

VANCOUVER ISLAND UNIVERSITY

Bridging the Gap: Literacy for Students Using Augmentative and Alternative Communication

by

Grietha E. van Gameren

(Bachelor of Arts)

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF EDUCATION IN SPECIAL EDUCATION

Faculty of Education

© Grietha E. van Gameren, 2021
Vancouver Island University

All rights reserved. This project may not be reproduced in whole or in part, by photocopy or other means, without permission of the author.

Abstract

The purpose of this project was to gain a deeper understanding of how to support literacy skills with students who use augmentative and alternative communication (AAC). The focus looked at finding an alternate means of assessing phonological awareness skills especially geared to students who are non-verbal or minimally verbal. A design-based research approach was used to survey elementary educators to identify a gap in literacy access for students using AAC and to create the Phonological Awareness Screen for Students using AAC (PASS-AAC). Results indicated that elementary educators did not find current assessment practices to be accessible for students with AAC and that the PASS-AAC would be a suitable alternative method. The findings in this project suggest that there is a need for alternative assessment methods for students using AAC and further trials with this population would be beneficial to get a deeper understanding how to best support literacy skills for AAC users.

Keywords: literacy, augmentative and alternative communication, phonological awareness, assessment

Acknowledgements

I would like to thank William McGann, faculty supervisor, for the insight, enthusiasm and humour while guiding me through this project. Thank you also to Stacey Harpell, second reader, for being a mentor and friend. Taking the time to review this project is so appreciated. I would also like to thank the educators and school district that were part of this project. Your input is valuable and will hopefully lead to more access for students with AAC. Last but not least, thank you to my family and friends. Your words of encouragements, special treats and just taking me for much needed mini breaks will never be forgotten.

Dedication

To all my students who use AAC – you are a true inspiration.

Contents

Abstract	iii
Acknowledgements	iv
Dedication	v
List of Tables	viii
Chapter 1	1
Augmentative and Alternative Communication (AAC)	1
Phonological Awareness	2
The Right to Literacy	3
Personal Context	4
Research Justification	5
Research Question	6
Research Methods	6
Value and Limitations	7
Chapter 2	9
Augmentative and Alternative Communication (AAC)	10
Assessments and AAC	12
Literacy and Phonological Awareness	14
Assessing Phonological Awareness for Individuals who use AAC	16
Conclusion	20
Chapter 3	22
Methodology	22
Participants	23
Phonological Awareness Screen for Students using AAC (PASS-AAC)	25

Data Collection	28
Data Analysis and Interpretation	28
Chapter 4.....	30
Survey One and Survey Two Demographics	30
Survey One	31
Survey Two.....	36
Final Thoughts.....	38
Chapter 5.....	39
Limitations and Future Research.....	40
Value and Significance.....	41
Conclusion.....	41
References.....	42
Appendix A Survey One.....	47
Appendix B Survey Two	50
Appendix C Introduction Letter One	52
Appendix D Introduction Letter Two	53
Appendix E Recruitment Poster One.....	54
Appendix F Recruitment Poster Two	55
Appendix G Letter of Consent One	56
Appendix H Letter of Consent Two.....	58

List of Tables

Table 1. Phonological Awareness Screening for Students using AAC (PASS-AAC)	27
Table 2 Roles of Participants in Survey 1 and Survey 2.....	31
Table 3 Participant's Years as an Educator in Survey 1 and Survey 2.....	31
Table 4 Participants Rating of Importance for AAC Users to have Literacy Skills	33
Table 5. Benefits of Current Class Materials and Teacher Overall Satisfaction for Literacy Programming for AAC Users	34
Table 6. Type of Training Needed for PASS-AAC Implementation.....	38

Chapter 1

Introduction

Literacy is a relatively small word; however, the significance and power of this word has a wide reach. Copeland and Keefe (2018) described literacy as an ever-changing entity that develops over a lifetime. For many, literacy developments are a naturally occurring change that are fostered by living and working in literacy-rich environments. Even with these often-undervalued privileges, some individuals do not have an ever-changing trajectory in literacy. This awareness of inequality is especially evident among non-verbal or minimally verbal students who rely on augmentative or alternative communication.

Augmentative and Alternative Communication (AAC)

Augmentative and alternative communication (AAC) refers to augmenting communication or using alternate means to communicate for those who are unable or have difficulties accessing oral communication. Dodd (2017) further described how AAC includes a set of tools and strategies in order for one individual to understand the other. Although AAC can come in a high-tech form like an iPad with a communication app, it can also come in many different forms like battery-operated communication devices, picture symbols, text, gestures, and facial expressions. Dodd (2017) further defined AAC, as provided by the American Speech-Language-Hearing Association (ASHA), as "all forms of communication (other than oral speech) that are used to express thoughts, needs, wants and ideas" (p. 2).

