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Experiences and Perceptions of Educators Implementing AAC in Inclusive Settings

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Abstract

Research shows that augmentative and alternative communication (AAC) can support the inclusion of students with complex communication needs (CCN) in inclusive school settings. AAC support for students in New Zealand is provided by a multidisciplinary team comprised of educators, specialists and family members. Successful AAC implementation can be challenging, and there are a number of factors which can potentially act as facilitators or barriers to successful AAC outcomes. To date, most research focusing on AAC in inclusive settings has been conducted outside of the New Zealand context.

Seven individual interviews were conducted with teachers and teacher aides working in inclusive settings, to explore their experiences of supporting students who used AAC. Seven key findings were identified from this study: (1) Educators identified short-term and long-term positive outcomes of AAC use, (2) Educators identified a range of factors which could act as barriers and facilitators to AAC use depending on their presence or absence, (3) AAC use had many positive impacts, including supporting students' speech and language development and reducing communication-related frustration (4) Educators advocated for the student's voice, perspective and rights to be considered with regards to AAC implementation and planning; (5) Collaboration between team members was viewed as important for successful AAC use, (6) Specialist AAC support was useful to educators, though some perceived that there was a lack of expertise amongst professionals and (7) Educators reported similar strategies to support the use of AAC within school settings. This study provides education professionals with an insight into the experiences of a group of educators who support students that use AAC.

Chapter 1.

INTRODUCTION

Introduction

This study explored the experiences of teachers and teacher aides who support students to use augmentative and alternative communication (AAC) systems in inclusive education settings. This chapter begins with an explanation of important terminology relating to the current study before describing the New Zealand context of learning support with a specific focus on students with complex communication needs (CCN). This is followed by an explanation of the background, rationale and purpose of the current study, including the author's perspective. The chapter then concludes with an overview of the structure of the thesis.

Terminology

There is some ambiguity of terminology within the field of AAC research (Sutherland, Gillon, & Yoder, 2005), thus it is important to provide clear definitions for the purpose of this study. Throughout this study, individuals who cannot meet their daily communication needs via speech alone will be referred to as individuals with complex communication needs (CCN), as is common in the literature (e.g. Beukelman & Mirenda, 2013; Iacono, Lyon, Johnson, & West, 2013; Light & McNaughton, 2014). Individuals may have CCN as a result of developmental or acquired disabilities, and they may use AAC to supplement or replace their speech in order to meet their daily communication needs. There is no typical individual who uses AAC and the demographics of people who use AAC (PWUAAC) have changed vastly since it was first introduced (Light & McNaughton, 2012), partially because AAC is no longer viewed as a last resort for those with CCN (Light & McNaughton, 2012, 2014). There

has been an immense increase in the number of individuals who receive support for AAC, and this population is now much more diverse, including individuals of a variety of ages and cultures (Light & McNaughton, 2014).

AAC is the broad term for methods of communication that can supplement or replace speech. The many different types of AAC systems available are often characterised by the type and sophistication of the technology. One method of classifying AAC systems is as either ‘unaided’ or ‘aided’ (Y.-C. Chung & Stoner, 2016). Unaided AAC systems do not require additional equipment or technology, an example of which is sign language. Conversely, aided AAC systems require equipment external to the user, such as communication books or boards, or speech generating devices (SGDs). Aided AAC can be further classified into ‘low-tech’ systems, which do not contain electronic components, and ‘high-tech’ systems which do (Iacono et al., 2013). Individuals with CCN may use a combination of AAC systems to communicate effectively in different contexts. Regardless of the AAC type, the overarching goal of AAC implementation is to “enable individuals to efficiently and effectively engage in a variety of interactions and participate in activities of their choice” (Beukelman & Mirenda, 2013, p. 8).

New Zealand Context

All children, including those with disabilities and associated CCN, have the right to be educated in mainstream, state schools in New Zealand (Ministry of Education, 2014b). Very few students with disabilities in New Zealand attend specialist schools, with most receiving their education in inclusive school settings (Ministry of Education, 2014b). Inclusion is one of the guiding principles of the New Zealand curriculum, which outlines that the learning needs of all students should be addressed, regardless of their individual abilities (Ministry of Education, 2007). Funding to support the learning and

participation of students with the most significant needs is provided through the Ongoing Resourcing Scheme (ORS) (Ministry of Education, 2014a). The ORS provides schools with funding for specialist teachers and teacher aides to support the student's classroom teacher. As well as this, specialist support from speech-language therapist (SLTs), occupational therapists (OTs), physical therapists (PTs), psychologists and special education advisors (SEAs) is available to school teams through this funding scheme (Ministry of Education, 2014a, 2014c).

Within New Zealand education settings, AAC support is provided by the student's team which includes their family, school staff and ORS specialist staff. SLTs who support the student as part of the ORS commonly provide low-tech or simple high-tech AAC, though this may depend on the confidence and AAC skills of the individual therapist. Depending on the complexity of the student's communication needs and the type of AAC required, a referral can be made for a specialist AAC assessment from The Talklink trust (The Talklink Trust, 2012). Following an assessment and recommendations from The Talklink Trust, the student's home and school support team, as well as ORS specialist staff are responsible for monitoring and supporting the implementation of the AAC system. There is a need to develop a greater understanding of how to support the teams who are facilitating students' communication.

Background and Rationale

Communication is an essential part of daily life and every individual has the right to freedom of expression through any chosen media (United Nations, 1948). Individuals with CCN may rely on AAC to meet their daily communication needs (Y. Chung, Berhmann, Bannan, & Thorp, 2012; Iacono et al., 2013) in home, education and community settings. Children who are learning to use AAC systems require support and

scaffolding from communication partners in their everyday environments (von Tetzchner & Stadsleiv, 2016), including those in school settings. As children may spend approximately 40 weeks of every year at school in New Zealand, their educators are significant communication partners, whilst also providing support and guidance for learning. It is therefore necessary to examine the experiences of educators who have supported students that use AAC, in order to provide a New Zealand perspective on successful outcomes of AAC use and facilitators and barriers to this success. To the best of the author's knowledge, there has been no previous published research in New Zealand that has investigated the experiences of educators supporting students to use AAC in inclusive settings. As well as this, there have been no New Zealand studies to date that have examined what educators consider to be successful outcomes of AAC use. The current study is therefore intended to provide insight into the experiences of New Zealand educators who support students to use AAC in inclusive classrooms.

Author's Perspective

I am an SLT who works in inclusive classrooms with children who receive ORS funding. The success and challenges that I have seen faced by students, families and educators, has lead me to complete this research. I am passionate about providing the right support for students and their teams at the right time, to further communication development and learning. I believe that exploring the perspectives of educators is necessary to begin to understand the support that they require and value most, therefore supporting my practice as an SLT.

Structure of the Thesis

This thesis is comprised of six chapters, the first of which has outlined the background, context and purpose of the current study. Chapter two begins with an overview of

language development as related to the use of AAC. The literature relating to outcomes of AAC use, along with the barriers and facilitators to this use, is then summarised. Chapter three describes the methodology of this study, including the research design and ethical considerations. Chapter four outlines the findings of this study which are then interpreted in chapter five. The final chapter discusses the trustworthiness of the findings, the strengths and limitations of this study and the implications for practice, before concluding with recommendations for future research.

Chapter 2.

LITERATURE REVIEW

Introduction

This chapter examines the literature pertaining to augmentative and alternative communication (AAC) use in education settings. It begins by discussing the importance of communication in education settings, before outlining theories of typical language development in order to provide the reader with background knowledge and context for the current study. Communicative competence and outcomes related to AAC use are then described. Finally, previously established facilitators and barriers to AAC use are discussed, along with the possible implications of these within school settings.

The importance of Communication

“Communication impacts all aspects of life” (Lund & Light, 2006, p. 285) and enables individuals to participate in a multitude of different experiences throughout their development. Through communication with others, individuals can meet their needs, express opinions, ask questions and clarify information given. Communication is also essential to establishing and maintaining interpersonal relationships. According to Beukelman and Mirenda (2013) it is not unusual for individuals with complex communication needs (CCN) to exhibit challenging behaviour if they have not yet learnt a symbolic means of communication. Aside from enabling individuals to meet social and emotional needs and manage their behaviour, adequate communication skills are essential for success in education settings. Communication is an integral part of all classroom tasks and subjects (Calculator, 2009). All students are required to participate in a range of social interactions within school settings, as well as academic activities such as reading and writing (Kent-Walsh & Binger, 2009). Without adequate

communication skills, students can experience challenges in acquiring literacy skills and are more likely to have increased anxiety and incidents of bullying (Dockrell & Howell, 2015). For these students, an inability to meet the language demands of the classroom may adversely affect their behaviour as they react to being unable to access the curriculum (Cross, 2011).

Given the impact of communication difficulties on educational achievement and social wellbeing, it is imperative that educators support students to meet the language demands of the classroom. This is particularly true for individuals with CCN who may experience physical and cognitive challenges in addition to language difficulties. These students must have access to and efficient, reliable forms of communication in order to succeed in inclusive education settings (Calculator, 2009). Educators therefore need to be aware of the communication challenges that students with complex needs face, in order to seek and provide the appropriate support. Specifically, for individuals with CCN who are without a reliable method of communication, educators must consider AAC systems for use in school (Kent-Walsh & Binger, 2009) as well as home and community settings.

Communication Development

A number of theories have been proposed to explain language acquisition in child development. Despite the sometimes vast differences between these theories, several acknowledge the role of communication partners in the child's development. For example, one of the most widely accepted theories of language acquisition is the sociocultural perspective for child development. This theory posits that children are products of the culture in which they live and that their cognitive development is dependent on their social interactions within these environments (Kail, 2010). Lev

Vygotsky, a proponent of sociocultural theory, suggested that children collaborate with those around them in order to reach their developmental potential (Vygotsky, 1978). He reasoned that a child's potential developmental level is greater than their actual developmental level, labelling the difference between the two as the 'zone of proximal development'. Through scaffolding from more experienced peers and adults, children can move through their 'zone of proximal development' to reach their potential and achieve learning which was not independently possible (Vygotsky, 1978).

Bronfenbrenner's ecological systems theory (1979) also stresses the important role of adults and more experienced individuals in children's overall development.

Bronfenbrenner developed an ecological model of child development to conceptualise the reciprocal relationship between the child and their everyday environments (Bronfenbrenner, 1979). This model presents a comprehensive view of all interactions that could impact on the growth and trajectory of an individual's development. The child is at the centre of this model, surrounded by their microsystem. The microsystem includes all individuals in a child's immediate environments, such as their family, peers and those in their education environments. Interactions within the microsystem occur directly between the child and those closest to them, thus these interactions have a direct impact on their development. The next layer surrounding the microsystem is the mesosystem, where the entities in the microsystem, excluding the child, interact and influence one another. Surrounding this, the exosystem encompasses the wider community, including neighbours and local industry. The final layer is the macrosystem, the wider context, which encompasses the laws, values, culture and attitudes of society. Bronfenbrenner outlines that a child's learning is shaped by the regular, sustained interactions that they experience directly or indirectly throughout the

different levels of these subsystems; that the child's interactions continually affect those around them and vice versa (Bronfenbrenner, 1979).

More recently, Tomasello (2009) described a 'usage-based' theory of language acquisition, in which the meaning of words are derived from the contexts in which they are used, and the structure of language develops through use. Specifically, Tomasello (2009) argues that, before speaking, children are developing intention-reading skills to understand the function of communication by others. They are also developing pattern-finding skills to learn about the grammatical conventions of a language. Similar to Vygotsky (1978) and Bronfenbrenner (1979), Tomasello highlights the importance of the input and support that a child receives. Skilled communication partners respond to the child's communication attempts, thereby giving them meaning. It is through the language modelled by these communication partners that children begin to identify patterns which they eventually apply to their own language use.

The above theories outline that language development is largely dependent upon the input and support received from skilled, experienced communicators in children's natural, everyday environments. In order to realise their communicative potential in their primary mode, children need modelling and scaffolding by advanced communicators. Additionally, children need to be engaged by others to learn purposeful communication in motivating, meaningful situations. They should be provided opportunities for reciprocal communication in different contexts for a variety of reasons. Children learning to use AAC may need further support from their communication partners, as they face additional language learning challenges as compared to their typically developing peers (von Tetzchner & Stadsleiv, 2016). Furthermore, they may only begin to receive support for language learning at a relatively late developmental age (Smith, 2015). Therefore, educators as well as

families, must be proactive in supporting the communication development of people who use AAC (PWU AAC), in order to maximise opportunities to further their communication development.

Communicative Competence in AAC

Achieving communicative competence in AAC is far more complex than learning how to use a specific system. To reflect this, Light (1989) proposed an initial definition of communicative competence for PWU AAC which included three key components: (a) functionality of communication, (b) adequacy of communication and (c) the development of knowledge and skills in linguistic, operational, strategic and social domains. There have been many changes in the field of AAC (Light & McNaughton, 2012, 2014) since this definition was first proposed, thus it has been expanded and reviewed twice (Light, Beukelman, & Reichle, 2003; Light & McNaughton, 2014). Following review, the main concepts of this definition have remained the same, though psychosocial factors are now included for consideration (Light et al., 2003). As well as this, the authors suggest that the breadth of communication skills for which AAC is required has increased significantly (Light & McNaughton, 2014). At present, communicative competence is described as being fluid, “a threshold concept with a focus on the attainment of sufficient knowledge, judgement and skills to meet communication goals and participate within key environments” (Light & McNaughton, 2014, p. 2). It is necessary to further explore this definition in order to highlight the vast array of skills that PWU AAC may need to develop for communicative competence.

Functionality of communication. The first critical component of communicative competence, functionality of communication, is the extent to which an individual is able to communicate within their natural, everyday environments (Light,

1989). Functional communication skills are those which “have consequences that are valued by individuals with complex communication needs and their partners in daily life” (Light & McNaughton, 2014, p. 2). Different individuals will experience varying communication demands based on the communication partners and environments that they encounter, thus functional communication is not the same for all individuals (Light, 1989).

Adequacy of communication. The second component of communicative competence is adequacy of communication; the degree to which individuals are able to successfully use functional communication skills. Light (1989) suggests that adequacy is not equal to the mastery of communication skills. Adequacy of communication may depend on the goals of the individual and the communication context, including the skill level of the communication partner (Light & McNaughton, 2014). Caution is required when defining adequacy of communication skills for PWUAAC as they may define their success differently to the professionals who are supporting them (Light & McNaughton, 2014).

Sufficiency of knowledge and skills. The third and final component of communicative competence is the sufficiency of knowledge and skills in linguistic, operational, social and strategic domains. Development of skills within these domains contributes to the adequacy of communication (Light, 1989). To develop linguistic competence, PWUAAC must develop linguistic skills in the languages used by their communication partners, as well as in the language of their AAC systems (Light & McNaughton, 2014). This includes developing receptive and expressive language as well as learning and applying semantic, syntactic and morphological rules. The development of linguistic competence is more challenging for PWUAAC than those who primarily communicate via spoken language (von Tetzchner & Stadskleiv, 2016).

One reason for this is that individuals who are learning to use AAC systems must usually learn to connect a concept with both the spoken word and the graphic symbol (von Tetzchner & Stadskleiv, 2016). Light and McNaughton (2014) also suggest that the design of the language code of individual AAC systems can have an impact on the attainment of linguistic competency.

PWUAAC also need to develop and utilise operational skills, which relate to the technical operation of AAC systems across all modes of communication, including selection methods and navigation skills for aided AAC systems (Light & McNaughton, 2014). For example, for an individual who can directly access their AAC system, operational skills may refer to their ability to select a target symbol with their finger. For individuals who are unable to directly access their AAC system, they may need to learn to select a target using a series of switches. Many individuals with CCN communicate using multiple modes of AAC (Lund & Light, 2006), thus they may be required to develop a broad range of operational skills to support their communicative competence.

In order for PWUAAC to develop social competence they must develop and apply sociolinguistic and sociorelational skills (Light & McNaughton, 2014). Sociolinguistic skills encompass pragmatic abilities, such as initiating interactions, turn-taking and topic maintenance. Another component of sociolinguistic skills is the ability to express a wide range of communicative functions, including requesting and confirming information, as well as providing information to communication partners (Light & McNaughton, 2014). Sociorelational skills are those necessary for the development and maintenance of effective relationships, such as expressing an interest in others and projecting a positive self-image (Light, 1989; Light & McNaughton, 2014).

Lastly, strategic competence refers to the ability of PWUAAC to use strategies to overcome communication barriers and breakdowns, which can occur as a result of AAC systems use, or limited competence in linguistic, operational or social domains (Light & McNaughton, 2014). Individuals may use temporary compensatory strategies to manage communicative challenges while developing competence in other domains, or they may use compensatory strategies long-term when the challenges in other domains cannot be overcome (Light, 1989; Light & McNaughton, 2014). Some examples of compensatory strategies include pre-storing phrases for quick communication, or giving clues to communication partners when a symbol is not in the AAC system, such as “It sounds like...” (Mirenda & Bopp, 2003).

In reviewing the original definition of communicative competence, Light et al. (2003) suggested that it was also necessary to consider psychosocial factors in relation to AAC use. These factors include the motivation, resilience and confidence of PWUAAC, as well as their attitudes and the attitudes of their families. Confidence is an important consideration, as it impacts on how likely an individual is to attempt communication (Light & McNaughton, 2014). Conversely, resilience affects whether or not an individual may choose to persevere when barriers are encountered or when communication attempts are unsuccessful (Light & McNaughton, 2014). Upon further review in 2014, Light and McNaughton concluded that the basis of the definition for communicative competence in AAC use has not changed. However, the way in which communicative competence is achieved has altered, as AAC technologies have developed and become more widespread (Light & McNaughton, 2014). They suggest that there is a need to investigate further approaches to support the development of communicative competence. Despite the complexity of achieving communicative competence in AAC use, the rewards are significant.

Outcomes of AAC use

Though the development of communicative competence for PWUAAC may be complex, many positive outcomes resulting from AAC use have been reported in the literature. The reported outcomes include perceived benefits of AAC use from a variety of viewpoints. As well as this, there have also been investigations into the language outcomes for PWUAAC. Both the perceived benefits and language outcomes are discussed below.

Perceived benefits. In determining what constitutes successful outcomes of AAC use, the viewpoints of key stakeholders including PWUAAC and their communication partners must be considered (Lund & Light, 2006). Researchers have examined a variety of stakeholder viewpoints relating to AAC use. They have reported a multiplicity of perceived benefits, some of which have been reported by PWUAAC themselves. One such study, conducted by Iacono et al. (2013) found that adults who used low-tech AAC perceived that their AAC helped them to meet their everyday communication needs, increase their independence and generally feel more empowered. In another study conducted by Y. Chung et al. (2012), individuals who used high-tech AAC reported that AAC enabled them to say whatever they wanted to say to a variety of communication partners. These perceived benefits are similar to those reported by other key stakeholders, such as family members.

