60	5	55	3	2	47
pre	162	108	91	4	83	6	2	80
mid	164	98	84	4	78	5	1	72
post	63	76	43	0	39	4	0	38

AY completed all activities and had no absences during the intervention period.

AY Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	57	37	34	1	33	1	0	30
wk2	129	47	71	1	67	4	0	57
wk 3	109	39	58	2	53	5	0	50
wk4	142	67	67	4	55	9	2	57
wk5	135	46	74	4	67	7	0	66
wk6	150	58	80	3	72	6	2	72
pre	132	120	63	0	62	1	0	49
mid	163	133	82	5	68	13	1	69
post	111	101	74	1	72	2	0	64

CP participated in all activities and had no absences during the period of intervention.

CP Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	37	17	28	2	26	2	0	24
wk2	16	12	16	0	16	0	0	13
wk 3	32	23	28	0	27	1	0	22
wk4	43	36	28	3	25	3	0	20
wk5	41	34	31	3	28	3	0	25
wk6	59	33	42	2	38	2	2	36

pre	102	91	65	0	63	2	0	57
mid	216	223	111	0	107	4	0	101
post	155	118	81	3	74	4	3	73

CS participated in all activities and had no absences during the period of intervention.

CS Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	32	19	22	0	22	0	0	15
wk2	14	12	12	4	8	4	0	8
wk 3	51	32	29	4	24	5	0	26
wk4	74	44	45	6	39	5	1	33
wk5	55	25	29	5	24	5	0	22
wk6	73	41	47	6	41	3	3	41
pre	72	103	42	0	39	4	0	34
mid	60	100	39	0	14	0	1	33
post	101	91	61	0	61	0	0	54

CT participated in all activities in Weeks 1 - 6 but was then absent for most of week 6 of the intervention.

CT Data

	twc	ttt	TOW	gvoc	T1	T2	T3	dw
wk1	137	57	64	0	60	2	0	52
wk2	59	22	38	3	35	2	1	30
wk 3	97	40	64	2	61	2	1	55
wk4	134	51	72	2	69	3	0	61
wk5	82	38	50	4	46	4	0	39
wk6	ABSENT							
pre	70	86	51	0	47	4	0	40
mid	90	104	58	5	52	5	1	50
post	79	78	48	0	47	1	0	41

FC participated in all activities and had no absences throughout the intervention period.

FC Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	71	26	52	0	48	4	0	43
wk2	66	30	49	1	47	2	0	41
wk 3	64	30	45	2	42	3	0	38
wk4	60	33	46	0	43	3	0	37
wk5	57	35	47	0	46	1	0	39
wk6	59	30	49	3	46	2	1	40
pre	125	203	63	0	59	1	0	52
mid	171	130	77	0	74	4	0	68
post	73	90	45	1	42	3	0	41

IM participated in all intervention activities and had no absences during the intervention period.

IM Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	77	45	50	1	47	3	0	38
wk2	59	32	38	5	32	6	0	33
wk 3	88	30	56	3	49	6	1	49
wk4	75	36	34	5	27	5	1	29
wk5	91	40	59	3	54	5	0	50
wk6	70	37	31	3	47	1	3	43
pre	61	103	42	0	38	3	1	32
mid	38	90	34	1	33	0	1	26
post	60	104	45	1	43	2	0	39

IT participated in all activities and had no absences throughout the intervention period.

IT Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	29	13	27	3	24	3	0	22
wk2	63	28	45	2	41	4	0	40
wk 3	65	29	45	1	41	4	0	38
wk4	99	38	64	3	59	4	1	52
wk5	71	31	51	2	47	4	0	40
wk6	87	36	61	3	56	2	3	53

pre	147	148	81	0	78	4	0	64
mid	171	157	87	1	83	4	0	74
post	335	211	146	5	125	21	0	139

LC participated in all activities but was withdrawn from the school before the final post intervention interview could take place.

LC Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	47	34	29	2	24	5	0	26
wk2	35	28	24	3	21	3	0	18
wk 3	64	48	41	3	37	3	1	40
wk4	64	41	42	0	40	2	0	28
wk5	62	49	40	5	32	7	1	31
wk6	60	41	35	3	32	2	1	30
pre	72	100	49	0	48	1	0	40
mid	49	84	32	1	30	2	0	25
post	absent							

TL completed every activity and had no absences throughout the intervention.

TL Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	24	14	17	0	17	0	0	13
wk2	25	16	19	0	19	0	0	11
wk 3	43	27	28	1	27	1	0	19
wk4	48	31	34	0	33	1	0	25
wk5	39	25	29	1	27	2	0	
wk6	44	32	34	0	32	2	0	28
pre	30	104	18	0	17	1	0	12
mid	48	96	35	0	33	2	0	29
post	40	86	26	0	26	0	0	24

TW completed all activities from Week 1- 5 but was absent due to illness in Week 6.

TW Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	63	34	49	2	47	2	0	39
wk2	78	27	53	1	52	1	0	42
wk 3	70	26	51	2	49	1	1	40
wk4	77	34	50	0	47	3	0	41
wk5	56	28	35	1	32	3	0	26
wk6	ABSENT							
pre	123	93	81	0	80	1	0	66
mid	123	93	71	0	69	1	0	62
post	173	163	94	4	85	7	2	80

ZV completed most activities but missed Week 5 due to illness.

ZV Data

	TWC	TTT	TOW	GVOC	T1	T2	T3	DW
wk1	34	21	29	3	26	3	0	23
wk2	50	24	32	2	29	3	0	25
wk 3	43	15	31	3	28	3	0	24
wk4	70	26	45	6	38	6	0	37
wk5	absent							
wk6	35	18	27	4	22	1	4	19
pre	43	68	32	0	29	2	0	21
mid	75	93	51	1	50	1	0	41
post	53	68	35	2	33	3	0	27

Appendix 6

Pre-Mid-Post Intervention Speech Sample Script

Today we will have a chat about some interesting animals.

Have a think about an animal that you really like. Picture the animal in your head and think about what it looks like and how it acts.

Can you tell me about your animal?

Prompt questions if necessary

- *What does it look like?*
- *How does it act?*

Think about how where your animal lives. Can you tell me about it?

Is there anything else you would like to tell me about your animal?

Thank you for talking to me about your animal.