The ability to express more complex ideas is closely linked to literacy skills. Beukelman and Light (2020) not only highlighted the importance of literacy skills for individuals with complex communication needs but also shared evidence on how literacy can be learned in combination with appropriate access to AAC. Keefe and Copeland (2011) also noted how

communication and literacy are closely intertwined, and both require equal opportunity and access to develop. Even though literacy has such incredible importance, access to literacy is not equal, especially for students who need AAC. These authors further explained how educators generally believe students with exceptionalities are unable to acquire literacy; therefore, literacy opportunities are not provided, and students' literacy levels remain low.

Phonological Awareness

One area of literacy that has been closely linked to the development of reading and writing is the acquisition of phonological awareness. Researchers have defined phonological awareness as one of the key markers to an individual's success in reading and writing (Gillon, 2018; Hetzroni, 2004). Schuele and Murphy (2014) described phonological awareness as the ability to analyze sounds in words. This analysis of sounds includes syllable identification, rhyming, alliteration, onset-rime segmentation, initial and final sound identification, blending sounds into words, segmenting sounds into words and deleting or manipulating sounds. These phonological awareness skills develop gradually, and often these emergent literacy skills begin to develop when individuals are in preschool.

Acquisition of phonological awareness skills is equally important for individuals who rely on AAC. Hetzroni (2004) identified that different forms of AAC or other means of Assistive Technology (AT), including the use of graphic symbols, can be used successfully to build literacy skills. However, the author also identified that, similarly to the acquisition of communication skills through AAC, acquiring literacy skills through AAC can be difficult due to restricted access, limited opportunities and lower expectations.

The Right to Literacy

In 1966, the United Nations Educational, Scientific and Cultural Organization (UNESCO) described literacy as a human right (Keefe & Copeland, 2011). The authors further recounted that with this statement, education needs to address the needs of each individual child and provide equal opportunities so that the human right for accessing literacy can be developed. Da Fonte and Boesch (2019) stated that "literacy is an essential life skill that is far more important than rehearsing partial participation in the activities of daily living" (p. 110). From a social-emotional perspective, it is essential to provide students with opportunities that are natural interactions that provide enjoyable experiences. Individuals who have been provided with opportunities in natural settings not only increased their literacy skills, but it also provided a positive impact on their social-emotional well-being. (Da Fonte and Boesch, 2019).

Keefe and Copeland (2011) further explained how our personal views of literacy will affect our practice and will, therefore, affect the opportunities we give individuals with exceptionalities. Waiting for a student to be ready for literacy instruction will "reinforce the belief that they are unable to become readers and writers" (Mirenda, 2003, p. 271). These words provide a reason to believe that specific training and understanding need to be given to educators so that personal views can be shifted regarding the learning abilities of students with specific needs.

Cook and Schirmer (2003) summarized their review of special education and discovered that many valuable programs have been developed and are being used in special education. However, there remains a gap in the consistency and faithfulness of implementation. While critically reviewing district practices, it is evident that evidence-based programs are being sought out with great intentions for full implementation. In addition, training opportunities are often

available for both special and general educators. Still, as the authors summarized, one training session is not enough to send them back with confidence and determination to see it through. As a result, you encounter teachers who are willing to embrace methods and strategies as a means to include all children, but without enough support and follow-through, there is abandonment. Cook and Schirmer (2003) clearly illustrated that when teachers are provided with more support and training for special education programming, better outcomes with program implementation occur.

Personal Context

As a district AAC Support Teacher, I am privileged to work with many students who use AAC. Some students come to me with very limited communication, but some are more fluent AAC users. Although school teams have done an amazing job of implementing AAC for communication, there remains a reluctance to use AAC throughout the day in an inclusive way. Educational Assistants (EAs) working with these students often share the care with other EAs which can create unintentional inconsistencies. Working with complex needs students can also be draining so often there is a lot of changeover which requires more training time from already thinly spread specialists. Other barriers that school teams face is the inability to assess students' academic levels and how to adapt lessons or strategies so that students using AAC can fully participate. Unintentionally students are being deprived of learning opportunities that could enhance overall communication growth and increase their literacy levels. Seeing this need and having heard from teachers how they want this need met has led me to explore how literacy and AAC can be combined successfully.

Research Justification

A Canadian study done in 2006 indicated that literacy instruction with students with Down Syndrome was attempted in primary grades but was essentially abandoned by the time they reached the middle school years (Keefe & Copeland, 2011). Further studies completed by the same authors indicated that literacy instruction abandoned in the early years impacts students even further during adolescence and adulthood. During adolescence and adulthood, literacy becomes even more valuable as these individuals seek more independence and a possible career. Without adequate literacy skills, people are known to be affected in education, employment and the overall school-work transition (Hanser & Erickson, 2007).