The views of parents and caregivers of PWUAAC have been widely reported on in the literature (e.g. Bailey, Parette, Stoner, Angell, & Carroll, 2006; Calculator, 2013; Calculator & Black, 2010; McNaughton et al., 2009; Soto, Müller, Hunt, & Goetz, 2001a). Benefits have been identified across home, school and community settings. For example, in one study the significant others of PWUAAC reported that the use of AAC

reduced frustration for the individual with CCN, as well as their communication partners in a range of settings (Iacono et al., 2013). In 2006, Bailey, Parette, et al. investigated the views of caregivers of primary and high school students who used AAC. Caregivers perceived that AAC use supported their child's overall independence, which ultimately meant that they required less supervision. In addition, participants described an increase in the child's communicative competence, resulting in children being able to interact in a greater variety of settings, with a wider group of communication partners. Similarly, McNaughton et al. (2009) conducted an online focus group to explore the perspectives of parents of individuals with cerebral palsy aged from 6 to 30 years who used AAC. Parents in this study reported that when their children learnt to use AAC, there was an increase in their children's self-confidence. Increased communicative independence was another reported benefit, which resulted in reduced scaffolding of interactions by adults and more experienced communicators around the child. Families have outlined that these benefits also extend to school settings (Bailey, Parette, et al., 2006; McNaughton et al., 2009).

The teachers of students who use AAC have also perceived there to be many benefits (e.g. Bailey, Stoner, Parette, & Angell, 2006; Kent-Walsh & Light, 2003; Stoner, Angell, & Bailey, 2010). In 2006, Bailey, Stoner et al. investigated the perspectives of professionals regarding the use of AAC systems in both self-contained and inclusive classroom settings. The participants in this study were six special education teachers and one speech-language therapist (SLT) who supported students with moderate to severe disabilities in junior high or high school settings in the United States of America. A collective case study method was employed, in which data was collected through interviews, observations and a review of documentation. The findings from this study suggest that using AAC can ensure that students have more independence in the

classroom and that instruction can be tailored more easily to fit a student's needs. The teachers within this study also reported that the use of AAC enabled them to more effectively teach their students. As well as this, it was stated that the use of AAC can improve the behaviour of students. Whilst this was a relatively small-scale study, the chosen methodology allowed for an in-depth exploration of the views of participants. Due to the small-scale of this study, the findings should be generalised with caution.

There can also be benefits to the use of AAC for communication partners of PWUAAC (Y.-C. Chung & Stoner, 2016; Kent-Walsh & Light, 2003; Stoner et al., 2010). For example, benefits for educators were reported in a case study by Stoner et al. (2010) in which teachers perceived that they were under less pressure to translate a student's unintelligible speech when a student could use an AAC system independently. One teacher also described his relief at being able to better understand what the student had to say in class. While these are interesting findings, they are from a case study involving a single student, so they may not be representative of the perceptions of the wider teaching population. In addition to educators, peers can also benefit from interactions with PWUAAC. Benefits to peers include developing their listening skills as communication partners (Kent-Walsh & Light, 2003) and accepting and embracing diversity (Y.-C. Chung & Stoner, 2016).

Whilst some researchers have focused on documenting the perceived benefits of AAC, others have investigated measurable indicators of AAC success. Lund and Light (2006, 2007a, 2007b) undertook a series of studies evaluating the outcomes of AAC use for seven young men with cerebral palsy who had been using AAC systems for 15 years, since preschool. They completed a variety of assessments to evaluate the language abilities of these individuals, as well as investigating their quality of life and aspirations. The outcomes reported in this study were extremely variable, highlighting the challenge

of measuring and comparing outcomes for this population (Lund & Light, 2006).

Positive outcomes for some of these individuals included undertaking tertiary study and having a high quality of life. Some participants, however reported a lower quality of life and wished to gain employment but did not feel that this aspiration was realistic.

Thomas-Stonell, Robertson, Oddson, and Rosenbaum (2016) also measured outcomes of AAC use, focusing on preschool children. They identified improvements in receptive language skills, pragmatics and social skills, as well as in speech intelligibility.

Surprisingly, despite the many positive outcomes associated with AAC use, a limited body of research has reported some less desirable outcomes of AAC use. In a single case study in a classroom setting, teachers described specific AAC systems as being problematic for other students, in that the phrases were repetitive and the volume could not be adequately turned down (Stoner et al., 2010). For other students with complex needs in the same classroom, repeated messages on devices could be irritating (Kent-Walsh & Light, 2003). It is not clear how these reported negative outcomes for AAC could be overcome, though technological advances in the field of AAC are occurring rapidly (Light & McNaughton, 2012) thus these may be addressed in the near future. Arguably, the negative outcomes associated with AAC use are preferable to the negative outcomes which could be associated with individuals not being able to communicate in a functional manner.

Language characteristics. As well as investigating the perceived outcomes or benefits of AAC use, researchers have examined the language characteristics of PWUAAC. Individuals with CCN are a heterogeneous group with wide ranging levels of linguistic competence, however, there are some commonalities of language characteristics reported in the literature. One reported language characteristic is the use of brief, single symbol utterances (Smith, 2015, Binger & Light 2008) which often do

not parallel spoken language word order (Smith, 2015). Caution must be taken when theorising why this is the case, as this language characteristic may reflect choice of the part of the individual, rather than ability. Smith (2015) suggests that PWU AAC may choose to express shorter messages using AAC to increase their efficiency or to define a topic and thus give context before communicating using other modes. In addition, graphic symbols on some AAC systems may communicate a more complex message than that of a single word (Binger & Light, 2008), reducing the need for PWU AAC to communicate using longer utterances. Aside from personal choice and graphic symbolism, communication partners can also have an impact upon the expressive language of PWU AAC (Clendon & Anderson, 2016; Smith, 2015). Through the process of co-construction, communication partners can apply shared knowledge to translate and extend the utterances of PWU AAC (Clendon & Anderson, 2016). However, the overuse of this strategy in adult-directed interactions can negatively impact upon language development, as this can result in reduced opportunities to practice language skills independently in different communication contexts (Clendon & Anderson, 2016).

Differences in grammar have also been reported as language characteristics of AAC use, in that PWU AAC may use simple clauses which omit auxiliary verb and tense markers (Smith, 2015). Again, this does not necessarily reflect the abilities of the individual using the AAC system, but may relate to the capabilities of the AAC system itself (Smith, 2015; Sutton, Soto & Blockberger, 2002), efficiency of communication or a combination of factors. The limitations of specific AAC systems may also impact upon the expressive vocabulary abilities of PWU AAC, as what can be expressed is limited to what is available within the AAC system (Sutton, Soto, Blockberger, 2002). Though many PWU AAC may present with differences in grammar, there is great

variability across this population as some PWUAAC may also use complex syntax with few grammatical errors (Lund & Light, 2007a).

Further impacting on these language characteristics are the pragmatic challenges that PWUAAC may face. For example, PWUAAC may be passive communicators who initiate few interactions (Kent-Walsh & Binger, 2009), thus potentially limiting their social competence (Light, 1989; Light & McNaughton, 2014). One explanation for this is that speaking communication partners of PWUAAC may often assume the role of the initiator, driving the conversation topic, while the PWUAAC therefore assumes the role of the responder (Beukelman & Mirenda, 2013). The passivity of communication for PWUAAC may therefore be more indicative of an imbalance in conversational power rather than pragmatic difficulties (Beukelman & Mirenda, 2013).

Success versus abandonment of AAC systems

Although there are many benefits associated with AAC use, the implementation of AAC is not always successful and systems may be abandoned (Johnson et al., 2006; Sutherland et al., 2005). Johnson, Inglebret, Jones, and Ray (2006) used focus groups with 28 SLTs working in the United States of America to examine SLT perspectives on factors associated with the success and abandonment of AAC. A survey was then developed using these factors which was completed by 275 additional SLTs. The settings in which the SLTs who completed the surveys worked was mixed, however as a group, participants had the most experience working in public school settings. Other settings in which participants worked included early childhood centres, hospitals and rehabilitation centres. Within this study, only 39.35% of those using AAC on SLT caseloads were considered successful, having used their AAC for a year or more. A total of 26.68% of PWUAAC ‘inappropriately abandoned’ their systems, meaning that

they ceased to use their AAC despite SLT recommendations to the contrary.

Interestingly, a third of PWUAAC on SLT caseloads were not considered to be successful nor to have inappropriately abandoned their systems. With the varying definitions of success and limited recent statistics regarding AAC outcomes, it is difficult to ascertain the true levels of success for the population of people who use AAC. However, it is concerning that such high levels of abandonment have been reported by those working mainly in education settings. It is well established that AAC is vital to success in inclusive school settings, thus it is necessary to examine why abandonment may occur.

Facilitators and Barriers

A range of factors intrinsic and extrinsic to PWUAAC can impact on communicative competence and the success of AAC use (Light & McNaughton, 2014). Published studies which have focused on facilitators and barriers to AAC use have mainly focused on settings in the United States of America (Bailey, Parette, et al., 2006; Bailey, Stoner, et al., 2006; McNaughton et al., 2009; Soto, 1997; Soto, Müller, et al., 2001a). The New Zealand setting is distinct in many ways, including being culturally unique. Although many different cultures are present in New Zealand, it is officially a bicultural country (Lourie, 2016), as both the Māori and European cultures are recognised. The partnership of these distinct cultures, established upon the signing of the Treaty of Waitangi in 1840 (Ministry for Culture and Heritage, 2017), is still recognised today. Therefore, both of these cultures, in addition to the multitude of other cultures within New Zealand, add to the uniqueness of the setting. Despite the American focus of studies to date, in order to position the current study, it is necessary to examine barriers and facilitators to AAC use that have already been established within the literature.

AAC system and modality characteristics. Overwhelmingly, it is apparent that the success of AAC does not depend solely upon the user. Regardless of whether an AAC system is aided or unaided, limitations related to certain types of AAC have been reported as a barrier to AAC use. For those who use unaided systems, such as sign language, difficulties can be present when interacting with unfamiliar communication partners who do not understand their particular method of communication (Iacono et al., 2013). As well as this, some aided forms of AAC do not have the capacity to allow PWUAAC to express more complex messages (Bailey, Parette, et al., 2006; Smith, 2015; Sutton, Soto, & Blockberger, 2002). While some adult PWUAAC prefer to communicate using unaided communication (Chung et al., 2012), there are multiple reports of individuals who use a combination of communication modes, depending on the specific situation or environment (Calculator, 2013; Y. Chung et al., 2012). The availability of multiple communication modes can ensure that PWUAAC are able to overcome communication breakdowns, by using alternate methods of communication as a ‘backup’ to their preferred method (Calculator & Black, 2009; Iacono & Cameron, 2009). Therefore, although unaided and aided AAC types may have limitations, multiple modalities of AAC can facilitate effective communication with others.

Low-tech AAC systems, such as communication books or boards are by no means obsolete (Zangari & Van Tatenhove, 2009), despite the advances in high-tech AAC in recent years (Light & McNaughton, 2012). One advantage of low-tech AAC systems is that they are able to be used in situations where high-tech options may not be appropriate, and they are also a valuable back-up when high-tech AAC systems fail (Zangari & Van Tatenhove, 2009). The use of low-tech AAC can also reduce the demand for operational skills related to AAC use (Zangari & Van Tatenhove, 2009), which may facilitate language development for those with more challenging physical or

cognitive needs. Although there are advantages to low-tech AAC options, it can be difficult to contain all of the vocabulary and morphology for a robust language system in a form that is still easily portable (Zangari & Van Tatenhove, 2009). Low-tech AAC systems may lack certain characteristics which high-tech systems contain, though neither option is perfect in all situations.

High-tech AAC systems, such as speech generating devices (SGDs) need to be carefully matched to the user to ensure that the capabilities of the device are congruent with the individual's abilities (Johnson et al., 2006). The design and features of high-tech AAC, including the general characteristics, vocabulary and custom characteristics can either facilitate or hinder the individual's success in using the system (Johnson et al., 2006). While there can be advantages to the use of high-tech AAC systems, they are not without their faults. Frequent breakdowns of powered AAC systems can lead to these systems being temporarily unavailable, which is often frustrating for the user (McNaughton et al., 2009). Additionally, these breakdowns can impact the proficiency of PWUAAC, as it may interrupt their learning of a specific system (Rackensperger, Krezman, McNaughton, Williams, & D'Silva, 2005). In circumstances such as these, PWUAAC then have to rely on other AAC systems to support their communication. Parents and caregivers of PWUAAC have reported that the impact of device breakdowns can vary depending on the user's dependence on the device (Bailey, Parette, et al., 2006). Device reliability is a barrier that has been reported frequently in the literature from the viewpoints of PWUAAC, family members and educators (Bailey, Parette, et al., 2006; Bailey, Stoner, et al., 2006; McNaughton et al., 2009; Rackensperger et al., 2005).

Regardless of whether AAC systems are low or high-tech, ease of use can facilitate AAC implementation (Bailey, Parette, et al., 2006; Bailey, Stoner, et al., 2006). There

are many factors that may be considered as contributing to ‘ease of use’ of a device, but it is essential to also consider the physical characteristics of the device, aside from the software. Some PWUAAC can struggle with physical access to a device (McNaughton et al., 2009). In addition, PWUAAC with physical disabilities can struggle with device portability. As such, some PWUAAC can only use their AAC devices in certain positions and environments, such as when seated in a specific wheelchair (Rackensperger et al., 2005). This can ultimately reduce their independence and communicative competence. Portability and durability of devices can also be problematic (Bailey, Stoner, et al., 2006), and it may become the responsibility of others to transport the system for PWUAAC (Stoner et al., 2010). To overcome barriers such as these, PWUAAC have suggested that they need greater involvement in the assessment and decision-making phase of AAC intervention (Rackensperger et al., 2005).

Another potential barrier or facilitator to AAC implementation is the extent to which AAC systems allow individuals to express their unique personalities, identities and cultures. Some reports within the literature suggest that there may be a mismatch between the identity of a PWUAAC and their AAC system. For example, Wickenden (2011) found that adolescent PWUAAC sometimes felt limited by the vocabulary available on their system that others had chosen for them. Specifically, there was limited or no access to certain slang and swear words that some of these teenagers would have liked to use to express themselves. Some adult PWUAAC have also expressed frustration at the highly-synthesised voices available for high-tech AAC and suggested that they need to be developed to sound more like a human voice (Y. Chung et al., 2012). Many technological advances have been made in the field of AAC (Light & McNaughton, 2012), though researchers have commented that AAC technology and

systems need to be more research-based (Light & McNaughton, 2013) in order to better address the needs of PWUAAC.

Training and Support. A strong barrier to AAC implementation reported in the literature is the limited amount of training that is often available when new AAC systems are introduced (Bailey, Parette, et al., 2006; McNaughton et al., 2009; Sutherland et al., 2005). If those supporting PWUAAC are not adequately trained in the use, management and programming of a device, they are not able to adequately model the use of the device and therefore may be unable to help PWUAAC to reach proficiency. In order to better understand parents' experiences of AAC service provision, Anderson, Balandin, and Stancliffe (2014) interviewed six Australian parents of children who used SGDs. Some of the parents reported receiving little support in the early stages of SGD implementation. In other studies, educators, families and SLTs alike have stressed the need for further training when a new system is selected to facilitate its successful implementation (Bailey, Parette, et al., 2006; McNaughton et al., 2009; Sutherland et al., 2005).

Aside from support in the early stages of implementation, ongoing support is also required for AAC implementation, especially to manage high-tech AAC system breakdowns. There is often a lack of support to manage these breakdowns (Bailey, Parette, et al., 2006; Soto, Müller, et al., 2001a). However, it appears as though access to technological support may be specific to the AAC system, as some PWUAAC have reported positive experiences in accessing support for breakdowns from device manufacturers (Rackensperger et al., 2005). To overcome a lack of technical support, some PWUAAC and their support people have developed enough proficiency to manage breakdowns themselves, though for PWUAAC with physical difficulties, external support may still be required (Rackensperger et al., 2005). It is possible that

more support may be available to manage breakdowns for AAC systems on mainstream technology such as iPads.

Within different countries, the training and support available for AAC service can be variable and is often dependent on government policies or the geographic location of families. This can present some additional challenges to the provision of AAC services. Recently, to overcome some challenges in typical AAC service delivery models, some SLTs have begun to offer alternative models of service delivery, including telepractice (Anderson, Balandin, & Stancliffe, 2015). Initial findings indicate that these service delivery models may be effective for providing support to those who are geographically isolated, or time poor (Anderson et al., 2015), though further research into these options is required.

Communication Opportunities. Individuals who are learning to use AAC are often immersed in a spoken language environment (Smith, 2015), consequently experiencing a mismatch between the input of the language that they hear and the output mode that is available to them expressively, usually symbolic communication (Beukelman & Mirenda, 2013). This can present a challenge for individuals learning to use AAC who are expected to developing proficiency in a communication mode that differs from the primary mode used around them. In addition, individuals with CCN may only receive access to AAC at a relatively late development age (Smith, 2015) in comparison to typically developing peers, who have their primary expressive mode of communication modelled from birth. It is therefore imperative that targeted intervention is provided to individuals learning to use AAC. As part of this, they should be provided with multiple opportunities to explore communication through multiple modalities in a language rich environment.

Von Tetzchner and Stadskleiv (2016) outline three requirements for a ‘competent environment’ to support children who are learning to use AAC; those around the child must recognise the need for AAC; they must make AAC available in all situations with all communication partners; and they need to be able to support and scaffold the child’s interactions. Essentially, children learning to use AAC are dependent upon the deliberate input of those around them to scaffold and support their communication development (von Tetzchner & Stadskleiv, 2016). It is therefore crucial that those supporting the developing individual are aware of and able to use effective communication partner strategies. One of these strategies, aided language stimulation (ALS), is a type of interactive modelling (Sennott, Light, & McNaughton, 2016) in which those around PWUAAC model the use of aided language in meaningful, everyday contexts. Within the literature, this is referred to by a number of different terms (Allen, Schlosser, Brock, & Shane, 2017) including ‘partner augmented input’, ‘natural aided language’ and ‘aided language modelling’ (Senner & Baud, 2017). Disregarding the specific label given, these types of communication partner interventions can lead to improvements in syntax, morphology, semantics and pragmatics (Sennott et al., 2016).

Attitudes and Expectations. According to SLTs, some adults with complex needs may choose not to use AAC systems despite the recommendations of SLTs (Sutherland et al., 2005). For some younger PWUAAC, the refusal of AAC may not be their choice, but may be a direct consequence of the attitudes and beliefs of their parents or caregivers. Familial attitudes towards AAC systems can sometimes impact on AAC service provision (Iacono & Cameron, 2009). In 2009, Iacono and Cameron interviewed SLTs working in early childhood settings in Australia. These SLTs reported that families often viewed AAC as a last resort for their children and sometimes did not

want their child to be using AAC. In some cases, differing attitudes towards AAC within families could also impact on AAC implementation. The SLTs reported that some families had views of SLTs working within ‘traditional models’, targeting speech sounds whilst working directly with the child. This made it more difficult to engage families in the naturalistic intervention typically recommended to support AAC implementation. Recommendations that these SLTs made for AAC intervention included viewing the parents as the primary focus for the intervention and upskilling them. These SLTs also highlighted the importance of being somewhat flexible with service provision; supplementing naturalistic approaches with direct SLT input as the child required it. These findings regarding service provision are similar to those of De Bortoli, Arthur-Kelly, Mathisen, and Balandin (2014), who reported that some teachers, parents and other community members still expected intervention to take place within a withdrawal model.

In an attempt to explain why families may have negative attitudes towards AAC, some teachers have perceived there to be a certain ‘fear’ of technology amongst some families (Bailey, Stoner, et al., 2006). These teachers have also suggested that families may lack knowledge about AAC devices and the potential positive impact they could have on their child’s communication, as well as experiencing a lack of time at home for implementation (Bailey, Stoner, et al., 2006). Family and caregivers of PWUAAC, play a large role in the implementation of AAC, as they spend such a large amount of time with them. Their attitudes and beliefs can impact largely on how much they are willing and able to support the implementation of an AAC system. As family and caregivers often know the AAC user well, they may be less likely to encourage the AAC system at home, as they may already be able to accurately interpret an individual’s non-symbolic communication (Bailey, Parette, et al., 2006). Although some families may require

support to understand the wider implications of AAC use, other parents and caregivers expect that AAC will allow their child more communicative opportunities (Bailey, Parette, et al., 2006).

Within the wider community, attitudes towards AAC use can impact individuals in school and community settings (Iacono et al., 2013; Stoner et al., 2010). For example, perceived negative attitudes towards AAC use can reduce an individual's willingness to communicate with unfamiliar communication partners (Iacono et al., 2013). In order to overcome such barriers, family members of PWUAAC have suggested that communication partners need to show an interest in an individual's AAC and be patient (Bailey, Parette, et al., 2006). Within schools, peers of PWUAAC may need support to develop communication partner skills, to reduce the sometimes negative and challenging nature of peer interactions (McNaughton et al., 2009). In some instances, educators may need to scaffold student interactions in order to facilitate the development of peer relationships (Soto, Müller, et al., 2001a). Once established, peer relationships can be a powerful source of natural support in the classroom which can enhance an individual's use of AAC (Soto, Müller, et al., 2001a) and lead to more naturally occurring social interactions with peers (Stoner et al., 2010).

As well as peer attitudes, teacher attitudes towards AAC use can also have a large impact on student's educational experiences. Soto (1997) found that the beliefs of educators regarding a student's ability to use AAC can impact either positively or negatively on the amount of support and effort they provide for these students. Also, teacher beliefs about the student's potential to learn to communicate more effectively was found to be the strongest direct influence on the teacher's intention to use AAC in the classroom. Those teachers who believed that they had responsibility and the skills to support students to increase their communication skills were more likely to have

positive views of their student's abilities to learn to communicate more effectively.

Soto's (1997) study also had the important finding that teachers who believed they had a shared responsibility for implementation of AAC alongside the SLT, also had more positive perceptions of student's ability to learn AAC.

It is not obvious how the barriers associated with the beliefs and attitudes towards AAC may be addressed. The findings from some of these studies (e.g., Soto, 1997) may be representative of that specific time period within the AAC field, as AAC technologies have become more mainstream and accepted (Light & McNaughton, 2012). It is possible that increased awareness and acceptance of AAC use has impacted on attitudes since this study was completed.

Team dynamics. The New Zealand Speech Therapists' Association (NZSTA) principles and code of ethics outlines the need for SLTs to collaborate with other professionals or individuals when supporting people with communication difficulties (New Zealand Speech Therapists' Association, 2015). SLTs may be part of a multidisciplinary team supporting students with complex needs alongside classroom and specialist teachers, teacher aides, occupational therapists, physiotherapists, psychologists and family members (Ministry of Education, 2015b). It is therefore necessary to explore the benefits of effective collaboration, as well as the factors which can impact upon this.

Hartas (2004) describes collaboration within school settings as being "a dynamic system for educational efforts which endorses collegial, interdependent and co-equal styles of interaction between at least two partners" (p. 34). Collaborative teaming can benefit the practice of the professionals involved. For example, SLTs can increase their knowledge of the language demands of the curriculum through collaboration with teachers

(Nippold, 2011), which in turn supports their classroom-based practice. Conversely, this collaboration allows SLTs to share their knowledge with teachers about language development and interventions (Nippold, 2011), which can support their teaching practice. SLTs have also described that collaboration with other professionals can support their practice by allowing them to consider different viewpoints and problem solve more effectively (De Bortoli et al., 2014). This collaboration between SLTs and teachers is considered to be one element of best practice for AAC implementation in inclusive classrooms (Calculator & Black, 2009).

The collaboration of the wider support team is also essential for supporting students to use AAC (Calculator & Black, 2009; De Bortoli et al., 2014), particularly when promoting the inclusion of these students in general education settings (Alquraini & Gut, 2012; Soto et al., 2001a; Soto, Müller, Hunt, & Goetz, 2001b). Ineffective teaming between professionals, PWUAAC and their significant others can be a major barrier to the implementation of AAC in a variety of settings (Bailey, Parette, et al., 2006; Rackensperger et al., 2005). There are a number of personal, ideological and organisational factors which can impact upon collaborative teaming when supporting students with communication difficulties (Hartas, 2004). Factors which can impact positively upon collaboration include having regular team meetings, the contribution of all team members towards ideas about how to achieve mutually defined goals and clear definitions of roles and responsibilities (Soto et al., 2001a). Team members also need to respect each other regardless of their role or position (Soto et al., 2001a) and communicate frequently and effectively (Bailey, Stoner, et al., 2006). In addition, teams require time, a shared understanding of the importance of communication, administrative support and support from all staff involved with the students (Hartas, 2004).

A factor which can impact negatively upon collaborative teaming for AAC implementation is a lack of key stakeholder involvement. Although professionals may be knowledgeable about different kinds of AAC systems, it is the PWUAAC and those closest to them who can provide more personalised information about potential requirements for a system (McNaughton et al., 2009; Rackensperger et al., 2005). Unfortunately, for PWUAAC in school settings, decisions regarding AAC suitability can be made by school teams with minimal stakeholder involvement (Bailey, Parette, et al., 2006). For the long-term success of AAC systems, PWUAAC need to take ownership and see value in their system (Johnson et al., 2006), which can be facilitated by being a valued and active member of an AAC team. PWUAAC therefore need to be heavily involved in the AAC system selection phase (Rackensperger et al., 2005). In addition to the involvement of PWUAAC, experts have stressed the need for parental involvement in supporting AAC implementation for school aged PWUAAC (Calculator & Black, 2009). This can increase the investment of families in the process and make the generalisation of strategies between home and school more likely (Calculator & Black, 2009). Through the knowledge gleaned from collaboration with families, SLTs are better able to plan and tailor intervention (De Bortoli et al., 2014) which they can then also transfer into school settings.

Professionals' knowledge and competency. Professionals such as SLTs often play a large role in the assessment and implementation of AAC, working alongside other professionals such as classroom and specialist teachers. Despite SLTs sometimes being perceived as the 'experts' within multidisciplinary AAC teams, SLTs can lack knowledge in the area of AAC. The lack of experience of SLTs has been noted by parents of PWUAAC (Anderson et al., 2014; McNaughton et al., 2009), some of whom have suggested that there may be limited access to AAC supervision for inexperienced

SLTs (Anderson et al., 2014). SLTs themselves have also reported variability in AAC experience, and many within New Zealand seem to be acutely aware of their lack of experience in this area. In 2005, Sutherland et al. surveyed New Zealand SLTs working in home, education, hospital and community settings. Over half of the SLTs surveyed indicated that they did not perceive themselves to be competent in delivering AAC services, indicating a great need for more training and support for SLTs in this area. Due to the time that has passed since the completion of this survey, it is necessary to be cautious in the interpretation of the results. It is possible that SLTs' awareness and competence in AAC service provision has increased since this time, although a recent Australian study has indicated a lack of expertise amongst some SLTs persists (Anderson et al., 2014). There is a perceived need for more AAC training for educators (McNaughton et al., 2009) as well as SLTs, to overcome this barriers for those working with students with multiple and severe disabilities (De Bortoli et al., 2014).

Though some experts have disagreed about who holds overall responsibility for AAC implementation in schools (Calculator & Black, 2009), it can often be teachers, alongside families who are expected to take the lead in supporting AAC implementation long-term. Teachers in general education classrooms are expected to take responsibility for the learning of all students within the classroom, including those with additional needs (Ministry of Education, 2014). Teaching students who use AAC can be a challenging and new experience for many educators. A major barrier to supporting students to use AAC within the classroom is a lack of time, particularly for collaborating with families and other school staff (Bailey, Stoner, et al., 2006). Teachers may also lack the time needed to learn how to use and programme the device themselves and to incorporate AAC system use into lesson plans (Bailey, Stoner, et al., 2006; Kent-Walsh & Light, 2003). Similarly, SLTs have reported that a lack of time can

impact negatively on AAC service provision (Bailey, Stoner, et al., 2006; Iacono & Cameron, 2009), reducing their ability to collaborate with teachers (Hartas, 2004). As well as this, the process of accessing AAC support can be complicated and time consuming (Sutherland et al., 2005).

Conclusion

There are many benefits and challenges to the implementation of AAC and it is imperative that PWUAAC are supported to develop communicative competency. Professionals supporting PWUAAC must have a clear understanding of the potential barriers and facilitators to implementation, in order to overcome challenges and provide appropriate intervention. Due to the unique cultural and geographical context of New Zealand, research is required to examine barriers and facilitators to AAC implementation that are specific to New Zealand education settings. Furthermore, with the exception of the study by Soto, Müller, et al. (2001a) there has been little focus on the views of teacher aides. This is despite the frequent presence of teacher aides within teams supporting students using AAC. As teacher aides and other educators are integral to collaborative teaming within AAC, it is necessary to examine their perspectives on barriers and facilitators as well as what they consider to successful outcomes of AAC use. The current study will provide a unique insight into the perspectives of teachers and teacher aides regarding AAC implementation within inclusive education settings, for students who use AAC and receive funding through the ORS service.

Chapter 3.

METHODOLOGY

Introduction

This chapter describes the methodological considerations that informed the design of this research and details the processes undertaken to complete this study. It begins by outlining the research design and rationale, before describing participant recruitment and data collection. The analytical framework used for data analysis is then described, as is the process undertaken for data analysis. The chapter concludes with a discussion of the ethical considerations for this study. Throughout this chapter, I will be using personal pronouns to refer to myself, the author. My personal experience of working as a speech-language therapist (SLT) has prompted me to complete this research, in order to better understand the experiences of the population that I often support. I am an SLT working in inclusive school settings, supporting educators and students with complex communication needs (CCN) to use and understand functional communication systems. I have previously worked within the health systems with adults with communication difficulties also. My work with both of these populations has contributed to my strong belief that functional communication is imperative to all individuals. Further to this, I believe that supporting individuals to learn to use various forms of AAC must be prioritised in home, school and community settings and that to not provide this support in its essence depriving individuals of a basic human right.

The Research Questions

The experiences and perceptions of teachers and teacher aides supporting students using AAC in inclusive education settings were examined in order to investigate the following research questions.

- (1) What do teachers and teacher aides working in inclusive school settings consider to be positive outcomes for students using AAC?
- (2) What are the barriers and facilitators related to achieving successful outcomes?

Research design

Qualitative research approaches. A qualitative, phenomenological approach was chosen for this study because this approach allows for the exploration of a phenomenon as experienced by others. There are many core characteristics of qualitative research including; naturalistic settings, the researcher being an integral instrument in data collection and the pursuit of a holistic account of the problem or issue (Creswell, 2014). Researchers employ qualitative methodological designs to gain an in-depth understanding of a phenomenon, to describe and understand concepts or occurrences (Silverman, 2014). It is also through qualitative research that an authentic understanding of participant experiences can be gained (Hinckley, 2014). The aims of this study related to exploring the experiences of educators in supporting students who used AAC, thus a qualitative approach was considered most appropriate. Specifically, a phenomenological research design was chosen to address the research questions within this study.

Phenomenological research design. Phenomenology is a person-centred approach to research (Hinckley, 2014) that allows researchers ‘to understand the lived experiences of persons about a phenomenon’ (Creswell, Hanson, Plano Clark, & Morales, 2007). This approach has many applications within the field of communication disorders (Hinckley, 2014) and can be used to explore the experiences of individuals relating to a specific phenomenon, in order to describe the ‘essence’ of this experience (Creswell, 2014). A phenomenological design was chosen for this research study as I

wished to explore the experiences of participants in order to describe them. The aim was not to explain these experiences and develop theories to inform decision making, as in grounded theory (Creswell et al., 2007). Furthermore, the aims of this study were not related to evaluating practice changes and interventions or to identify future needs for support service, but rather to allow participants the opportunity to describe their experiences as they perceived them. The phenomenon being examined within this study was that of supporting students who are learning to use AAC, through describing the perceptions and experiences of teachers and teacher aides.

Individual Interviews. Interviews are a data collection method consistent with phenomenological approaches (Hinckley, 2014) and are a popular tool used by individuals conducting qualitative research (Creswell, 2012). Focus groups were initially considered for data collection in this study however, due to the geographical dispersion of participants, individual interviews were used instead. Individual interviews are an especially popular method of data collection within education research, despite their time-consuming nature (Creswell, 2012). Depending on the aims of the study, researchers can use structured, semi-structured or unstructured interviews with individuals or groups to gather their data. Interviews are typically used to gather participant views and opinions on important topics (Creswell, 2014). Researchers in the field of communication disorders have used semi-structured individual interviews to examine the perspectives of participants in a particular area of concern (Daniel & McLeod, 2017; Lund, Quach, Weissling, McKelvey, & Dietz, 2017; McCormack, McLeod, McAllister, & Harrison, 2010). Specifically, McCormack et al. (2010) used semi-structured interviews to deeply explore the experiences of children with speech sound disorders and their significant others. One benefit of using semi-structured interviews for data collection is that they allow the researcher to focus on defined areas

of a topic and to probe specific areas of interest (Hinckley, 2014). This is typically through the use of open ended questions that prompt participant discussion but also allow them to discuss in depth areas that are of importance to them. Creswell (2012) suggests that interviews are best used with participants who are articulate and can share ideas comfortably.

Although individual interviews are used as a tool for the exploration of personal experiences, a limitation of this data collection method is that the information disclosed by participants is 'filtered' through their views (Creswell, 2014) and may not be representative of the objective experience. However, it could be argued that this matters little within a phenomenological research design as the researcher is aiming to understand the 'essence' of the experience as perceived by participants. Another limitation of individual interviews is that participant disclosure can be biased by the very presence of the researcher (Creswell, 2014), though this cannot be overcome as researchers are a key instrument in interview data collection (Creswell, 2014). Within this study, it is conceivable that participants may have preconceptions about the information that I, as researcher and SLT, was attempting to gather. Information shared with the SLT about the participants' practice may be different to that which they would share with their peers who are also educators. For the current study, open ended questions were used deliberately to ensure participants were able to best describe their experiences in their own words, rather than being forced into responding within constraints set by the researcher (Creswell, 2012).

Telephone Interviews. Telephone interviews can be conducted in a similar manner to face to face individual interviews (Creswell, 2012). One major limitation of conducting interviews via telephone is that the non-verbal communication between the interviewer and participant is reduced. This may affect the researcher's ability to fully

understand the participant's experience of a phenomenon (Creswell, 2012). However, telephone interviews are an appropriate method of data collection when it is not possible or convenient for the researcher and participant to meet in person, which typically occurs due to geographical dispersion (Creswell, 2012). As focus groups and face to face interviews were not feasible, telephone and video call interviews were offered to participants. All participants chose to complete their interviews via telephone.

Positionality

The researcher is considered to be a 'key instrument' within qualitative research studies (Creswell, 2014). It is thus conceivable, if not inevitable, that the experiences, worldviews and personal values of individual researchers will impact upon the way in which they conduct and interpret qualitative research. While it a reasonable assumption that the personal backgrounds of researchers could be a potential source of bias in studies, some have asserted that it is not possible for researchers to separate their own personal views from research interpretations (Creswell, 2012). In fact, Lincoln (1995) stated that the attempt of researchers to detach themselves from their own experiences and remain objective during research does not, in fact, improve the quality of the research. Creswell (2014) suggests that researchers should have awareness of their personal experiences and views at the outset of studies. It is therefore necessary to identify and present my world-view and experiences in relation to this study.

My preferred model of working is through collaboration with the individuals and their significant others, as well as other professionals. In my opinion, a collaborative model ensures that those who know the individual best are able to provide communication support in every day, naturally occurring situations, increasing functional learning opportunities for the individual. I believe that this collaboration between professionals,

the individual and their family is essential to achieving successful outcomes in functional communication. These beliefs and my experiences undoubtedly influence my interpretation of information shared with me by participants. Disclosure of my role to participants is important to position myself within this research and acknowledge the potential bias in the interpretation of results because of my world view as an SLT and researcher. In order to reduce this potential bias due to my background, semi-structured interviews were used to allow participants to describe their own experiences in their own words, as impacted upon by their own individual backgrounds and world-views.

Participant recruitment

Participants who met the following criteria were recruited to participate in individual interviews for this study: (a) being a teacher or teacher aide (b) working in an inclusive school setting (c) currently working or had previously worked with a student using at least one type of aided AAC within the past 2 years. To narrow the focus of this study, AAC included both low, mid and high technology options, but excluded the use of only unaided AAC, such as NZSL and/or Makaton sign. For the purpose of this study, inclusive settings were defined as general education schools in which students spent the majority of the school day in mainstream classes, but may also have spent a portion of their time in a supported learning unit. Participants were recruited outside of the region that I work in as an SLT, in order to avoid potential conflicts of interest and other ethical issues.

Participants were recruited via The TalkLink Trust, a charitable trust in New Zealand which employs professionals such as SLTs and occupational Therapists (OTs) to provide clients of all ages with suitable AAC to meet their communication needs. A TalkLink regional manager was approached about this research, before contact was

made with the General Manager. The General Manager agreed to support the recruitment phase of this research by sending an information sheet (see Appendix A), which provided detailed information about the study, to potential participants via email. Information regarding the study was sent to schools that were known to have previously or were currently, supporting students who used AAC. Two weeks after the initial email was sent, the General Manager sent a follow up email to ensure this information had been received by schools. The General Manager of TalkLink also distributed information sheets regarding the study to potential participants during professional development courses that she was involved in running. Upon receiving information about this research, interested staff who met the criteria were invited to contact me directly for further information. If participants met the criteria for the study, they were sent a consent form which they scanned and returned via email before their participation.

Initially, I aimed to interview 10 participants in total with an even split of five teachers and five teacher aides, however this was not possible due to difficulties with participant recruitment. The participants were one classroom teacher, four specialist teachers and two teacher aides who worked within inclusive school settings within a region of New Zealand. The teachers and teacher aides who participated did not work within the same classrooms, but some did work within the same school. Almost all of the educators who participated currently or previously supported only one student to use AAC, while four educators had supported more than one.

Data Collection Methods

There were two distinct data collection phases with this study. Firstly, in phase one, individual interviews were used to collect information about participants' experiences.

Then, in phase two, questionnaires were used as part of the data analysis procedures to explore the trustworthiness of the analyses. As phase two of this study was part of validation of results during data analysis, this is discussed within the data analysis section of this chapter. The rationale for the research methodology and descriptions of data collection and analysis procedures for phase one are provided below.