It is important to note that a presumed inability for non-verbal or minimally verbal students to learn to read and write was further emphasized by a perception of their inability to learn to become communicators even though the students had access to AAC. Andzik et al. (2018) reported that 42% of AAC users are not proficient communicators in classroom settings and are at a higher risk for not being able to build successful relationships and, in turn, have a lower quality of life. Results like this bring us to the conclusion that if communication has such low proficiency levels, then reading and writing will undoubtedly show similar or lower levels of proficiency.

Machalicek et al. (2010) described how students with physical and developmental disabilities are at a high risk of being delayed in literacy skills or they do not acquire literacy skills. A shared example by the same authors indicates that as high as 90% of children with cerebral palsy cannot read or read well below grade level even when the individual's intelligence is in the average range. Even though the benefits and rationale for literacy instruction are known, students with physical and developmental disabilities encounter major barriers to the acquisition

of literacy skills. Machalicek et al. (2010) noticed that the barriers these individuals encountered include uninformed educators and a lack of access to good literacy instruction.

Research Question

Educators often have limited awareness of the literacy skills of their students who use AAC. Early reading skills like phonological awareness are often skipped or abandoned. This has led to the development of two research questions for this thesis. What tools are available to assess the phonological awareness skill of students who use AAC? Would an adapted or modified assessment tool provide a more accurate picture of students' abilities and foster more opportunities for literacy engagement?

Research Methods

For this study, a design-based research approach will be used. Wang and Hannafin (2005) described design-based research as a flexible research method that looks to improve educational practices through research, design, development and implementation. The ontology of design-based research is rooted in pragmatism and is further described as "what is true and what is valuable is what works" (Cohen et al., 2018, p. 35).

In 1916, John Dewey, an educational pragmatist, urged teachers to educate "the whole child" (Katz, 2012, p. 15). His view included looking at the whole child and that each child should be given equal opportunity in their naturally occurring learning environments. Vygotsky shared similar beliefs and strongly encouraged looking at the experiences the child encounters that shape their development (Santrock et al., 2003). Therefore, this research's epistemological nature examines the relationship between what is known and what will be discovered through the flexibility of design-based research.

Participants in this research included the researcher, Kindergarten to Grade Five teachers, Elementary Learning Assistance Teachers, and Elementary Resource Teachers. Data was collected using two questionnaires in an online survey format with questions generating both qualitative and quantitative data. The first survey examined baseline knowledge of literacy, AAC and the phonological awareness screening process with students using AAC. This survey provided input for the development of a phonological awareness screen for students who use AAC. The second survey allowed educators to give feedback on the newly developed Phonological Awareness Screen for Students using AAC (PASS-AAC). The surveys included both open- and close-ended questions that were analyzed through a mixed methods approach.

The process in design-based research includes four phases in a cyclical pattern. For the purpose of this study, only one cycle was used. During Phase One, a literature review was completed on literacy development; in particular, phonological awareness and the link to AAC. Survey One was created and sent to elementary educators in a district found in southwestern British Columbia. During Phase Two, the data from Survey One and the information from the literature review were combined to develop a phonological awareness screen for students that use AAC. During Phase Three, the newly created draft PASS-AAC was reviewed by educators. Feedback from participating educators was collected through Survey Two. Finally, during Phase Four, the researcher reviewed the data collected in Survey Two and refinements and implementation ideas were considered.

Value and Limitations

Positive factors from this research include giving teachers involved in the study knowledge about the achievability of emergent literacy assessment and interventions for students who use AAC. The tools and strategies that will be provided will allow educators to implement

them when encountering future students who require AAC. Through these interactions, capacity-building opportunities were created within schools and the district.

Since this study used design-based research, caution will need to be taken with the validity, reliability and objectivity of the project. Findings from this study cannot be generalized beyond the context and participants involved.

Chapter 2

Literature Review

Over the last couple of decades, Augmentative and Alternative Communication (AAC) has undergone some significant changes. Light et al. (2019) attributed these changes to improved and more readily available technology with research-based vocabulary sets and evidence-based strategies for implementation and opportunity. While advances in AAC are noted in the expansion and availability of technology and service delivery, it is evident in the literature that providing appropriate AAC services to help individuals become proficient in communication and literacy is an ongoing area of research. Light et al. (2019) emphasized that although technological advances are important, AAC acquisition also requires strong intervention skills targeting “an individual’s linguistic, operational, social and strategic skills and to teach communication partners effective interaction strategies” (p.1).