Instruments.

Questions for Individual Interviews. A series of open ended questions were developed for the individual interviews, relating to the research questions of this study (see Appendix B). These questions were designed to be open ended, in order to allow the participants the opportunity to share their experiences, while minimising the influence of the researcher's experience on their responses (Creswell, 2012). These questions were not intended to lead participants but were broadly generated from themes gathered during the literature review process regarding educator experiences in the field of AAC. The questions aimed to explore participants' experiences of AAC, including successful and unsuccessful experiences and the perceived contributing factors. Participants were asked to reflect on their experiences supporting students who used AAC, including the success that they were aiming for, the success that was achieved and their feelings of competence and confidence during the support process. In addition, they were also asked about what support educators needed when supporting the AAC implementation process. Experience and behaviour questions (Patton, 2015b) were developed to elicit discussion regarding the observable behaviours of participants' AAC support practice. An example of this type of question used in this study is "Think back about a specific student that you have supported who used AAC. Can you talk me through this experience?". Opinion and value questions (Patton, 2015b) were created to explore the beliefs and perceptions of participants as pertaining to AAC use, such as

“What support do you think educators need when they are supporting students who use AAC?”. Along with these questions, probes were also developed to be used as required to encourage participant elaboration and discussion. Before individual interviews took place, the questions and probes were shared with my supervisors for feedback around the clarity of meaning and were adjusted as necessary.

Procedures.

Individual interviews. Data were collected through interviews over the telephone, which were recorded using a voice recorder. Participants advised me of the time and means of interview which was most convenient to them. All participants chose to be interviewed via telephone. I conducted all of the interviews for this study, using interviewing experience that I have gained from my experience as an SLT. This experience includes one year working with adults in hospital and community settings and three years of clinical experience working with children and adults in the Education system.

At the beginning of each interview, I introduced myself and ensured that the scheduled interview time still suited the participant. Participants then had the details of the study explained to them again, including their right to withdraw from the study at any point up until data collection. I emphasised to participants that it was their experiences and views which were sought, thus the interview would consist of open ended questions which they could answer as they wished. Participants were asked to begin by sharing information about their experience working with students using AAC before proceeding to other questions to explore these experiences further. See Appendix B for a schedule of the individual interviews.

Throughout the interviews, I asked participants open-ended questions (see Appendix B) and provided non-directive comments, asking them further questions to clarify their meaning or to prompt them to elaborate as necessary. Each individual interview took no longer than 40 minutes in total. At the conclusion of each interview, participants were thanked for their time.

Digital recording and transcription. Voice recordings were made for the entire duration of individual interviews. These were recorded using an Olympus digital voice recorder. Immediately following the individual interviews, I reflected upon each interview and made notes about any distinct comments or ideas discussed. Recordings from the individual interviews were transcribed verbatim by myself and entered into a word document with any additional notes added.

Member Checking. Following the completion of interview transcripts, these were emailed to participants for verification. This was an opportunity for clarification of any answers given but also to request omission of any responses. This was deemed important due to the nature of discussions which may have been critical of the practice of other educators or services. No participants made changes to their comments during this process. As member checking does not add to the validity of a study (Bazeley, 2013) it was used primarily as a means of clarifying participant voice and protecting the autonomy of participants. As well as this, member checking was used to add to the rigour of data collection by increasing the trustworthiness of interview data.

Data Analysis

Data analysis framework. Within qualitative methodological designs, data is collected that requires a level of analysis to ensure that it is made sense of and accurately synthesised (Attride-Stirling, 2001). One such method of interpreting data,

thematic analysis, is often used by researchers in qualitative studies relating to communication disorders (De Bortoli et al., 2014; Iacono & Cameron, 2009; Iacono et al., 2013). Specifically, Thematic Network Analysis (TNA) is a method that has been used by Goldbart and Marshall (2014) in research focusing on AAC. TNA provides a method of identifying and then organising qualitative data into linked ‘networks’, through three distinct phases. This begins with breakdown of the text, then the exploration of the text which is finally followed by the integration of information summarised during exploration. Visual thematic networks are created to demonstrate how the information within the text is linked within levels of meaning. TNA is thus an appropriate tool for summarising and interpreting data in a simple and transparent manner (Attride-Stirling, 2001).

Data Analysis Procedures. Following the transcription of individual interviews, TNA was then implemented following the six steps described by Attride-Stirling (2001). In the first step a ‘data-driven’ coding system was developed, in which codes were derived directly from data within the transcripts (DeCuir-Gunby, Marshall, & McCulloch, 2001). To do this, a sample of interview transcripts were broken down into meaningful units of texts (DeCuir-Gunby et al., 2001) and labelled according to the underlying idea or meaning within each. These labels were compared and contrasted across the sample transcripts, eventually being refined into codes. A coding book (see Appendix C) was then created in which the code along with a definition and an example were recorded (DeCuir-Gunby et al., 2001). This was shared with a colleague who provided feedback regarding the clarity of the code definitions, as a means of adding to the rigour of this process. Following the development of the coding system, all the transcripts were coded in preparation for the second stage.

In the second step of TNA, the excerpts of the overall text were re-read within the context of their coding group and any apparent underlying themes were identified. The themes were then further refined, as recommended by Attride-Stirling (2001), to ensure that they were discreet but broad enough to capture the meaning behind segments related to one another. This process ensured that there were no repetitions of themes, but also ensured that succinct themes were beginning to be developed (Attride-Stirling, 2001).

Following this, in the third step, networks were constructed using the identified themes. Themes were sorted into groups with other similar themes. The initial themes that were identified were labelled 'Basic themes', thus forming the beginning of the thematic network. Next, the basic themes were arranged into 'Organising themes' which centred on larger issues shared by basic themes. The organising themes were then analysed to identify the common meaning amongst these themes which then shaped the 'Global theme' which Attride-Stirling (2001) describes as "the core, principle metaphor that encapsulates the main point in the text" (p. 393). These themes were then organised visually into a thematic network. The themes at each level were then reviewed again to ensure that the Global theme was in fact the correct interpretation of the text before moving onto step 4 of the process.

In the fourth step, the derived themes were compared with transcript quotes, with a quote being used as evidence for each identified theme. Within this step, patterns that were beginning to appear were noted so that the analysis could begin to be elaborated. Phase two of data collection occurred within this step of the TNA process and was completed in order to add credibility and transferability to the results of this study (Goldbart & Marshall, 2014). To achieve this, the results from the study were shared with individuals who had similar experiences to the original participants (Attride-

Stirling, 2001), following the same procedure to that of Goldbart and Marshall (2014). The themes were shared with specialist teachers, classroom teachers and teacher aides who work with students with Ongoing Resourcing Scheme (ORS) funding at a specialist teacher network meeting in a separate region from where individual interviews were conducted. Educators at the meeting met the criteria for participating in this phase of the study if they had (a) supported a student who used AAC and (b) were a teacher, specialist teacher or teacher aide who had worked in a general education setting. To protect the confidentiality of the phase one participants, the educators were not told the location of the study during the presentation of the information.

During the sharing session, those present at the meeting were given an information sheet (Appendix D) and invited to complete a questionnaire (see Appendix E) to give feedback on the similarities and differences between the themes shared and their own experiences. The questionnaire included two open ended questions which were designed to encourage participant reflection on whether the themes presented were similar or different to their own experiences supporting students who used AAC. Those who wished to participate were asked to anonymously place the forms into a box at the back of the room upon their completion. All identifying information from received questionnaires was removed, before this information was analysed to compare and contrast data. Only three educators, who were all specialist teachers, completed the questionnaire. The thematic network was then summarised in the fifth step, with the interpretation and analysis of data in relation to the research questions taking part in the sixth and final step. Further information about the thematic network and the interpretative process for this final step is included in the Discussion chapter.

Ethical Considerations

As qualitative research projects often rely on high levels of participant disclosure (Creswell, 2012), it is of vital importance that researchers acknowledge and address potential ethical issues when conducting research projects. Some of potential issues include informed consent, cultural considerations, privacy and confidentiality. This research had a high potential to involve participant discussion of the practice of others within school teams and from other organisations, thus careful ethical consideration was essential. Ethics approval for this study was obtained through the Massey University Northern Human Ethics committee (Appendix F).

Informed consent. When completing research with human participants, their informed consent is essential to preserve and protect their self-determination and freedom of choice (Cohen, Manion, & Morrison, 2011). Two critical components of informed consent are: the voluntary participation of individuals in research, and ensuring participants are fully informed about the process (Gregory, 2003). In order to ensure that the principles of informed consent were upheld in this study, participants were provided with information sheets (see Appendix A) before the study. These contained a level of detail that allowed them to understand their participation in the research project and any potential benefits and risks. Participants were encouraged to contact me to ask any questions prior to agreeing to participate and were also offered this opportunity again immediately before individual interviews took place. For phase two of this study, participants were informed that they were consenting to participate in the research by completing and submitting their questionnaires. Throughout the study, participant rights to autonomy were ensured by making sure they were aware that their participation was not mandatory and that they were able to withdraw their consent at any point prior to data analysis. Participants in individual interviews were asked to

provide written confirmation of their consent by completing a consent form (Appendix G) prior to their participation.

Confidentiality. When agreeing to partake in research projects, participants often place a high level of trust in researchers (Creswell, 2012). In order to maintain this trust, it is vital to protect participant rights to confidentiality. Furthermore, assuring participants of confidentiality of research can encourage participants to be more open and frank (Gregory, 2003). Safeguards used within this study to ensure participant confidentiality included using careful data collection and storage methods. For example, once collected, data were stored in a password protected format only available to me. During data collection, participants were asked not to mention any students by name or to give any identifying information about students such as the nature of their disability, their age or their ethnicity. During data analysis and presentation, every effort was made to ensure that information disclosed by participants would not be presented in a way that would identify them. This included giving participants labels within transcripts, such as P1 in transcripts and F1 on phase two questionnaires. Due to the identifiable characteristics of teaching teams and students within the relatively small geographical region, it was vital to withhold information relating to the region in which the research took place. In instances in which educators did mention a student or colleague by name, an 'X' was used in written transcripts.

Privacy. As this research used individual interviews, it was not possible to ensure the absolute privacy of participants through anonymity. Thus, safeguards were employed to ensure as much privacy as was possible for participants. A third party contacted potential participants on behalf of me, providing them with information on how they could take part in this research should they wish to. The third party, whom had a working relationship with participants, was not informed of whether or not

participants had agreed to participate. In addition, no more information was collected about the participants than was required to provide a context for participant experiences within this research.

Conflict of interest. I also sought permission from my employer to undertake this study to ensure any perceived conflicts of interest were identified and mitigated. One potential conflict of interest was that I am employed as an SLT and may have known some of the target participants within my region. To mitigate this conflict, participants were sought from a different region. It was important to ensure participants understood that I was not completing this research on behalf of the organisation by I am employed, thus a third party completed participant recruitment. This helped to preserve working relationships and also reduced the potential for coercion during recruitment.

Chapter 4.

RESULTS

Introduction

The purpose of this study was to explore the experiences of educators when supporting students who use AAC, with a particular focus on the perceived positive outcomes for these students and the barriers and facilitators to this success. Participants were asked to discuss their experiences supporting students who use AAC, including describing successful strategies that they had used. In addition, they were asked to identify the supports needed for educators throughout the process. In this chapter, a summary of the results from individual interviews is presented.

Participant Information

Seven participants were interviewed in total; one classroom teacher, two teacher aides and four specialist teachers. The participants were from a mixture of urban and suburban areas; three worked in secondary schools and the other four in primary settings. See Table 1 for a breakdown of participant information. All of the participants worked in schools in which students who used AAC spent at least a part of their day in a mainstream classroom. One of the teacher aides who was working in a primary school setting also spoke briefly of her experiences supporting a student in an early childhood setting. Two of the participants were from the same school. There was a disproportionate number of female participants compared to male, thus to protect the identity of individuals, all participants will be referred to as 'she' throughout this section. The findings from interviews with the classroom teacher, specialist teachers and teacher aides are presented together.

Table 1

Participant Role Information

Participant role	Educational Setting	Number
Classroom teacher	Primary School	1
Specialist teacher	Primary School	1
Specialist teacher	Secondary School	3
Teacher aide	Primary School	2

Thematic Analyses

Basic themes comprising each organising theme are presented according to salience and in a manner that allows for flow and understanding of meaning from each theme (Attride-Stirling, 2001). Basic themes, identified through inductive coding of the interview transcripts, were grouped into organising themes. Following interpretation using Thematic Network Analysis (TNA) (Attride-Stirling, 2001), two global themes emerged from this study: Successful outcomes of AAC use and Facilitators and Barriers to AAC implementation. The organising themes underlying the global themes are explained in detail below. See Figures 1 and 2 which show the thematic networks for each of these global themes.

Successful outcomes of AAC use. This global theme directly related to the research question of ‘What do teachers and teacher aides working in inclusive school settings consider to be positive outcomes for students using AAC?’. Participants described both the long-term, aspirational goals they had for their students who used AAC and the short-term success that the students had achieved to date. This global

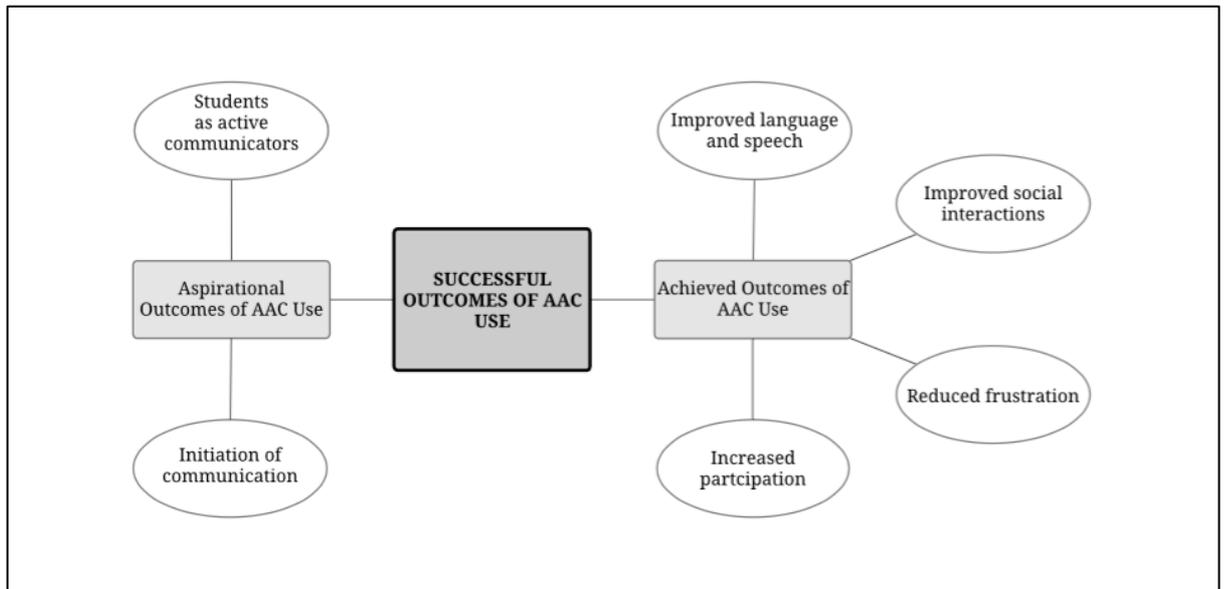


Figure 1: Thematic Network for 'Successful Outcomes of AAC Use'

theme encompassed two organising themes; 'Aspirational outcomes of AAC use' and 'Achieved outcomes of AAC use'. These themes and the basic themes underlying them are explained below.

Aspirational outcomes of AAC use. Participants spoke of the long-term outcomes that they were aiming for when supporting their students to use AAC. Most of these outcomes had not been achieved yet, but were often described as underpinning the short-term goals relating to AAC use that educators had set for their students. The basic themes included under this organising theme were 'Students as active communicators' and 'Initiation of communication'.

Students as Active Communicators. One of the most common aspirational outcomes reported by participants was active communication. Participants made indirect reference to components of active communication that they wished their student to develop further. All but one of the teachers working in secondary school settings discussed the importance of their students learning to use AAC in a variety of settings. One participant described this as being a current focus for the student and their family:

His mum still wants him to use it at home, because she says he's going out into the community, that's where he's going to have another stumbling block. She wants him to be able to go down to the shop and say 'I want a coke' or something like that.

In contrast to this, another teacher spoke of the student's future AAC use, in long-term adulthood. She described the learning of independent AAC use as being imperative for her student, as she only had a limited amount of time left at school: "She needs to start seeing it as a means of self-help. You know, when she leaves school, when she's not in the environment that she's in."

Other participants spoke broadly of the communicative independence of students, for example, one identified the importance of "being heard and having the ability to speak" and another highlighted the need to develop better self-management skills through AAC use.

Some participants discussed that they wished for their students to be able to communicate for a wider variety of reasons than they were currently able. This included being able to connect socially with others, which one participant described as being able to "relate to one another". Specific communicative functions were also mentioned, including requesting, making choices and expressing feelings and opinions. One teacher expressed that she was very hopeful about how the use of AAC could support her students, stating "I've got grand hopes for this AAC".

Similarly to communicative independence, participants spoke about the need for students to develop 'autonomous communication'. One participant, who explicitly mentioned "autonomous communication" described this concept in the following way:

We just want them to have... a good understanding of what the machine can do for them, so that they can express their feelings. They can tell someone if they're not feeling safe... make choices. And just understand that what they do influences their surroundings and that they can influence it by engaging with this technology.

Relatedly, another participant outlined that students need to be able to express a message when they wanted to and that this needed to be understood by those around them.

Initiation of communication. Another aspirational outcome identified by participants was the initiation of communication. Many participants described that their students were not yet initiating interaction with others. One participant explained that their student would only use their AAC system “with a lot of support and encouragement”. Although many participants alluded to initiation of communication as being important, only two specifically identified this as being a long-term goal. Both of these participants described their hopes that over time the students would begin to initiate use of their AAC more often to start an interaction, with one participant hoping her student would “instigate a conversation”. One participant believed that initiation of communication was a precursor to further communicative success. As described previously, she believed that an important measure of success was students being able to say what they wanted, when they wanted, but believed that “before that... it's them initiating”. The other participant spoke of her views that initiation of communication using an AAC system was an indicator of success, but she also believed that achieving this success was a challenge, describing that: “The biggest... hurdle for all the students is for them to realise ‘Oh, I’ll just go and get it and I’ll use it.’ To actually initiate use of it rather than being prompted by a member of staff”.

Achieved outcomes of AAC use. Aside from discussing the long-term goals for their students, participants also spoke of the success that their students had achieved to date. One teacher, following discussion of her aspirational goals, indicated that the achieved outcomes were “far less”, but explained that any achievement was still celebrated. Broadly, participants identified successful outcomes as improved language and speech, improved social interactions, reduced frustration and increased participation. These ideas expressed by participants are outlined below.

Improved Language and Speech. A commonly reported achieved outcome for students was that of an improvement in various communication modes. Four participants spoke of the improvements they had seen in the language or speech of their students, which they attributed to the use of AAC. For some, the skills initially targeted for AAC use had generalised to spoken language, as one teacher explained: “Greeting and saying farewell to his peers and using their names, he is definitely doing that and in fact... often he’s able to do that without using his AAC now. He can actually remember their name.”

Four participants also described how the use of AAC had increased the complexity of their student’s communication, as students were able to use their AAC system to increase their mean length of utterance. One participant believed that the use of AAC had benefited her student as it had been “much more of... a catalyst for him to improve his own speech”, however she also expressed concern regarding the frequency of use of AAC by another one of her students, stating “as long as it doesn’t replace her speech, we’ll be fine”. Only one participant stated that the use of an AAC system had supported her student’s receptive language.

Improved Social Interactions. Improvement in social interactions was reported by three participants, though their accounts of these improvements varied. One participant had seen increased peer interaction and relationships for her student, namely because the student had been able to use the AAC system to remember the names of classroom peers and would use these in greetings. The student was now also reportedly able to make a choice of which of his peers he would like to work or sit with in classroom activities. Two other participants spoke of the increased ‘depth’ of social interactions between themselves and their students. One teacher aide indicated that she was now able to have a conversation with the student she supported, something which was not possible before AAC implementation. The other participant who spoke about increased ‘depth’ of communication also expressed that she was pleased she could better understand her student’s intended message:

She can talk and I can decipher. And we get on, we get by. But with the device I get more clarity, I get more detail. And I can probe a little more...I can go to the device and I will probe a little deeper.

Reduced frustration. Participants directly addressed or alluded to the frustration felt by their students when they were not understood, with two participants indicating that they had seen a change in behaviour related to AAC use. One participant described the challenges her student would face when not understood and the resulting “tantrums”, which subsequently reduced as a result of the availability and use of AAC: “Quite often he would just instantly go into a tantrum rather than trying to communicate with you, but now he’s trying to communicate and it’s [the tantrums] becoming less and less which is really good.”

The other participant spoke of not only the student's communication related frustration, but also that of her communication partner, which had both reduced: "It was very, very frustrating for everybody, but especially for her because she would get really angry about it, that we weren't understanding her... So having the device for her, has made a big difference for her."

Increased participation. Some participants also identified that they had seen an increase in participation in classroom activities since the implementation of AAC. One participant stated that her student contributed more during writing time, as he would use his device to look up words. Another mentioned that her student was contributing more at school in general, but one participant explicitly stated that AAC allowed her student to participate more in group work. She attributed this to her student being able to demonstrate an understanding of the work being undertaken: "She is on task, she is showing you that she's thinking. She's responding to what I'm asking the group and it's not a silly answer."

Overall, participants described many positive outcomes that students had achieved relating to their participation at school, including improvements in a variety of modes of communication, improved social interactions and reduced frustration. Beyond this, they were still aiming for students to become active communicators who initiated communication.

Facilitators and barriers to AAC implementation. This global theme directly addressed the second research question of what are the perceived barriers and facilitators to these successful outcomes? Throughout the analysis of interview data, participants discussed factors which could be considered barriers or facilitators depending on their absence or presence. These are presented under the six organising

themes of: student specific considerations, collaborative teaming, beliefs about AAC, specialist support and advice, the AAC learning journey and strategies to support AAC use (see Figure 2).

Student specific considerations. Participants spoke directly and indirectly of individual student factors which impacted the support they provided for AAC use. Actual and perceived student-related factors relating to AAC use were discussed as participants spoke of their experiences. This section describes participants' perceptions of their students' identities and self-image, as well as presenting participants' thoughts on student motivation and preference for AAC use.

Student voice and identity. Three participants spoke of their consideration of student voice, with one teacher discussing 'voice' in both literal and metaphorical terms. These participants described the importance of considering the student's wishes in a wide context, but also specifically relating to the use of their AAC systems. One particular teacher emphasised the need to have student input into the goal setting and planning process:

Actually ask the student as well. It's all very well sitting around in a meeting, talking about what is best for little Johnny in the corner, but actually ask him 'what do you think? What do you want?' Involve them. 'Cos I think sometimes we can get so carried away with ourselves, we don't think about the actual student...

Participants also discussed their perceptions of their students' identities and self-image, including the importance of the student taking ownership of their AAC system. One teacher spoke of the student needing to think of AAC as being "hers", whilst another discussed the need to "build that concept of; the machine is actually your voice." Two

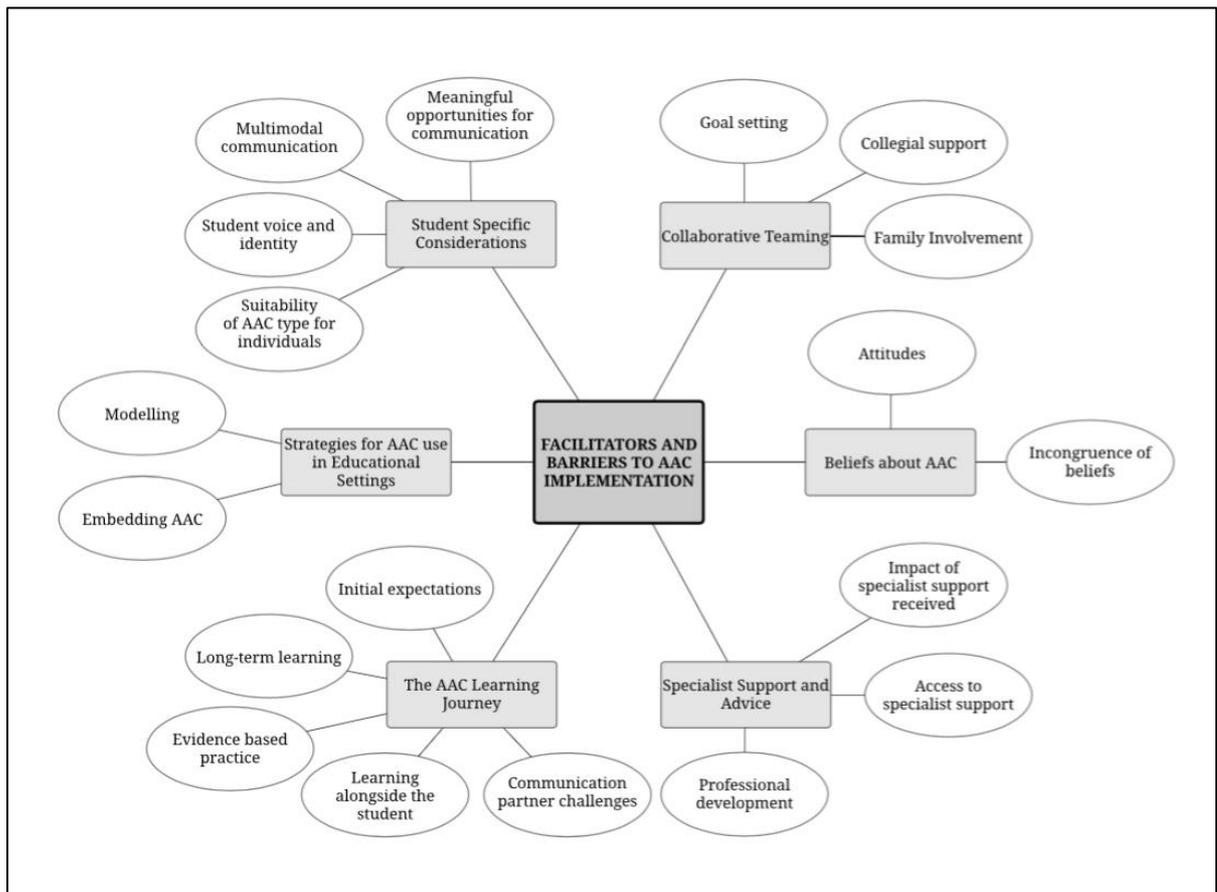


Figure 2: Thematic Network for 'Facilitators and Barriers to AAC Implementation'

educators spoke specifically of how they perceived high tech devices to be more accepted by students' peers and therefore the students themselves. One specialist teacher explained the experience of a student that she worked with who "wanted to be like everybody else and we're a 'bring your own device' school, so that fitted in really well to have something else." However, this participant also discussed the reluctance of this student to use AAC at certain times:

When we started the New Year, he was reluctant to use it at all... He wouldn't bring it to school. That is sort of another challenge to get through... It was an image thing. Even though it was a nice small iPad and it looked cool for him to have that, he wasn't confident about having it at school.

To overcome this, this participant spoke of supporting the student's self-image in a positive manner, by encouraging the student to teach other AAC users who use the same device. The teacher described the student as "feeling good" about being a teacher and model to other students. One participant also spoke of the importance of 'normalising' the use of AAC, in an attempt to ensure that the student didn't feel different to others by being the only one to communicate via AAC:

We have to give them the 'oks' and 'it's ok to use the talker, we use it with you'... It's a normality thing, it's not something that is solely hers... This is her way of talking and it's nice for other people to be using it to talk to her as well. So that she feels like it's all normal.

Meaningful opportunities for communication. Five participants spoke of the importance of creating opportunities for the students to use their AAC systems that were meaningful, but also motivating. One teacher concisely explained her strategy to ensure the student was engaged in these learning opportunities: "I followed the child's interest in it." In a similar vein, a teacher aide also discussed her child-focused model of providing support to her student: "Go at the speed that the child wants to go, rather than forcing it to happen."

One teacher described the novel ways that she had found to engage her students who used AAC in meaningful communication opportunities, despite the unconventional nature of this activity in the classroom. She described that the team "started off with a head massage... he would go over to 'go' and then I'd go and then stop and he'd go back to 'go'... It was weird but it was what worked." The same teacher, however, acknowledged how difficult it could be to persevere to try and find meaningful opportunities for students to communicate, stating "that's the hardest thing to do, is to

keep it meaningful. Keep it cause and effect.” The advice given to other educators by this teacher was to “just keep doing it.”

Suitability of AAC type for individuals. Participants discussed many factors which impacted on AAC suitability for their individual students. One teacher expressed frustration at the limited customisation of certain AAC systems, especially the accessories required to support their use: “It’s quite funny... with these machines, they send out customised bits and pieces that aren’t actually custom. They’re just like a factory kind of pop out.” To overcome this barrier, the teacher resorted to attempting to make custom accessories with the support of those in her local community. The same teacher also described customising the set up on the technology, including the amount of symbols displayed on a screen at one time for selection and the type of symbols used. This was for perceived ease of use for the student, but also for use in specific activities at home and at school.

Interestingly, only one participant described a mismatch between the student’s culture and their AAC system. Specifically, the student the teacher was supporting had learnt English as a second language. The teacher described that the AAC device was English-only capable. She asserted that this had an impact on the student’s use of AAC at home as it was understood that the family mainly spoke their native language at home.

Multimodal communication. Participants alluded to ways the implementation of AAC supported multimodal communication development. They spoke of their students learning multiple modes of communication, in order to be able to communicate via whichever means best meet their communication needs at any given time. Further, most participants spoke of the student’s right to choose their method of communication as they saw fit and the importance of valuing this choice. One participant described that

“Whether it’s using core boards, using sign, using the talker... because that’s the main thing, it’s communication of some sort.”

Despite identifying the need to support multimodal communication development, one teacher had experienced challenges in receiving support for this. She expressed her frustration about this:

I teach from a very holistic point of view... and to me, these devices are just another tool in this child’s toolbox for communication... I am a firm believer that it is a tool in a toolbox, not the be all and end all. ... We’ve been given this tool and it’s an expectation that this is what we use and... predominantly now... we would only get support for using this device with this child...I feel like we’re pushed to just using that and not exploring these other avenues.

Participants also spoke about the need for multiple types of communication to be available depending on the communication context. Specifically, one teacher aide discussed the suitability of different types of AAC for her student at different times throughout the school day. She described her student as being particularly “active” and often being out on the playground, moving around. The teacher aide identified that at times like these, it was best to have a low-tech AAC option available, to ensure that her main mode of AAC, a high-tech option, was not damaged during play. Similarly, another participant mentioned that her student found it more efficient to use low-technology options during classroom tasks as these were faster for her to use for the purpose.

Collaborative teaming. Participants described the ways in which collaborative teaming had facilitated AAC implementation with a specific focus on goal setting and

support from the wider team, including colleagues and families. Some participants expressed some frustration at a lack of collaborative teaming.

Goal setting. Six of the seven participants in this study discussed the importance of goal setting with the wider team. All of these participants met to set goals for the student as a team, often at Individual Education Plan (IEP) meetings. Participants often listed those involved in the goal setting process, which was reported to include family members, the school team and external professionals such as speech-language therapists (SLTs) and occupational therapists (OTs). Participants described the importance of setting goals relating to AAC use to clearly identify what one educator labelled the “next step”, although it was reported that it could sometimes be difficult for teams to set specific goals. Two participants identified that sometimes school teams might need support to identify appropriate goals, depending on the needs of the student. One of these participants explained that, initially, “we didn’t realise, I don’t think, what the real goals were... I think our goals were unrealistic”. To ensure goals were realistic, one participant suggested setting small, short-term goals because “You’ve got to have those little goals to make you feel better, don’t you?”

In line with the importance of goal setting for AAC use, one teacher outlined the need to set communication related goals and to “use... AAC as a means or a strategy to achieve those goals, rather than an end-point in itself”. Ongoing review of the goals was reported as especially important by one teacher aide who appreciated meeting with the teachers that she worked with often to ensure everyone was aware of the current goals for AAC use.

Family involvement. Three participants discussed the involvement of their students’ families, with one referring to a lack of family involvement and the challenges

that this presented. Consistency between home and school was spoken of as vital to success in the student's AAC use by one teacher, who appeared to greatly value the support of the family: "Whatever we do at school, the parents are doing at home, so it's making it nice and easy for her and us." Another participant extended this idea further, expressing her gratitude that the SLT had been able to provide support for the family at home, stating that she felt "really lucky" that this had occurred. This participant perceived that having this support at home "empowered" the parents. This participant described this 'group' support as follows: "So to have that group thing was really beneficial all round because you didn't feel like a complete failure." Conversely, one teacher did not believe that the family were willing and able to support AAC use at home, describing this as a "disservice" to him and his communication development. The teacher believed this related largely to the mismatch between the language the student's family spoke predominantly at home and the English-only capability of the student's AAC.

Collegial Support. Collegial support for educators was described as being a facilitator to supporting students using AAC. One participant spoke of working alongside other teachers and teacher aides supporting these students and indicated that she valued this support network, stating that "if you're on your own, that's really difficult". Two of the four participants who identified collegial support as a facilitator spoke specifically of the supportive relationship that existed between the specialist teacher and the teacher aide. One of these participants, a specialist teacher, indicated that it was often her role to support the teacher aide to learn how to use the AAC system and to plan how it could be used in different classroom activities and contexts. The other participant who mentioned this supportive relationship was a teacher aide, who spoke of having informal meetings with the specialist teacher to review the progress of

the student that they were both supporting. This teacher aide indicated that she found this relationship to be valuable stating that “I definitely can’t say I didn’t get enough support.” The final participant who identified collegial support as a facilitator described that she had sought this support from a colleague at another school in the community: “I’ve been able to work alongside other people who are using these devices with students... within my wider community.”

Beliefs about AAC. Participants reported differing attitudes and beliefs about AAC use as being a barrier to AAC implementation. Differing beliefs were largely reported as occurring between educators and specialists, such as SLTs, however these differences were also reported to occur between school and family team members.

Attitudes. Four participants spoke of attitudes related to AAC use that had a negative impact on its implementation. Two of these participants described their own initial experiences learning to use AAC as “daunting”, with one going on to say it was also “frightening”. Whilst these participants reflected on their own experiences in this light, one specialist teacher suggested that this ‘fear’ could also be a reason why some mainstream classroom teachers did not often use AAC with their students, stating “I don’t know if it scares them.” The only classroom teacher in this study (see Table 1), stated that her attitude towards AAC had changed over time. Although she did not indicate having a negative attitude towards AAC initially, her changed attitude related to increased knowledge and awareness regarding the long-term nature of AAC implementation, i.e. that successful outcomes would take time, rather than occur immediately following implementation.

Incongruence of beliefs. Incongruence of beliefs was discussed in interviews by three participants, who spoke of differing beliefs amongst members of the home and

school team as well as other professionals. All participants described this as having a negative impact on AAC use, as it was something extra that had to be addressed in order to effectively support the student. One teacher expressed that while she had found it difficult to first get the family “on board”, she then had to also get the support staff who worked with the student “on board” too. Another teacher had found it challenging to work with the teacher aide who supported the student, as she felt that the teacher aide made incorrect “assumptions” about that student’s abilities and interests, which limited the way she supported the student.

For one specialist teacher who worked in a secondary school setting, there had been “quite a lot of debate as to what was best” for her student. This participant expressed that her opinions about ways in which to support her students’ AAC use differed to some professionals. She gave the example of talking about the weather with students. She explained that she “always got in trouble. Well not in trouble but I always got challenged by people. ‘Cos I’d talk about the weather. It’s just something that you and I can both see, we can both feel.”

Specialist support and advice. All of the participants spoke of the specialist support that they had received in some manner, mainly from SLTs. Some described the ways in which this support had enabled them to better support their students, but others found a lack of specialist support and knowledge to be a barrier to AAC implementation. This information is grouped together and reported below.

Access to specialist support. Participants recounted varying experiences of the availability and access to specialist support and the impact that this had on their own practices. Two teachers spoke of the long wait for access to services from various organisations, with one also finding wait time frustrating once they were involved:

You've got so many organisations involved and... so many people involved with these students. It's kind of frustrating how long things take. If we were doing it one off, like if each student... they made a special thing for them, fair enough. Making one offs all the time... I just think it could be streamlined better.

The same participant also spoke of her experience trying to receive AAC accessories from specialists and the impact that this had had on her students:

I wouldn't buy a new car and for them to say 'Oh, we'll send you the wheels, we'll get on to the wheels. And when we get them, we'll send them on to you.' It's like... these are students who have the right to education... It's their education. It actually does take time and these students are important. To keep them waiting and waiting and waiting.

This particular participant, who explained that she worked mainly with complex, high-tech AAC, reported that at times she also found it difficult to access technological support when something went wrong with these devices. She expressed that she wondered if this was because the technology was also relatively new in the field.

Other participants described a lack of specialist support in the early stages of AAC implementation. These participants all recounted how they felt that they were given a device and were then left to explore it themselves, without support. One teacher described her experience:

It was like... suddenly you had a device and it was like, right, what do we do now? How do we use it? ...It was almost as if you were given the device and... it was assumed that you would know how to use it.

Another participant shared her very similar experience, explaining that she felt the device “arrives in the courier at school and there can be a bit of a time lapse before anyone turns up to tell you what’s going on and how to use it”. To remedy these difficulties, one teacher suggested that educators “need people who know what they’re talking about to drop products off”. Similarly, one teacher expressed that she was unsure whether there was the specialist expertise in her geographical area relating to supporting language development through AAC.

Conversely, other participants spoke of ease of access to specialist support and the somewhat informal nature of this, as some specialists were just “a text or an email away”. For some, the first port of call for participants was their SLT who worked in education, but for others they accessed support directly from contacts at The Talklink Trust.