Studies have indicated that barriers for individuals who use AAC are not only found in learning to communicate but are also found in the combined use of AAC and literacy. These effects are especially noticeable in the understanding of phonological awareness and the related outcomes of reading and spelling. In order for individuals to become successful in both communication and literacy, the gap between communication and literacy needs to close. Several studies have shown positive results in the ability to assess phonological awareness skills for individuals with complex communication needs. Although these positive results exist, it continues to be difficult to find a screening tool that can be implemented and followed by a rigorous intervention program. The development of the PASS-AAC was supported by looking at studies that have tried various assessment tools and strategies used with individuals who have complex communication needs and comparing the results to common standardized assessments.

Augmentative and Alternative Communication (AAC)

Augmentative and Alternative Communication (AAC) is an essential support service for individuals with communication disabilities. Although many advances have been made in AAC, it is still a relatively young and developing field. It was not until the 1950s and 1960s that augmented or alternative means of communication emerged. Hourcade et al. (2004) described this emerging field as part of a broader reform of bringing people who had previously lived in segregated settings into mainstream society. Even with all these advances, current research indicates that individuals with complex communication needs are often subject to limited access to natural communication environments, few communication partners and infrequent opportunities to use their devices (Andzik et al., 2018).

AAC Devices

One of the most significant changes in the field of AAC in the past fifty years is the availability and the functionality of the equipment involved. AAC can come in a range of different forms and is often categorized into unaided and aided communication systems. Unaided communication consists of any form of communication we can do using our bodies. Examples of unaided communication include signs and gestures, facial expression, pointing, and vocalizations. Aided communication devices are any products that can be used with a person to enhance expressive communication. Examples of aided communication include low tech systems (e. g. PECS [Picture Exchange Communication System], activity boards and communication binders/books), mid tech systems (e. g. Big Mack, Step-by-Step, and Go Talk) and high-tech systems (e. g. tablet or iPad with a communication app and eye-gaze technology). Early forms of aided communication devices were expensive, heavy, cumbersome pieces of equipment that relied heavily on the support of therapists since these devices were essentially

typewriters that required adequate reading and writing skills. The lack of portability and opportunities to be an independent communicator did not make AAC an appealing path to follow. In the 1980's and 1990's, there was a tremendous technological growth that made AAC more accessible through advances that included the introduction of voice output and the use of graphic interfaces (Hourcade et al., 2004). The invention of the iPad in 2010 provided a revolutionary wave to the world of AAC. A couple years after this introduction, AAC communication apps were being introduced making the iPad a smaller and much more affordable option for families. McNaughton and Light (2013) summarized the benefits of the iPad as increased AAC awareness for the general population as well as providing choice according to the needs of the family which allowed a wider range of individuals to access communication. However, the authors cautioned that the easy availability of mobile AAC devices for consumers leads to bypassing assessments that would indicate an individual's ability and suitability for the various AAC devices and apps. Lack of assessment may lead to implementations of AAC that does not take into account the needs and skills of the users. The significance of these pros and cons showed that although close to three quarters of families could now purchase a more affordable piece of communication equipment, three quarters of these recipients did not feel effective in providing support to the individual using AAC (McNaughton & Light, 2013).

AAC Services

Alongside these technological advances also came changes in the service delivery models. By the 1970s and 1980s, the Education for All Handicapped Children Act (P.L. 94-142; reauthorized in 1997 – P.L. 101-476 – as the Individuals with Disabilities Act, or IDEA) in the United States of America “was the first federal legislation to mandate the provisions of special education services to all school-aged students with disabilities...in the least restrictive

environments” (Hourcade et al., 2004, p. 236). These changes were further amended to include technology in the Assistive Technology Act Amendments of 2004 (P.L. 108-364) (Beukelman & Mirenda, 2013). Not only were individuals now seeing services to support their communication in natural environments, but they were also being assessed for technology that supports current and future needs (Hourcade et al., 2004; Beukelman & Mirenda, 2013). Even though these fundamental changes envisioned what AAC could mean for an individual with complex communication needs, reality reflected a significant gap between what policy stated and the AAC services that were being delivered. Andzik et al. (2018) reported that 42% of students using AAC were by no means proficient and only communicated their wants and needs with adults in their environment. Literature has indicated, too often educators and therapists focus on building prerequisites for AAC, instead of using an AAC device to increase vocabulary and develop language needed for communication and literacy. Hourcade et al. (2004) encouraged staff to view and assess individuals through a strength-based model instead of a deficit-based model.

Assessments and AAC

Assessment is an important part of reflecting on, modifying for, and expanding learning, but often the right tools are not available for students in special education. Finding appropriate assessment tools for individuals that use AAC is problematic, and at the same time, the lack of assessment information is a barrier for setting appropriate learning goals. Assessments can be categorized as either being standardized or dynamic in nature. Although highly valued as a tool to provide information of a student’s current level of performance, standardized assessments will tell you how an individual performs compared to others with similar characteristics but are not necessarily designed to identify specific interventions for learning (King et al., 2015). The Phonological Awareness Test 2nd Edition: Normative Update (PAT-2:NU) is used with students

who have phonological awareness deficits. Results on this assessment “identified language impaired and special education groups performed below average” (Robertson & Saltar, 2018, p. 53). Similar results were found on the Comprehensive Test of Phonological Processing 2nd Edition (CTOPP-2) where “students with differences like learning disabilities or speech-language disabilities scored lower or substantially lower than average” on the assessment (Wagner et al., 2013, p. 84). With this knowledge we can clearly determine that individuals with phonological awareness deficits can be identified but for students who need alternate ways to answer questions the assessments may not be as suitable and would therefore not give an accurate picture of the deficits.

In contrast to standardized assessment, King et al. (2015) describe dynamic assessments as an active learning and teaching process. It takes into account the differences of an individual’s observed performance and the level of possible development. These differences and levels of possible development are achieved by scaffolding the learning process with the help of a prompting system. When providing scaffolding for the learner we are giving them temporary supports that will help them achieve new learning. A prompting system is a hierarchy of steps on how much support an individual will need to be able to complete a task. Prompting ranges from very invasive supports (e. g. hand-over-hand) which makes the learner less independent, to hardly any supports (e. g. a visual that can be referenced independently) which gives the learner an opportunity to be independent. Research has indicated that dynamic assessment may help inform educators and therapists in setting appropriate goals for students who use AAC (King et al., 2015).

Literacy and Phonological Awareness

Literacy has long been seen as a critical component of success in academics, employment and social-emotional well-being, but many students, especially those with complex communication needs, have gaps in this functional skill. Rohde (2015) explains that literacy skills begin in infancy and develop throughout a person's lifetime. This means that when a child begins school, many early literacy skills have started and are developing into a rich base that is ready to receive more advanced literacy instruction. Unfortunately, many of our students with complex communication needs do not have these same experiences. Koppenhaver (2000) suggested that this discrepancy can be “attributed to a child’s physical, sensory, communicative, behavioural, or cognitive differences” (p. 272). Gillon (2018) also cited decreased exposure, opportunity and expectations as factors for lower literacy skills among individuals with AAC.

As literacy develops through a person's life, it goes through various stages, starting with emergent literacy. The concept of emergent literacy was first introduced by Marie Clay in the 1960s, during a time when education was transforming into a more inclusive frame (Hourcade et al., 2018; Rohde, 2015). The concept of emergent literacy further developed in the 1980s to remove the notion that students need a specific level of maturity and age before literacy skills can be taught (Mason & Sinha, 1992; Rohde, 2015). From this reform, researchers such as Brown adopted design-based research to carefully observe a child's interaction in their natural learning environment and recount the educators' modelling and scaffolding (Brown, 1992). Design-based researchers' work closely fits with the pragmatic view of Vygotsky, who emphasized that providing modelling and scaffolding in authentic learning environments allows working within a student's zone of proximal development (Mason & Sinha, 1992).

Phonological awareness is a broad skill of how an individual can analyze and manipulate oral language. Phonemic awareness is a narrower skill within phonological awareness and allows one to analyze and manipulate individual sounds of language. Research has shown that strong phonological awareness skills are closely linked to becoming a good reader in later years (Iancono & Cupples, 2004; Schuele & Boudreau, 2008; Vandervelden & Siegel, 1999). Over time, there is a gradual development of more complex phonological awareness skills, which are closely linked to being able to decode more difficult text. For most children, phonological development begins in the preschool years (Schuele & Murphy, 2014). By modelling and providing appropriate scaffolding, educators immerse students in sound awareness through play and other functional learning activities; however, students who rely on AAC miss out on many of these early opportunities. Vandervelden & Siegel (1999) comparative study with thirty-two students who had motor speech impairments due to cerebral palsy, noted that students who did have regular exposure to emergent literacy skills like phonological awareness scored higher than those who did not have that exposure. Since a good understanding of phonological awareness skills has been identified as a key component of literacy, questions remain why individuals with AAC struggle with low literacy levels. Gillon (2018) literature review described that comparative studies done with students who have complex needs did not perform differently in phonological awareness skills than those with typical communication. However, differences were noted in phonological knowledge or representation which leads to question how children with complex communication needs receive the information, process the information and are able to retrieve phonological awareness skills to aid in other literacy tasks. Therefore, being able to assess students with complex communication needs for phonological awareness levels would be beneficial.

Assessing Phonological Awareness for Individuals who use AAC

A review of the literature suggests that individuals that use AAC could gain literacy skills when given appropriate interventions. Pufpaff (2009) described how, after decades of study, researchers agree that phonological sensitivity, or the umbrella term that encompasses phonological awareness and phonemic awareness, is the link to reading achievement throughout an individual's school years. In addition, researchers have also highlighted the importance of alternative methods of assessment. Since individuals with AAC can have very unique learning profiles due to different underlying etiologies, it is important to find reliable and valid assessment methods that can be adjusted to meet the needs of these individuals (Barker et al., 2014; King et al., 2015).