Impact of specialist support received. Many of the same participants who discussed having difficulty accessing services at times also spoke of the support that they did receive in a positive light. Participants expressed that they valued having a contact for troubleshooting, with one teacher reminding others that it was important to “know your limits” and to seek the specialist support when it was needed. Some participants discussed that their confidence in AAC use relative to the fact that they felt they could usually access support when needed. One teacher explained the importance of this specialist support to her practice:

I suppose we need to be reassured that what we’re doing is useful, is beneficial...
The speech-language therapist comes in every fortnight. And I’ll touch base and I’ll say ‘Look, I’m doing this, I’m doing that, what do you reckon?’ and she’ll say ‘Ok, yep, do it this way or that way. Yep, sounds good, try not to do that.’

And then it just brings you back in line. I like that we're touching base, I think it's important... We need the experts to... keep us on the right path.

Another participant spoke of the support she felt the team actually needed and how useful this had been:

We've been lucky over the last couple of years... We've had... ongoing speech-language therapy support, just assessing and advising. And that's what we wanted. We didn't need you to come in and do a programme, we want you to come in and advise us how to do it.

The same teacher explained that, previously, the school team had tried to set a student up with AAC without specialist support:

A few years ago, we went straight in with another student and put Proloquo on to a device... none of us had any training or anything like that but we wanted to help this person to communicate. That wasn't a success, because it was the wrong app.

Since then, with specialist support, the school had begun to implement different, more appropriate AAC systems with their students. This participant described the role of specialists as below:

Professionally trained speech-language therapists... who are very good at the assistive equipment, know about it and can assess it and know the students and what is going to fit best for them.

However, not all participants believed that the 'specialist' needed to be an SLT.

Participants indicated that the specialist could also be an OT. One participant described

that the ideal individual to describe this support should be someone who is “passionate”, “experienced” and “has had successful experiences” with AAC implementation.

Professional Development. Professional development (PD) was a facilitator mentioned by five different participants. PD, mainly in the form of courses and workshops, was reported to have been extremely beneficial to these participants and they often gave examples of the tips and the knowledge that they had gained from attending this PD. One teacher thought that for educators new to AAC, it would be helpful to have “workshops where you actually get to see someone using it and then you get to practice yourself.” Another thought that there should be flexibility in the format of PD to make it easier for educators to attend: “Whether it’s in school, whether it’s after school. In the holidays, whether it’s face to face, whether it’s Skype, depending on where you are.”

The AAC learning journey. Throughout the interviews, participants made reference to the nature of their own and their students’ learning ‘journey’. They described the nature of AAC learning as ongoing, in which none considered themselves to be experts.

Long-term learning. All participants referenced time in one form or another, describing how this had impacted on the support that they had provided to students using AAC. One specialist teacher, who worked in a secondary school setting, wondered about how outcomes for her students may have differed had they been identified for AAC use earlier: “It would be really lovely if those guys had had it in primary. I don’t know whether it would have made a difference.”

Participants also discussed the long-term nature of providing support around AAC use, with one educator explaining that AAC implementation is a “long process” and that the

student's use of AAC is "not going to be instant". Participants spoke of how the length of time before seeing their student use AAC may be disheartening, described by one educator as feeling "as if you're stuck in the one place". One participant spoke of her student taking a "long, long time to utilise it herself" but emphasised that it was important to provide this support: "It might have taken a year; it might have taken 15 months. But you can't put a time limit on this."

Another participant indicated that she had been told that it could take "four or five years" for students to build up the memory and knowledge necessary to independently use their AAC systems. However, this teacher had seen one of her students develop some communicative competence in a shorter time period than this:

About a year and a half after us working with him, he kind of clicked in and realised what communication was all about, he was actually getting things he wanted and getting things his way.

Learning alongside the student. Four participants spoke of how they had learnt to use AAC alongside the students that they were supporting. Generally, these participants expressed that they did not feel as though they had to be 'experts' at using the AAC system to effectively support their students. All expressed a somewhat relaxed attitude about having to learn as the student did, with one participant describing her experience in the following way: "We're learning together. This was a new device for both of us and for this child's family. So it's been a really good process like that."

Another participant, when asked about her confidence in supporting AAC use stated "I feel relatively confident because I just learn alongside the student". The learning of how to use AAC systems alongside students was also described by participants as being ongoing in nature. One participant described this with the students that she was working

with; “We’re still learning with every one of them I think”, also stating later that “you’re always learning, aren’t you?”

Initial expectations. Four participants discussed their initial expectations of AAC use and how these had changed over time. All explained that they had found their initial expectations regarding AAC implementation to be incorrect. Specifically, two of these participants indicated that they had initially thought that the student would initiate and be self-directed in their AAC use, with one explaining that “you almost felt like, because he had the device, he should be using it straight away”. The other spoke of how her team, initially, had expected the student to be the one to “instigate” the use of AAC. She reflected that “we had hopeless expectations”. The other participants who spoke of their initial expectations also explained that they had originally thought that they needed to be modelling full sentences using the AAC, but that professional development and information had helped them to realise that this was not the case.

Evidence-based practice. Two participants mentioned their consideration of the evidence base when providing support to students who used AAC. One of these participants questioned, on multiple occasions, the applicability of certain research findings to the students she was working with: “Trying to keep up with the... research and the data and what that shows in comparison to the student sitting in front of you... Are there 50 test specimens like my student?” Another participant, a teacher aide, spoke of the importance of keeping up with “the latest strategies” for supporting students to use AAC and that her school had been very supportive of this.

Communication partner challenges. Participants demonstrated their awareness of accessing the true voice of the students as much as possible. Two of the participants spoke candidly of the difficulties they encountered as communication partners with the

students that they worked with. These difficulties were encountered even with the use of AAC systems and caused these participants to wonder if they had correctly understood the student's intended message. One participant described the difficulties that she had experienced with different eye-gaze technology: "There were quite a lot of assumptions that were made as to what the student was actually trying to communicate, I felt. From what I saw." These difficulties as communication partner persisted, even with a different programme using eye-gaze: "There was still that element of, are we just making up a story here? Are we just making up what we want and what we think?"

The other teacher, who experienced similar difficulties using devices with more straight-forward access described communication with her student before AAC implementation: "we weren't 100% [sure] of what she was saying, we were making judgements and getting along that way." These difficulties still persisted to some extent, even with the introduction of AAC, as she explained:

I'm making assumptions. So, for example, if the student... says something and we can't quite work it out and we're using the device, sometimes I'm aware that I'm assuming. And then I can take the conversation down the completely wrong way... Her intention, or her intended conversation gets lost, because she hasn't got the skills to type in the word that she might be trying to say or... she hasn't got the option on her iPad.

As communication partners, some educators spoke about a lack of time which inhibited their own learning of AAC use and the support that they were able to provide to that student. This was reported to have a negative impact on AAC implementation. One teacher described the lack of time from her point of view: "You're using this device for

one, maybe two students in your classroom but you still have a class of... 27 other students with high learning needs as well.”

Strategies for AAC use in educational settings.

Modelling. Four of the participants specifically mentioned using modelling as a strategy to support the student to learn to use their AAC system. Most of these participants mentioned modelling in the sense of adults modelling communication using AAC to students, however one teacher described how she used modelling of AAC to support the learning of other team members:

To support my staff in how to use it I’m often working with the student and demonstrating how to use the device. So they can see... I’m modelling to them so they can then go on to model it with their student.

One participant mentioned modelling as a strategy but explained that it could sometimes be a challenge to get other staff members to use it:

One of the things... recommended to us was that we needed to do a lot of modelling in order to show the student how to use some alternative communication system. So that was the initial challenge of course, was to get everyone using um a low-tech device. So just pointing at the pictures and getting used to using that to support your communication.

Embedding AAC. A total of three participants mentioned embedding AAC within curriculum-related tasks as being a strategy they used to consolidate the use of AAC. The use of AAC in academic tasks was described as supporting the student’s ongoing communication development, but also their literacy skills in some cases. One participant recommended educators should “integrate it [the AAC system] into daily

classroom learning, rather than seeing it as something separate in and of itself. It's actually something that will support that child in their learning in the classroom."

Another strategy mentioned by three participants was that of peer teaching; students who use AAC teaching other students how to use it. Two educators suggested this strategy, while another did not believe peer teaching was an effective strategy for one of her students as "her peers aren't in a position to correct her or to be modelling as much."

Summary

These results reveal that while teachers and teacher aides have experienced challenges in supporting students to use AAC, they have also had positive experiences along the way. Whilst setting small-term goals that are largely achieved, many educators seem to be mindful of the long-term goals for their students' use of AAC. The presence or absence of various factors can either be barriers or facilitators to AAC implementation. Generally, considering the student's characteristics and needs, collaborative teaming, specialist support and specific strategies were identified as supporting AAC implementation. Learning as part of the AAC journey and beliefs of wider team members could present challenges to supporting students who used AAC. Participants described the support that they were providing as largely ongoing and not having reached completion.

Chapter 5.

DISCUSSION

Introduction

Inclusion is one of the guiding principles of the New Zealand Curriculum (Ministry of Education, 2007) and all students, regardless of their individual abilities, have the right to attend their local state school (Ministry of Education, 2014b). This includes students with complex communication needs (CCN) who may use augmentative and alternative communication (AAC). Educators play a crucial role in supporting AAC implementation at school. While there has been some research which has focused on the perspectives of educators who support those with CCN (Bailey, Stoner, et al., 2006; Kent-Walsh & Light, 2003; Soto, 1997) this has mainly provided an American perspective, in 'self-contained' or specialist classroom settings rather than inclusive settings. To begin to address the paucity of research in this area from a New Zealand perspective, this study investigated educator perspectives relating to successful outcomes of AAC use and the facilitators and barriers to this success in inclusive education settings. Seven semi-structured individual interviews were carried out with educators, including teacher aides and classroom and specialist teachers.

Data from these interviews were analysed using Thematic Network Analysis (TNA) (Attride-Stirling, 2001), part of which involved sharing interview themes with those with relevant experience for feedback in preparation for presentation of the findings (Attride-Stirling, 2001). Within the literature, there is limited explanation of procedures used during the feedback phase of TNA making it difficult to replicate this phase of analysis. Following analysis, seven key findings were identified from this study: (1) Educators identified both short-term and long-term positive outcomes of AAC use, with

different focuses depending on their educational setting; (2) Educators identified a range of factors which could act as barriers and facilitators to AAC use depending on their presence or absence, including factors internal and external to the student; (3) AAC use had many positive impacts, including supporting students' speech and language development and reducing communication-related frustration, though some challenges remained despite the use of AAC; (4) Educators advocated for the student's voice, perspective and rights to be considered with regards to AAC implementation and planning; (5) Collaboration between team members was viewed as important for successful AAC use. Different factors, including incongruence of beliefs amongst team members negatively impacted on collaboration and therefore AAC implementation; (6) Specialist AAC support was useful to educators, though some perceived that there was a lack of expertise amongst professionals and (7) Educators reported similar strategies to support the use of AAC within school settings. This chapter explores the thematic analyses in relation to the research questions.

Successful Outcomes of AAC Use

Educators in this study perceived aspirational successful outcomes of AAC use to be: (a) students as active communicators and (b) the initiation of communication. They reported successful achieved outcomes to be: (a) improved language and speech; (b) improved social interactions; (c) reduced frustration and (d) increased participation. The aspirational outcomes described by participants were long-term goals, whereas the achieved outcomes were short-term goals that had been achieved in the time that the educators had been supporting their students. The successful outcomes described in this study are similar to those previously reported on in the literature.

Aspirational outcomes of AAC use. Educators identified positive aspirational outcomes relating to their student's use of AAC in the long-term, possibly extending beyond the conclusion of the educator's support for the student. Participants described aspects of active communication, which is a vital component of communicative competence (Y.-C. Chung & Douglas, 2014). Active communicators are self-directed, motivated and skilled in their interactions with a variety of communication partners in multiple contexts (Y.-C. Chung & Douglas, 2014). As part of active communication, participants indicated that their students would be successful in their AAC use when they were able to effectively communicate in a variety of environments, for a variety of reasons. One participant within this study also explicitly mentioned the similar concept of autonomous communication, describing this as the student being able to use their communication as a means of self-management and to influence their environment. Burkhart and Porter (2015) describe autonomous communication as being "able to say what I want to say, to whoever I want to say it to, whenever and wherever I want to say it" (p.2). It is possible that this participant may have received information and/or training regarding autonomous communication, but she also spoke of the evidence base, potentially indicating that she may actively seek guidance from the literature to inform her own teaching practice.

Educators also identified the initiation of communication as being a desirable, positive outcome of AAC use which they hoped their students would achieve, though this was also identified as being challenge for some students who used AAC. The perception of initiation of communication as an indicator of success is similar to the findings by Bailey, Stoner, et al. (2006) who found that special education teachers considered the initiation of communication by students to be an indicator of communicative competence. In addition, the initiation of communication has also been reported as one

of the top priorities for parents of children who use AAC (Calculator & Black, 2010). It is promising that the educators within this study demonstrated a holistic understanding of the potential application of AAC technology and the importance of communication for all individuals.

Interestingly, there was a notable difference in the aspirational outcomes reported by educators working in primary versus secondary settings. Educators working in secondary school settings discussed the importance of AAC use in broader contexts, outside of school settings. Some also expressed their awareness of the limited number of years that students had left at school. This could be indicative of the focus of secondary school educators on preparing students for life after-school, in community settings. However, some of the educators who spoke of AAC in community settings also reported this as being a priority for their student's parents, thus this could have been a major influencing factor. Regardless of the reason for the focus on life after school, it is vital that the AAC use of these students is considered in this context also. It has been suggested that AAC use can allow individuals with developmental disabilities to participate meaningfully in society after secondary school (McNaughton & Bryen, 2007), thus it is encouraging that educators are aware of the value of AAC use for their students in broader contexts. The differences in focus noted between primary and secondary school educators may warrant further investigation.

Achieved outcomes of AAC use. Participants perceived that the use of AAC had improved the language and speech skills of their students. Improvements in language reported by participants included increased mean length of utterance and generalisation of language skills using AAC systems to spoken language. As well as this, one participant perceived that the use of the AAC system had resulted in improved intelligibility of speech for their student, a finding which has previously been reported

in the literature (Thomas-Stonell et al., 2016). Despite the positive outcomes identified related to speech, one teacher expressed concern that the student may favour the use of the AAC device over her natural speech, though she did not indicate that she would attempt to prevent this in any manner. It is not clear why this participant expressed concern about this prospect. Within the literature, the opposite has in fact been reported; that some PWUAAC may favour the use of their speech over high-tech AAC systems (Y. Chung et al., 2012). Despite this, these same PWUAAC have also acknowledged that their AAC systems are indispensable, but they do caution that professionals should not consider AAC as a replacement for speech (Y. Chung et al., 2012).

The finding that AAC use can support social interactions is similar to outcomes reported in the literature, though previous studies generally focused on wider peer interactions, with AAC being one component of the intervention (Biggs, Carter, & Gustafson, 2017; Y.-C. Chung & Carter, 2013; Y.-C. Chung, Carter, & Sisco, 2012). There is a need for further research into the impact of AAC on the social communication of individuals, particularly those with autism spectrum disorders (Logan, Iacono, & Trembath, 2017). In this study, as part of improved social interactions, one educator perceived that the depth of the interactions with her student had increased as the student was able to communicate more details. While some people who use augmentative and alternative communication (PWUAAC) may use shorter utterances to set the topic or context before using other means of communication (Smith, 2015), this participant perceived that her student was able to use AAC to add more depth to interactions, beyond meeting wants and needs and therefore enabling further social connection.

Some participants identified that the use of AAC had reduced communication-related frustration not only for the AAC user, but also for their communicative partner, which is

similar to what has been reported by the significant others of PWU AAC (Iacono et al., 2013). In the current study, participants reported that reduced frustration resulted in improved student behaviour, which has also been reported by Bailey, Stoner, et al. (2006). Within the present study however, some educators described that communication partner difficulties remained when attempting to interpret some messages communicated via AAC. This difficulty could arise as a result of a number of communication partner difficulties, as summarised by Smith (2015). Communication partners first have to understand messages and then interpret their meaning, however Smith (2015) suggests that they may resort to strategies that potentially limit the message that can be expressed by the AAC user. This can sometimes occur as a result of adult-directed conversations, in which frequent guessing of communicative intent can result in limited opportunities for the practice of communication skills, ultimately leading to dependency on the communication partner (Clendon & Anderson, 2016). The communication partner difficulties described by the participants in the present study could possibly be remedied through further training in communication partner strategies.

As well as reduced frustration, some educators within this study believed that students were able to participate more in classroom tasks following the introduction of AAC systems, including literacy and group work. This is not a surprising finding, as effective communication is critical to participation in classroom tasks (Calculator, 2009). One participant described that she was able to gauge whether or not her student was on task following AAC implementation. Individuals with communication difficulties have expressed that they are sometimes unable to demonstrate their skills and abilities due to their communication (McCormack, Baker, & Crowe, 2017), so it is possible that this

student was engaged previously, but their AAC system allowed them to demonstrate their engagement, therefore increasing their participation.

Facilitators and Barriers to AAC Implementation

Many factors reported by participants could act either as facilitators or barriers depending on their presence or absence and some of these factors interacted with each other to compound success or difficulties experienced (see Figure 3). Through thematic network analysis (TNA) (Attride-Stirling, 2001) six organising themes related to facilitators and barriers emerged: (1) student-specific consideration; (2) collaborative teaming; (3) beliefs about AAC; (4) specialist support and advice; (5) the AAC learning journey and (6) strategies for AAC use in educational settings. The interpretation of these results relating to themes is discussed below.