Different dynamic assessment methods paired with phonological awareness have been reviewed by various researchers. Pufpaff (2011) used a preliminary investigative study to explore different response methods for possible phonological awareness assessments with students who use AAC. Barker et al. (2014) compared the reliability of a dynamic assessment to other standardized tests when assessing higher-level phonological awareness skills. Further, Gillam et al. (2011) examined a specific phonemic awareness task, phoneme deletion, by using a nonverbal dynamic assessment and comparing this to other traditional methods of assessment. These studies, examined in more detail below, describe the positive impacts of assessing phonological awareness skills with students who use AAC. The small sample size of the studies and the absence of actual AAC users as part of the studies warrants further research on phonological awareness assessment with students who use AAC.

Pufpaff (2011) explored how different response methods would change the outcome when testing students' phonological sensitivity. The author identified phonological sensitivity as

a term that covers both phonological awareness and phonemic awareness. Participants in this study included 12 typically developing kindergarten students from two different classes within the same public school. All students spoke English as their first language and had no identified disabilities at the time of testing. Each response method group had four randomly selected kindergarten students. The response methods used in this study included spoken response, spoken response with picture support, and picture only response. Before the phonological sensitivity assessment took place, all students were taught the names of all the pictures involved in the study over a two-month period. The assessment protocol consisted of 12 phonological sensitivity tasks that matched a developmental continuum as previously researched by the same author (Pufpaff, 2009). Students in the pictures only response group answered the assessment questions with yes/no visuals and multiple choice in picture format. Data was collected by assessment protocols and video recordings. Although the sample group of this study was small, the overall outcome of the assessment was positive. The average score for all tasks was the highest for students who could use both speech and pictures ($M = 8.31$) followed by no speech ($M = 8.20$) and ($M = 7.92$) for speech only conditions (Pufpaff, 2011 p. 19). The author noted that between-group comparisons did not reach significance. These results may indicate that the response method does not affect the results outcome. The author also noted that many phonological sensitivity tasks were easier when pictures were available for both the spoken response with picture support and the picture only support groups. Even though the study did not include students who relied on AAC, the similar outcomes for all response methods indicates a step towards identifying the literacy needs of individuals who use AAC.

Barker et al. (2014) used a concurrent and convergent validity approach by comparing the reliability of their Dynamic Assessment for Phonemic Awareness using the Alphabetic Principle

(DAPA-AP) with other standardized tests that include phonological awareness subtests. The authors describe phonological awareness as a key feature to reading and spelling success. The authors further explain that even the most robust and preprogrammed AAC devices will have vocabulary limitations when presented and used in different contexts. The DAPA-AP was therefore created to help find a way for individuals with complex communication needs to overcome barriers with standardized assessments so that their true abilities can be identified. The authors identified four barriers that individuals with complex communication needs encounter when completing an assessment. These barriers include oral speech as the only response method, complex instructions with no or limited visual supports and lack of an embedded prompting system. In addition, test validity comes into question when individuals are not able to answer in a typical way. The study was designed as a prototype test in order to refine the tool prior to using it with AAC users.

Participants in this study included 17 adults with mild to moderate intellectual disabilities. The 15 males and two females who participated in the study had sufficient verbal skills, but their reading skills had limitations. The DAPA-AP was administered over one to four sessions, followed by some standardized subtests found in the Comprehensive Test of Phonological Processing (CTOPP) and the Woodcock Reading Mastery Test-Revised (WRMT-R). The DAPA-AP was administered by using a computer with a touch screen with voice output. The participant would listen to the word and touch the word they heard. If the individual made an incorrect choice, an embedded prompting system would scaffold the learning. Comparison data between the DAPA-AP and the standardized tests for phonological awareness provide evidence that the DAPA-AP may be a reliable and valid measure for individuals with speech impairments paired with intellectual disabilities (Barker et al., 2014). Even though this study was completed

with adults who had some reading ability, the outcome of the study demonstrated the value of a dynamic assessment.

Gillam et al. (2011) examined the use of a nonverbal dynamic assessment measure targeting phoneme deletion as compared to that of traditional assessments. Participants in this study consisted of 64 typically developing students in kindergarten to third grade. Children were divided into two age groups; the first group consisted of children in the age range from 6;0-7;0, and the second group consisted of children ranging from 7;5-8;9. The nonverbal dynamic phoneme deletion task used 21 Boardmaker picture symbols of one-syllable words with various beginning and ending consonant combinations. After listening to auditory instructions, children had to point to the corresponding picture symbol from a choice of four. When children pointed to an incorrect picture, they were supported with a prompting system. Prompting supports in this study were dependent on the type of foil the child chose. The examiner would highlight the type of error (e. g. initial sound or final sound) the child made and would then guide them to the correct answer. Data collected from the prompting system gave the administrator insight into where the learning gaps occurred. In the traditional phoneme deletion tasks, the students were presented phoneme deletion tasks without picture support and a prompting system. Comparative data collected from both the dynamic and traditional phoneme deletion tasks indicated acceptable reliability. The authors also noted that the correlation between the two testing methods was strong, indicating that picture supports are appropriate scaffolding supports when using different modalities, i. e., pointing compared to speaking.