Student-specific considerations. Throughout interviews, many participants discussed their perspective of the students' experience and wishes, demonstrating their desire to honour the 'student voice'. Educators demonstrated their belief in the self-agency of AAC users, not only as students, but as individuals. There has been much attention recently within education on the topic of 'student voice' and advocacy and it is vital that student competence is presumed for them to be involved in their educational planning. The beliefs of participants in this study support the need for individuals with communication difficulties to be viewed as people first and foremost (McCormack et al., 2017). These educators, in considering the students' desires, are in essence supporting them to establish an identity as a person outside of their communication disorder (McCormack et al., 2017). Participant advocacy for student voice may be reflective of recommendations by the Ministry of Education, which supports student

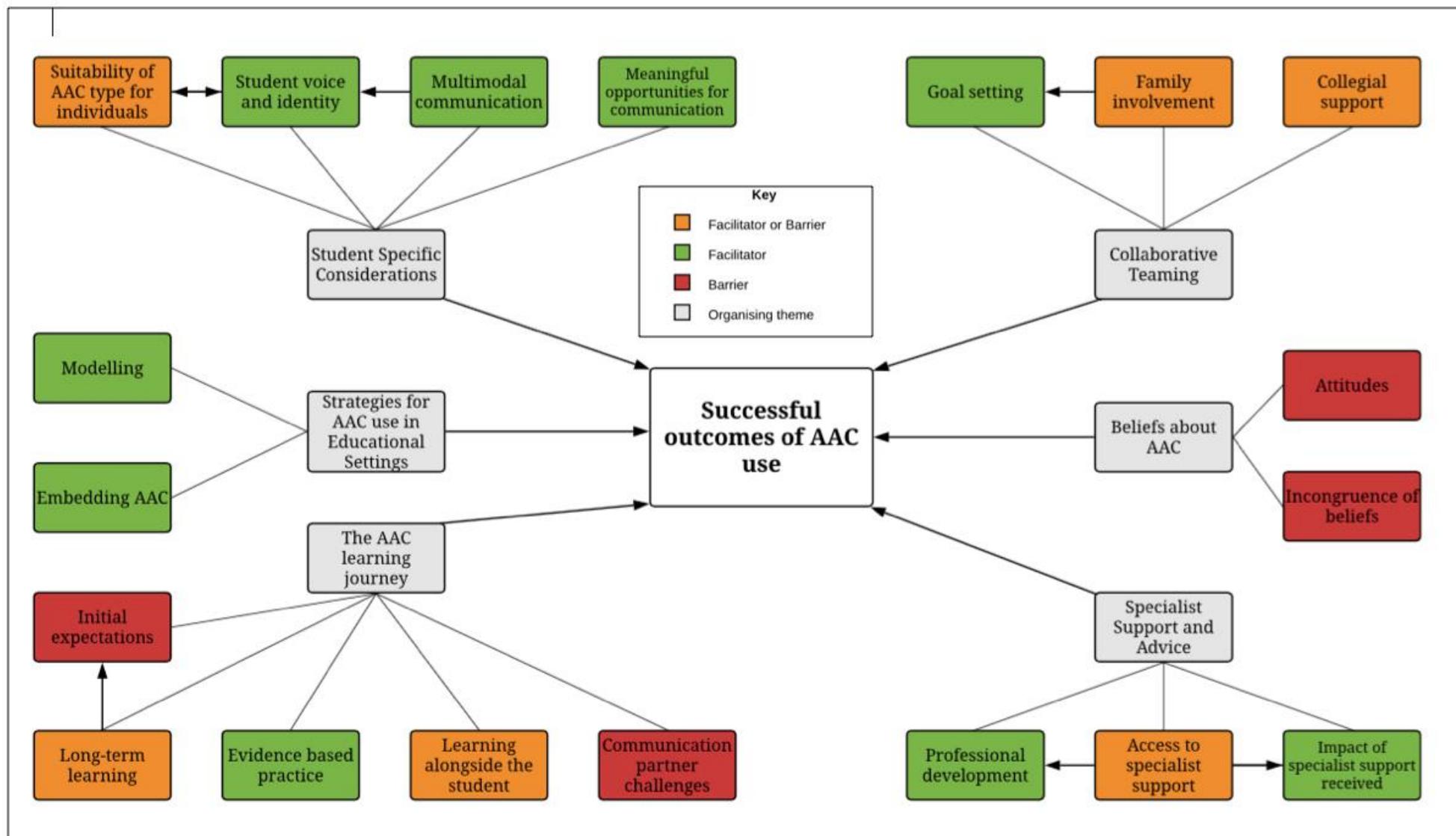


Figure 3: Impact of Facilitators and Barriers upon Successful Outcomes of AAC use

participation during the reflection and planning of their education goals (Ministry of Education, 2015b).

As well as being included in the planning, participants in the current study believed that the students had the right to choose whichever method of communication they would like to use at any given moment, whether this involved AAC or not. Participant values aligned with the recommendation that AAC encompasses a broad range of communication modalities, including high and low-tech AAC and unaided AAC such as sign language (Zangari & Van Tatenhove, 2009). Participants believed that all of these modalities of communication must be honoured to allow for efficient communication of AAC users, which aligns with the suggestions in the literature that students need to learn multimodal communication to become active communicators, repairing communication breakdowns and communicating when (or if) their primary or preferred mode is unavailable or unsuitable for the environment (Y.-C. Chung & Douglas, 2014). This finding suggests that educators value student choice and autonomy.

Aside from discussing student voice, participants also described their perceptions of the student's perspective. Some participants believed that some of their students who used AAC felt as though it made them different and therefore affected their inclusion.

Conversely, one participant also believed that the specific type of technology, in this case an iPad, positively supported the student's inclusion as it was a type of mainstream technology within their school. It has been documented previously in the literature that AAC is one tool which can support the inclusion of students with complex communication needs (CCN) (Alquraini & Gut, 2012). The finding in the current study aligns with the suggestion that AAC technology becomes more accepted as it becomes

more mainstream, which has begun to occur with the advent of communication software for the iPad (Light & McNaughton, 2012, 2013).

To further support the students in this study, some educators believed that they needed to 'normalise' AAC, through the use of AAC by others around the student. This indicates that teachers perceive that students need to see the AAC system being a valued mode of communication. Johnson et al. (2006) have reported that this is the second most important factor associated with long-term use of AAC; the value placed upon the AAC system by the PWUAAC and their communication partner. Valuing multiple modes of expression is part of the Universal Design for Learning framework (Ministry of Education, 2017). This framework encourages teachers to offer and value multiple means of expression to ensure that all children participate in classroom tasks to the best of their abilities. It could be that educators view AAC within this wider framework, thus demonstrating the value of AAC to their students by making it available and modelling its use.

In further considering individual student characteristics, participants within this study emphasised the need for AAC systems to match the abilities and needs of the user. There was a perceived lack of customisation available for the physical characteristics of some AAC systems, as well as the software. The mismatch between the needs of the student and their AAC system capabilities can hinder the successful use of AAC systems (Johnson et al., 2006), which is why is vital that AAC systems are carefully matched to individuals (Johnson et al., 2006). The same participant who perceived a lack of customisation for her student's AAC system demonstrated ingenuity in her attempt to customise the AAC system herself, in order to better meet the needs of her student. It appeared that this educator was driven and willing to commit her own time to reduce this barrier for her student. It is unclear as to whether other professionals

involved with this student perceived the same mismatch between the student's abilities and their AAC system characteristics.

Experts recommend that AAC practices need to support the culture and beliefs of the student and their family in order to be successful in home settings (Calculator & Black, 2009). One teacher within this study discussed the significant nature of the mismatch between her student's native language and the language of their AAC system. Though not explicitly stated, it is likely that the English-only capabilities of the device impacted the support that the student's family was able to provide at home in their native language. Further research is required to investigate the most effective supports for children in bilingual environments who require AAC, though the current recommendations centre on principles relating to bilingual language development in general (Soto & Yu, 2014). One of these principles include the involvement of the family and wider community in intervention (Soto & Yu, 2014), though this can sometimes be challenging for families. For example, in some instances the AAC system and recommendations may not be conducive to certain cultures (Binger, Kent-Walsh, Berens, Del Campo, & Rivera, 2008). There are also nuances within the use and learning of specific languages, thus the translation of vocabulary into multiple languages within AAC systems may not be adequate to support bilingual language development (Soto & Yu, 2014). As the capabilities of high-tech AAC systems continue to advance, some of these challenges may be overcome however, further research and development is required to create AAC options for individuals who speak or are regularly exposed to more than one language.

Collaborative teaming. Some participants reported requiring support from specialists for goal setting tasks. There are currently no learning progressions within New Zealand for communication that teachers can use to identify next steps in their

students' progress. The Literacy Learning Progressions (Ministry of Education, 2010) start at the school-entry and have large incremental 1-2 year steps, reducing guidance available to educators for students who are beginning communicators. Educators may therefore require more guidance from specialists regarding this, until such a time as learning progressions for communication are developed.

This study confirms that collaborative teaming is a facilitator to AAC implementation, a finding that is already well established in the literature (Alquraini & Gut, 2012; Bailey, Parette, et al., 2006; Bailey, Stoner, et al., 2006; Calculator & Black, 2009; De Bortoli et al., 2014). Within this study, participants perceived that collaboration during goal setting related to AAC use was vital, with the involvement of family being particularly important for this process (see Figure 3). The fact that educators value the input of families and the home-school relationship is encouraging, as parents often have a strong desire to be involved in the AAC support process, particularly during decision making processes (Anderson et al., 2014; Marshall & Goldbart, 2008). In addition, family involvement can support AAC implementation by supporting the generalisation of AAC skills to the home setting (Bailey, Stoner, et al., 2006), however a lack of involvement may act to disempower some parents (Anderson et al., 2014).

Whilst most participants spoke positively of collaborative teaming, some had experienced frustration as a result of working alongside other team members. In particular, educators perceived that some families did not often use AAC at home, as AAC was not perceived to be the most efficient method of communication. Educators appeared to believe that this impacted on the generalisation of the student's AAC skills between environments. Speech-language therapists (SLTs) have reported this as one of top reasons why PWUACC may inappropriately abandon their systems; because communication partners believe that they can communicate effectively with the person

without their AAC (Johnson et al., 2006). Parents themselves have reported that they may not use their child's AAC device with them at home if they can understand their unaided communication (Bailey, Parette, et al., 2006). It is possible that the students and their parents discussed by participants in this study perceive unaided communication to be more efficient in the home environment. This could be reflective of multimodal communication; students and their communication partners are choosing the mode that suits them best for the situation. However, the difficulty in this may be that the lack of generalisation of AAC use to home environments may ultimately affect their learning of other modes of communication, impacting on their communicative competence with unfamiliar communication partners in wider environments, including the school environment. This finding is perhaps an example of when effective communication, a facilitator to collaborative teaming (Bailey, Stoner, et al., 2006; Y.-C. Chung & Stoner, 2016), had not occurred.

Aside from family involvement, educators found support from their colleagues within their school team or the wider community. This finding appears to be a new contribution to the literature. One teacher had found support from another educator within her region, who was supporting a student to use a similar type of AAC. Participants who had collegial support acknowledged how hard it might be for educators who lacked this wider support. This is an important consideration for educators who may be isolated geographically in area with limited access to support. For these educators, it may be worth considering alternate service delivery models or support groups to ensure a wider support network.

Beliefs about AAC. The incongruence of beliefs between home and school was reported to have a negative impact on AAC implementation, again highlighting the particular importance of the home and school relationship. This is a similar finding to

that of Bailey, Stoner, et al. (2006) who reported that the incongruence of goals and expectations regarding AAC device use between teachers and parents could impact AAC implementation negatively. Aside from the incongruence of beliefs within the wider team, educator attitudes were reported as a barrier to AAC implementation. Participants indicated that other staff members, specifically teacher aides, could sometimes have limiting expectations of student's abilities, which impacted upon the support they may provide. It has previously been reported that some teachers perceive the attitudes of some teacher aides could have a negative impact on AAC implementation (De Bortoli et al., 2014). Additionally, participants within this study suggested that some educators who are less familiar with AAC may initially be fearful of the system. This is concerning, as PWUAAC may be less willing to communicate via their AAC system if they perceive negative attitudes from potential communication partners (Iacono et al., 2013). A number of suggestions have been made by key stakeholders in the AAC process to overcome barriers associated with perceived negative attitudes, including communication partner training (Soto et al., 2001a). Participants within this study were candid about their own change in attitudes throughout the AAC implementation process, but perhaps may not be so open with other practitioners in real-world conversations.

Specialist support and advice. Educators must have access to their own support in order to feel competent providing support to students who use AAC (Calculator, 2009). It is therefore encouraging that many participants in this study spoke positively of the impact of the support that they had received from professionals such as SLTs and occupational therapists (OTs). Despite the positive experiences described, some participants perceived that there was limited expertise within their area to support AAC implementation. Specifically, one participant had expressed that she was unsure

whether the professionals in her local area had specialist AAC knowledge. A lack of expertise in AAC service delivery has also been reported by some parents within a study by McNaughton et al. (2009). Parents in this study commonly reported a lack of expertise amongst professionals supporting AAC implementation, including teachers and SLTs, which reportedly resulted in delayed or inappropriate interventions. Within the literature, some SLTs themselves have indicated gaps within the own knowledge in the area of AAC (Iacono & Cameron, 2009; Sutherland et al., 2005). Within the New Zealand context Sutherland et al. (2005) surveyed SLTs regarding AAC provision and over half of these participants did not consider themselves competent in AAC service provision, or indicated that they were in need of further development in this area.

A participant within the current study described that the wait time for access to specialist support resulted in the wrong AAC system being selected for a student in the interim which lead to unsuccessful outcomes. This is problematic as children may be more likely to abandon AAC systems if they are incompatible with their capabilities (Calculator, 2013) and the provision of a communication aid without being guided to use it may 'hinder development of communication and language' (von Tetzchner & Stadskleiv, 2016, p. 23). Perhaps within this wait time, accessible and tailored professional development could support educators in a more general sense, as educators within this study had identified that professional development was helpful to their practice.

The AAC learning journey. In analysis of the data, it was discovered that participants spoke of their own and the student's learning regarding AAC to be ongoing, akin to a continuous journey. There was much participant reflection on how their initial expectations, which they described as unrealistic, changed over time. They also indicated that they initially did not realise how long it may take before their students

achieved success in AAC use. The self-reflection demonstrated by participants is interesting to consider in the context of supporting teams new to AAC use. They may require support and guidance initially to manage expectations and ensure shared understanding within the team. Differences in expectations of teams regarding learning may have been influenced by the way in which the AAC system was introduced and the roles and responsibilities that teams defined.

Another interesting finding relating to the AAC learning journey was that participants described that they had learnt about AAC alongside their students. They also indicated that they did not feel as though they had to be an expert in AAC use to successfully support their students. The idea of learning alongside the student, is similar to 'ako', a concept in te ao Māori in which teaching and learning take place simultaneously (Ministry of Education, 2015a). Ako recognises that both teachers and students learn from each other (Ministry of Education, 2015a), which is what frequently occurs in AAC support; those supporting AAC implementation are learning about the system at the same time that they are required to be the child's main support for AAC learning (von Tetzchner & Stadskleiv, 2016).

Surprisingly, although time was reported as being a barrier for some participants, this was not a particularly strong theme. Time is one of the most frequently identified themes within the AAC literature (Y.-C. Chung & Stoner, 2016). It is not clear why so few participants within this study reported a lack of time as being a barrier to AAC implementation. It could be that participants had not experienced this as a significant barrier, or a more likely explanation is that the questions posed within interviews did not prompt participants to explore this potentially significant barrier.

Strategies for AAC use in Educational Settings. A strong theme identified within this study was that of modelling of AAC by educators to the students. This is a strategy that is well-known within the literature and is sometimes referred to as ‘aided language stimulation’ or ‘aided language modelling’ (Sennott et al., 2016). This is an interactive type of modelling (Sennott et al., 2016) in which an individual’s primary expressive communication mode is modelled by others in everyday environments. This strategy identified by participants has been shown to support aided language development (Kent-Walsh, Murza, Malani, & Binger, 2015; Sennott et al., 2016), though there is some evidence lacking for the effectiveness on specific language areas such as receptive syntax skills (Allen et al., 2017). The strength of this theme may indicate that modelling of AAC is a commonly suggested practice by specialists supporting teams to implement AAC. Participants also emphasised that they had found it beneficial to embed the use of AAC into their classroom planning, preferring to consider it one tool that could be used in the classroom rather than an endpoint. This may reflect a wider focus on communication being one integral part of the learning process in schools.

Conclusion

Participants within this study expressed views regarding successful AAC use and facilitators and barriers to this success that are similar to those reported previously. It is unclear as to what informed the participants’ perspectives on successful AAC use, though possible influencing factors could include experience supporting those with CCN, specialist support, professional development or literature they may have sought. Regardless of what may have influenced these educators, it is clear that they are knowledgeable and hopeful about the future use of AAC by their students, despite the barriers that they may face.

Chapter 6.

CONCLUSION

Introduction

This chapter summarises the purpose, design and findings of the current study, as well as addressing the limitations. It also discusses the potential implications of the key findings in relation to the practice of educators and other professionals supporting AAC implementation. Areas relating to this topic that may require future research are also highlighted, before the chapter concludes with some final thoughts from the researcher.

Purpose and Design

There has been some research internationally which has examined facilitators and barriers to the implementation of AAC in a range of settings (e.g. Bailey, Stoner, et al., 2006; Baxter, Enderby, Evans, & Judge, 2012; Crisp, Draucker, & Ellett, 2014). This study aimed to explore the perspectives of New Zealand classroom teachers, specialist teachers and teacher aides, in relation to AAC implementation in inclusive education settings. Specifically, information was sought regarding educator perspectives on what constitutes successful outcomes in AAC use and the facilitators and barriers to this success. The use of a qualitative, phenomenological design allowed for the exploration of participant experiences relating to the phenomenon that is supporting students to use AAC. Semi-structured interviews were used to gather data, following which Thematic Network Analysis (TNA) (Attride-Stirling, 2001) was used for the analysis and interpretation of data.

Prior to this study, there was no published New Zealand literature on educator perspectives regarding AAC success and facilitators and barriers. The findings from this study provide a New Zealand perspective and add to the literature already available

internationally on these topics. It is hoped that the findings will provide insight into educator experiences for professionals supporting AAC implementation in inclusive settings, in order to support reflection regarding practice in education settings.

Trustworthiness of Findings

Credibility, transferability and confirmability are three major components of trustworthiness in qualitative research (Mills, 2014) which were considered during the design of this study. Credibility triangulation (Patton, 2015a) was used in this research to enhance the credibility of findings. This is a process when researchers; (1) acknowledge the potential implications of their own background, (2) examine the perspectives of participants and (3) share results with an audience for review of the findings (Patton, 2015a). The third component of this triangulation, the sharing of results, was achieved through phase two of data analysis. The findings from the interviews were shared with a group of individuals with relevant experience for feedback as part of an “expert audit review” (Patton, 2015a, p. 671). This is consistent with the TNA process (Attride-Stirling, 2001). Although only a small amount of feedback was received during this process, it allowed for the consideration of alternate explanations for the findings and also served to confirm some research findings.

Transferability refers to the belief in qualitative research that findings from a study are context dependent (Mills, 2014). It is therefore not a goal of this research to generalise the findings to the entire population of educators (Mills, 2014). Rather, the findings presented are intended to provide some insight into the ‘essence’ of the experience for some educators supporting students to use AAC, as in common in phenomenological approaches (Patton, 2015a). Some information regarding the context of educational

settings in which participants worked has been provided, in order to allow those reading this research to consider the transferability of findings (Mills, 2014).

Increasing the confirmability of research findings can be achieved through triangulation processes and the acknowledgement and reflection of potential researcher bias (Mills, 2014). Therefore, to add to the confirmability of findings, as the researcher I clearly positioned myself to participants and I have described my background and the potential impact of this in chapter three. My background as a speech-language therapist could potentially have impacted upon participant disclosure, thus semi-structured interviews were used to allow participants to describe their experiences as they viewed them. The triangulation process, part of which involved the sharing of findings with a group with applicable experiences, also added to the confirmability of findings. Despite the strengths of the research design, there are inevitably some limitations which must also be considered.

Limitations

There were a number of limitations in the present study which may impact upon the reader's interpretation and transferability of the findings. Firstly, attempts were made to recruit a wider range and larger number of participants, though only seven participants took part; including only one classroom teacher and four specialist teachers. Secondly, participants were recruited through The TalkLink Trust, having received their support. There may be many educators working to support AAC implementation in inclusive settings who have not received this specialist support, thus their experiences may be very different. Thirdly, the participants who elected to take part in this study may have been motivated to do so because of strong views relating to AAC implementation, either from positive or negative previous experiences. A fourth limitation relating to

transferability of results is that there was variability in how much time students spent within inclusive classrooms. This makes the comparability of findings between educators more difficult, thus this may impact upon the transferability of findings. In addition to the above limitations, this study explored experiences of AAC use from a single stake-holder perspective only; that of the educators. Further exploration of the perspectives of other stake-holders may have provided a more complete overview of contributing factors to both successful outcomes and facilitators and barriers.

Implications for Practice

Overall, this study provides an insight into the perspectives of some educators regarding AAC use, adding to the body of research available for practitioners supporting students to use AAC. This has a number of implications for practice, including implications relating to successful outcomes of AAC use. The educators within this study believed that short-term indicators of successful use of AAC were: (a) improved language and speech, (b) improved social interactions, (c) reduced frustration and (d) increased participation. Though this was success that they had achieved, they were also aiming for: (a) students as active communicators and (b) initiation of communication. These findings provide support for the benefits of AAC use, which may support practitioner discussions with team members about why AAC use is necessary for students. As well as this, these reported educator outcomes give others an insight into the outcomes that are valued by educators. This may have implications for the goal setting process within teams. The long-term, aspirational outcomes described by educators also provide focus for the long-term nature and impact of AAC use, which helps to position the use of AAC as being about more than just academic outcomes in education settings.

Aside from successful outcomes, implications for practice also exist with regards to facilitators and barriers. Within this study, educators believed that factors relating to the following areas could be facilitators or barriers to AAC use: (a) student specific considerations, (b) collaborative teaming, (c) beliefs about AAC, (d) specialist support and advice, (e) the AAC learning journey and (f) strategies for AAC use in educational settings. These findings highlight that practitioners need to provide student-centred support that is tailored for individuals and provided in a collaborative model.

Difficulties may be encountered during teaming, but it is imperative that obstacles are overcome. One possible solution to some of these difficulties is for educators to seek collegial support from the wider community of educators, a finding which appears to be a new contribution to the literature. In addition, AAC practitioners must be prepared to encounter and address a range of attitudes relating to AAC use, potentially including fear and negative attitudes. Practitioners can be assured from some of these findings that the specialist support they provide is useful, though in some instances there is a need for practitioners to upskill in the area of AAC. The strategies that were reported as useful, including modelling and embedding of AAC may be strategies that could be recommended to other educators supporting AAC implementation. In summary, this research provides an opportunity for other professionals to consider the perspectives of educators, in order to be aware of potential facilitators and barriers to AAC use, which may stimulate reflection regarding their own AAC practice. Furthermore, these findings may be useful to provide educators within the field with information regarding the experiences of other educators.

Implication for Further Research

This study adds to the body of AAC research on educator perspectives, and provides some information regarding the New Zealand context. Further research is warranted to

examine AAC within the New Zealand education setting, including examining the perspective of students themselves and their significant others. This would allow for a deeper explanation of AAC implementation. In addition, the investigation of measurable outcomes of AAC use may provide further evidence to support the benefits to AAC use. As well as this, given the unique cultural context of New Zealand, further research may be required to examine the interaction between AAC use and cultures within New Zealand, in order to ensure practitioners are providing culturally responsive support.

Final Thoughts

All of the educators within this study reported that their students had achieved success related to AAC use and they were generally positive about the potential for use of AAC systems. Educators were strong advocates for student voice and demonstrated a focus on student-centred support, within a collaborative model. This study highlights the need for professionals, including speech-language therapists (SLTs), to provide support to educators in a responsive and flexible manner. Professionals' awareness regarding facilitators and barriers to AAC use in New Zealand classrooms can help them to identify how to support AAC implementation, resulting in more positive outcomes for all stake-holders. Viewpoints and explanations of increased educator knowledge over time in this study, highlight the need for SLTs to continue to raise awareness of benefits and strategies for AAC use, including dealing with any misconceptions for individuals support students.

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APPENDICES

Appendix A: Phase one information sheet



MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Facilitators and Barriers to AAC Implementation in Inclusive Education Settings

INFORMATION SHEET

My name is Bryony Jones and I am Speech-language Therapist currently working towards the completion of a Master's degree in Speech-language Therapy. For my thesis project I will be investigating the experiences of teachers and teacher's aides who have supported students who use aided Augmentative and Alternative Communication (AAC). 'Aided' AAC requires equipment external to the user such as core vocabulary boards, Picture exchange communication systems (PECS) and speech output devices and software. 'Unaided' AAC does not require any external equipment, examples of which include Makaton sign and New Zealand Sign Language (NZSL).

The aim of this research is to examine the perspectives of teachers and teacher's aides about which factors can support or hinder successful AAC implementation in classrooms.

I would like to invite you to participate in this research by taking part in one semi-structured individual interview.

Interviews will be completed with participants via Skype or phone. Participants will be encouraged to discuss their experience of supporting students who use AAC and make recommendations for other teachers or teacher's aides who may support AAC implementation in the future. Following the individual interviews, any themes identified will be shared with other educators at a Specialist teachers' network meeting in the Wellington region for discussion of any similarities in experiences.

I am seeking teachers and teacher's aide participants, who fit the following criteria:

- You are currently supporting or have previously (within the last 2 years) supported a student using AAC.
- You have supported this student in a mainstream setting, where the student has been in a mainstream classroom for most of the day.
- The student you support may use a variety of forms of communication, including spoken language, but uses at least one type of 'aided' AAC.

Individual Interview procedures

- Interviews will be scheduled with participants at a time that is convenient to them and completed through their chosen method (i.e. phone call or Skype).
- Participants will be asked open-ended questions about experiences with students using AAC.
- Audio recordings will be taken for the duration of the interviews for the purpose of recording a written version of what was said.
- Each Individual interview will take no longer than 40 minutes in total.
- Participants will be asked not to mention a student by name or share other identifying details such as nature or type of the student's disability, their ethnicity and/or age. Participants may like to use a pseudonym when referring to individual students.

Data Management

- Audio recordings will be stored on a password protected Iron key external drive until they have been transcribed. Following the completion of written transcripts, the audio recordings will be permanently deleted. Written copies of the focus group transcripts will be stored on a password protected Iron key external drive until the completion of analysis.
- Written transcripts of the interviews will be provided to participants for verification and to give an opportunity for clarification of meaning.
- After the transcripts have been verified, I will then analyse the data to identify any common themes and write an analysis of these for my thesis report.
- Before the themes are shared at a Specialist teachers' network meeting, identifying details will be removed.
- Written copies of the reviewed transcriptions (containing pseudonyms for participant names) will be stored securely in a password protected folder on my supervisor's university computer for 7 years before being permanently deleted.
- The final results of this study will be shared with the Ministry of Education.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;

- withdraw from the study at any stage of this project before completion of the data collection
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

Project Contacts

The information regarding this research has been sent to you by Ann Smail from The Talklink Trust.

If you would like to participate in this study, or you have any questions please contact me, Bryony Jones, at Bryony.Jones.2@uni.massesey.ac.nz or my supervisor Elizabeth Doell at E.H.Doell@massey.ac.nz.

Please note: Although I am employed as a Speech-language therapist by the Ministry of Education, this research is being conducted by me as an individual separate to the organisation.

Massey University Human Ethics Committee (MUHEC) ethics statement:

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 16/50. If you have any concerns about the conduct of this research, please contact Dr Lily George, Acting Chairperson, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x 43923, email humanethicsnorth@massey.ac.nz.

Appendix B: Interview schedules

Schedule for semi- structured individual interviews:

“Thank you for taking the time to talk to me today. This interview will last for no longer than 40 minutes. I will be asking you questions to find out more about your experiences supporting students who use Augmentative and Alternative Communication (AAC). Before we begin, I’ll just remind you of the key points from the information sheet.

- I will be making an audio recording of this interview so that I can create a written transcript of what we talked about. Once this is completed, I will send this through to you to check over so that you can clarify the meaning of what you have said if needed.
- If you wish, you can use a pseudonym when talking about a specific student. For purposes of confidentiality, please refrain from mentioning specific details about students such as their ethnicity, nature of disability and their age.
- You have the right to decline to answer any questions that I ask and to stop the interview at any point in time.
- You have the right to withdraw from the study at any point during the data collection phase.

Before we begin, do you have any questions?”

1. Please tell me about the experience you have working with children who use AAC.
(Probes- length of time, how many students, in which settings)
2. Think back about a specific student that you have supported who used AAC. Can you talk me through this experience?
(Probe- what stands out in your mind most about this experience?)
3. What were the outcomes that you were aiming for when supporting students to use AAC?
4. How did these compare to the outcomes that students achieved?
5. How competent and confident do you feel about your ability to support students using AAC?
6. Can you tell me about a time when you did not feel competent or confident when supporting a student to use AAC?
7. Are there any specific strategies that you would recommend to educators supporting students who are using AAC?
8. What support do you think educators need when they are supporting students who use AAC?

Appendix C: Coding Book

Code	Definition	Example	Letter Code
Student motivation	Participant refers to the student's motivation and desire to communicate through any modality	We started off with a head massage. And that pretty much... stood out... having a conversation using that set up, it was just 'stop' and 'go'. I'd um, do the head massage and then stop. And then he would go over to 'go' and then I'd go [laughter] and then stop and he'd go back to go. Yeah, that's what really got him, got him. The machine and on a... it was weird [laughter] but it's what worked.	SM
AAC use planning	Participant discusses how the use of the AAC device was planned including if/how it was documented and the team members involved in the planning process.	everyone had an input... the specialist teachers, the teacher, myself um Speech therapists, um the Ministry... physios if they're on board.	PL
Goal Setting	Participants discuss the goal setting process	So I found that we've tried to incorporate some sort of communication goal into his IEP. And used the... used his AAC as a means or a strategy to achieve those goals rather than an end-point in itself.	GS
Evidence based practice	Participant references the applicability of research and the evidence base in	And that was um... it was better but it was ah... trying to keep up, trying to keep with the... research and the data and what that shows in	EBP

	relation to their daily teaching practice.	comparison to the student sitting in front of you, like, you know, was this person in the test... are there 50 test specimens like my student.	
Family involvement	Participants discuss the involvement of the student's family in process of supporting the student to use AAC	Um and definitely the family didn't take it on board at all, even though they felt that yeah it would be something good. The student didn't use it at all. He didn't actually point to any of the words. Whatever we do at school, the parents are doing at home, so it's making it nice and easy for her and us.	FI
Suitability of AAC device for individual students	Participant discusses their thoughts about the suitability of different types of AAC for their students as individuals, including the limitations and benefits of different types of AAC.	Um, before that it was just a book with feelings... it was almost like a... um... picture exchange except it was just ah... they used um... eye gaze. Like just ah, continual eye gaze. Yeah, so they were kinda.... You were assuming... yeah there were quite a lot of assumptions that were made as to what the student was actually trying to communicate. I felt. From what I saw. But it was ah... yeah, just a lot of lag. And some... certain things that were, you know, that were kind of missing in the program.	DS
Specialist support/advice	Participants discuss advice they were given and support received from other	We're lucky now that we've got a Speech-language therapist that is accredited to actually assess already.	SS

	professionals regarding AAC use		
Beliefs	Participants discuss their own and others' beliefs regarding AAC, including incongruence of beliefs.	<p>Yeah, I always got um... I always got in trouble, well not in trouble, but I always got challenged by people... Coz I'd talk about the weather.</p> <p>And um, it's just something that you and I can both see, we can both feel, we've both experienced getting here from the car, or however you got into the classroom.</p> <p>I feel, as a classroom teacher, there's a very big expectation on us to just push the one way of communication</p>	B
Multimodal communication	Participant discusses the nature of the communication with their students as being multimodal.	<p>I teach from a very holistic point of view... and to me, these devices are just another tool in this child's toolbox for communication</p> <p>There are so many ways that you can communicate</p>	MMC
Achieved outcomes	Participants discuss achieved student outcomes relating to AAC use	they're going from one word, you know, to a simple sentence to being able to express their emotions and things... um... we have also been developing that within sign, within speech.	SO
Aspirational outcomes	Participants discuss aspirational student outcomes	What we'd like is for her to initiate it more.	
Long term learning	Participant discusses the ongoing nature of learning to use AAC	now I see that it is a really long process	LT

Learning alongside the student	Participant discusses learning about AAC simultaneously with the student	I feel, I'm learning with her.	LA
Strategies	Participants describe strategies and activities that they use with the student to further support the use of AAC, excluding modelling.	Um, so, often to support my staff in how to use it I'm often working with the student and demonstrating how to use the device. So they can see... so I'm modelling to them so they can then go on to model it with their student.	STR
Generalisation of AAC use	Participant references the use of AAC outside of planned, structured activities in a variety of environments including home and community settings.	...with a lot of support and encouragement he will. Um use his device. But um... there's a lot of. I guess you have to structure the situation so that he will use it	GU
Knowledge of how to use AAC systems	Participant discusses their own and other staff members' knowledge of ways in which to use the AAC system, including discussions of how their knowledge and beliefs have developed over time.	You would have very sort of restricted um... A very sort of restricted way of using it. And um.. and I guess um because it was all new and we were all learning, that was just the way It's not just the device, it's actually knowing what you want to say.	K
Time	Participants refer to the amount of time involved in supporting students to use AAC	Most educators are time poor, because that's, you know, you're using this device for one, maybe two students in your classroom but you still have a class of... 27 other	T

		students with high learning needs as well.	
Difficulty accessing support	Participants discuss difficulties accessing specialist support services, including the wait time involved for these services.	<p>They were just a little bit... off. You know, so we had to calibrate it to his eyes and... to get that um... support from the actual people who ah... provided the equipment and wrote the equipment was ah... quite a challenge as well. Because it was all just coming on the scene...</p> <p>...it arrives in the courier at school and there can be a bit of a time lapse before anyone turns up to tell you what's going on and how to use it.</p>	AS
Attitudes	Participant directly or indirectly reference their own attitudes or the perceived attitudes of others towards the use of AAC.	<p>So, you know, it's a normality thing, it's not something that's just solely hers</p> <p>The children in the class are going to be using it with her as well. So it makes it a normal thing</p> <p>This is her way of talking and it's nice for other people to be using it to talk to her as well</p> <p>I know that other teachers who have used it... it's a frightening, daunting thing.</p>	AT
Communication partner difficulties	Participant discusses the negative impact of difficulties they have encountered as a communication partner	You were assuming... yeah there were quite a lot of assumptions that were made as to what the student was actually trying to communicate. I felt. From what I saw.	CP

Collegial Support	Participant discusses support received from colleagues	I've been able to... to work alongside other people who are using these devices with students. And just within, you know, my wider community. And... it's a learning process	CS
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Appendix D: Phase two information sheet



MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Facilitators and Barriers to AAC Implementation in Inclusive Education Settings

INFORMATION SHEET

My name is Bryony Jones and I am Speech-language Therapist currently working towards the completion of a Master's degree in Speech-language Therapy. For my thesis project I am investigating the experiences of teachers and teacher's aides who have supported students who use aided Augmentative and Alternative Communication (AAC).

'Aided' AAC requires equipment external to the user such as core vocabulary boards, Picture exchange communication systems (PECS) and speech output devices and software. 'Unaided' AAC does not require any external equipment, examples of which include Makaton sign and New Zealand Sign Language (NZSL).

The aim of this research is to examine the perspectives of teachers and teacher's aides about which factors can support or hinder successful AAC implementation in classrooms. Individual interviews have been conducted with teachers and teacher's aides to identify themes surrounding this topic. Today, I am presenting these themes at the Specialist teachers' network meeting.

I would like to invite you to participate in this research by completing an anonymous questionnaire about your own experiences in supporting students using AAC, provided that you:

- You currently or have previously supported a student who uses AAC
- You are a teacher, a specialist teacher or a teacher's aide

Questionnaire procedures

- Themes from the Individual Interviews will be presented to you and explained.
- Throughout the presentation you will have the opportunity to discuss themes presented as compared to your own experiences, recording this in the questionnaire form if you wish.
- The presentation, including opportunities for discussion and completion of the questionnaire, will take no longer than 40 minutes.

- In your questionnaire responses you will be asked not to mention a student by name or share other identifying details such as nature or type of the student's disability, their race and/or age. Participants may like to use a pseudonym when referring to individual students.

Data Management

- The completed questionnaires can be placed into the box at the back of the room upon completion. The questionnaires will then be scanned and saved into a password protected folder on my computer until completion of data analysis.
- No identifying information (including names of schools or students) will be included in the analysis and write up of the questionnaires.
- Once analysed, the questionnaires will be stored securely in a password protected folder on my supervisor's university computer for 7 years before being permanently deleted.
- The final results of this study will be shared with the Ministry of Education.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any stage during the presentation and questionnaire completion;
- ask any questions about the study at any time during participation;
- provide information on the understanding that this questionnaire is anonymous.
- be given access to a summary of the project findings when it is concluded.

Project Contacts

You have received this information as part of your attendance at the Specialist teacher's network meeting.

If you have any questions please contact me, Bryony Jones at Bryony.Jones.2@uni.massey.ac.nz or my supervisor Elizabeth Doell at E.H.Doell@massey.ac.nz.

Please note: Although I am employed as a Speech-language therapist by the Ministry of Education, this research is being conducted by me as an individual separate to the organisation.

Massey University Human Ethics Committee (MUHEC) ethics statement:

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 16/50. If you have any concerns about the conduct of this research, please contact Dr Lily George, Acting Chairperson, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x 43923, email humanethicsnorth@massey.ac.nz.

Appendix E: Phase two questionnaire



MASSEY UNIVERSITY
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Facilitators and Barriers to AAC Implementation in Inclusive Education Settings

QUESTIONNAIRE

Please note: By completing and submitting this questionnaire you are consenting to participate as detailed in the information sheet.

Your role: Teacher/Specialist teacher/Teacher's aide (please circle one)

1. Which, if any, of the themes presented are similar to your experiences supporting students using AAC? (Please explain)

2. Which, if any, of the themes presented are dissimilar to your experiences supporting students using AAC? (Please explain)

A large, empty rectangular box with a thin black border, intended for handwritten or typed comments.

Any other comments?

Please place completed questionnaires in the box marked at the back of the room before leaving today.

Appendix F: Ethics Committee Approval



Date: 24 January 2017

Dear Bryony Jones

Re: Ethics Notification - **NOR 16/50 - Facilitators and Barriers to AAC implementation in Inclusive Education Settings**

Thank you for the above application that was considered by the Massey University Human Ethics Committee: **Human Ethics Northern Committee**, at their meeting held on **Tuesday, 24 January, 2017**. On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Brian Finch
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Appendix G: Phase one consent form



MASSEY UNIVERSITY
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Facilitators and Barriers to AAC Implementation in Inclusive Education Settings

INDIVIDUAL INTERVIEW PARTICIPANT CONSENT FORM

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being sound recorded.

I agree to participate in this study under the conditions set out in the Information Sheet.

If you would like to receive a copy of results at the completion of this study, please provide your email

address: _____

Signature:

Date:

Full Name - printed