Though each of these studies' goals differed slightly, they had a common interest in creating access to phonological awareness assessments for students using AAC. These trial assessment methods focused on what kind of access method is needed for students with AAC to

be able to reflect their true skills in phonological awareness assessments (Pufpaff, 2011), by examining a computer-based dynamic assessment for phonemic awareness compared to standardized tests (Barker et al., 2014), and by comparing a nonverbal dynamic assessment targeting phoneme deletion to that of a traditional assessment (Gillam et al., 2011). Reliable benefits were noted when phonological awareness assessments were accessible with picture supports (Pufpaff, 2011), when a computer-based system with an embedded prompting system was used (Barker et al., 2014) and when dynamic assessment with an embedded prompting system and picture support was used to assess phoneme deletion (Gillam, 2011). Research on effective, accessible, dynamic assessments for phonological awareness for students who use AAC would be useful and would help to educate the impact of phonological awareness on literacy skills with this group.

Conclusion

Advances in AAC and literacy are connected to a broader reform called inclusion (Hourcade et al., 2004; Rohde, 2015). Although AAC and literacy have become more accessible, many individuals are exposed to partial programs or old views that a person needs to come to a certain maturation before AAC and literacy can be implemented fully (Andzik et al., 2018; Rohde, 2015). Several studies have shown some positive results on how phonological awareness can potentially be assessed with students who use AAC. The results indicate that an access method with picture support (Gillam et al., 2011; Pufpaff, 2011), an embedded prompting method (Barker et al., 2014; Gillam et al., 2011) and using dynamic assessment instead of standardized testing (Barker et al., 2014; Gillam et al., 2011) could be of great value for students who use AAC. Since research supports the bridging of AAC and literacy, it would be worthwhile to investigate how the combined approach of AAC and dynamic phonological awareness

assessments can be implemented in general education classrooms to support efforts towards inclusion of students that use AAC.

Chapter 3

Methodologies and Methods

This study investigates two research questions: what tools are available to assess students' phonological awareness skills who use augmentative and alternative communication (AAC)? Would an adapted or modified assessment tool provide a more accurate picture of students' abilities and foster more opportunities for literacy engagement? The goal of this study is to identify teacher understanding and practices for supporting students who use AAC to access phonological awareness assessments. The research will also guide future training and implementation of a phonological awareness screening tool for students who use AAC.

Methodology

For this research, the design-based research (DBR) approach was used. Design-based research is a flexible methodology that looks to improve education by analyzing current practices, designing and developing alternative options and implementing these new designs in active learning environments, with the collaboration of educators and researchers (Wang & Hannafin, 2005). From a pragmatic theoretical view, the research will look for successful and practical outcomes that can enhance learning for individuals in everyday classroom settings (Cohen et al., 2018). Design-based research uses a cyclical framework that consists of four phases. These phases aim to understand the research question from literature, to gain an understanding of current practice, and to then identify research gaps. The flexibility within DBR allows the researcher to implement designs with room for improvements. For the purpose of this study, one cycle of four phases was completed. During Phase One, a literature review was done to explore the connection between AAC success and the acquisition of literacy. During this time, participants were also surveyed to identify gaps in the delivery of literacy skills for students

using AAC (see Appendix A). In Phase Two, the researcher compared Survey One's outcome with the literature review and developed a draft screen called PASS-AAC. During Phase Three, participants reviewed the screen and gave feedback by completing Survey Two (see Appendix B). Finally, during Phase Four, feedback from Survey Two was reviewed and compared to data collected in Survey One. Updates for the PASS-AAC will be considered in the reflection.

Participants

Participation with this study was open to all classroom teachers in Kindergarten to grade five, elementary resource teachers and elementary learning assistance teachers in a specific public school district in southwestern British Columbia, Canada. The school district consists of twenty elementary schools (K-5), five middle schools (grades 6-8) and three secondary schools (grades 9-12). The fast-growing district covers an area of about 1,825 km² with more than 14,000 students and is served by over 1,800 teachers and support staff. Approximately 140 students in the district use a form of AAC.

Characteristics

Learning Assistance Teachers (LATs) provide support for student who have mild to moderate learning differences including those who have not yet been identified with underlying needs. Resource Teachers (RTs) work with students who have identified moderate to severe learning differences. In both of the surveys, demographic data was collected regarding the participant's current role, how long they have been an educator and whether they had any experience teaching students who use AAC.

Recruitment

In October 2020, before participant recruitment took place, a Vancouver Island University (VIU) Research Ethics Board (REB) application was submitted for ethical review.

This review examined the project's purpose, goal, and knowledge transfer. The planned study design, methods, the recruitment process and study population were also reviewed for benefits, risks and risk mitigation. After the researcher was granted permission by the REB and the district superintendent, school principals in said district were contacted by email. Since DBR has multiple phases, the emails to the principals for Phase One included an introduction to the study (see Appendix C), a request to forward the email to their classroom teachers, resource teachers and learning assistance teachers and to include the attachments in their forwarded emails. Attachments for the first survey included a participant letter of consent (see Appendix G), a recruitment poster (see Appendix E) that included the Google Form survey link and the district letter of permission. After two weeks the same principals received a reminder email to share with their staff indicating the survey closing date.

During the second survey, the same elementary principals were emailed with the request to forward the recruitment email (see Appendix D) to their classroom teachers, learning assistance teachers and resource teachers. The email included another introduction to the study and a request to forward the email and the attachments to their staff as mentioned above. Attachments for the second survey included a participant letter of consent (see Appendix H), a recruitment poster (see Appendix F) that included the Google Form survey link and the district letter of permission. In addition, this email included a draft copy of the teacher and student materials of the newly created PASS-AAC. Due to a school break, administrators received a reminder email for this survey three weeks after the initial recruitment once again indicating the survey closing date.

Ethical Issues

Since the researcher of this study holds a district role of AAC Support Teacher, careful consideration was taken that no undue influence or unintentional manipulation arose between the researcher and the participants. Participation recruitment was therefore done by emailing the administrator teams and explaining the process of the study. By eliminating direct contact between the participants and the researcher, it was hoped that the participants would not feel obliged to participate in this study in order to receive better or more services for the students in their school. Each participant had access to the Participant Letter of Consent and by answering the first question in each survey consent was given. Participation was voluntary and anonymous. Participants were able to withdraw from the survey at any time by either refusing consent or by closing the browser. Data was collected using Google Forms and the study did not collect any identifiable information. Participants were notified in the Participant Letter of Consent that Google Drive stores data on servers located outside Canada. They were told the information is not protected by Canadian privacy legislation and may be accessed by a foreign government(s) in accordance with its/their laws. All data is password protected on the researcher's personal computer.

Phonological Awareness Screen for Students using AAC (PASS-AAC)

Phonological awareness skills develop in a hierarchical way. Understanding this development of phonological awareness is crucial to understanding and developing assessments, instruction and intervention (Pufpaff, 2009). The PASS-AAC was developed using the sequence of skills similar to Schuele & Bourdreau (2008) and to the general developmental continuum of phonological sensitivity skills (Pufpaff, 2009). Both studies underline the importance of

understanding this developmental hierarchy of phonological awareness skills and how it is the foundation of literacy success.

PASS-AAC Student Edition

The student section of the PASS-AAC assessment consists of eight subtests using both identification and production activities including syllables, rhyming, alliteration, onset-rime segmentation, initial and final sound identification, blending sounds into words, segmenting words into sounds, and deleting and manipulating sounds. Each identification or production activity has five different questions; however, if the subtests ask for sound awareness in different parts of the word, the section will have six questions (see Table 1 for sample questions). The assessment questions all included one correct answer and two or three foils. All questions were depicted using Boardmaker Picture Communication Symbols. Permission to use these symbols was granted to this researcher from Tobii Dynavox. Pufpaff (2011) identified that using picture symbols to assess phonological awareness skills were equally valid compared to those who did not use picture symbols. Picture symbols are shown in colour and measure approximately 1.5 inches by 1.5 inches.

PASS-AAC Teacher Edition

The teacher edition of the PASS-AAC allows the test administrator to score student performance. Each subtest has an instructional script that the test administrator reads to the student. Questions are scored either correct or incorrect. At the end of the assessment, total scores are tallied and recorded for summary scores.

Table 1. *Phonological Awareness Screen for Students using AAC (PASS-AAC)*

Phonological Awareness Skill	Identifying Task	Producing Task
Syllables	“tel-e-phone” – student points to a matching picture from a group of three	“telephone” – student points to a number card that matches the number of syllables
Rhyming	“ <u>cat</u> , <u>hat</u> ” – student points to yes or no card	“ <u>cat</u> , <u>hat</u> , <u>bat</u> ” – student points to an additional rhyme from a group of three
Alliteration – Initial and Final Sound	“ <u>c</u> ake, <u>c</u> at, <u>c</u> op” – student point to yes or no card	“ <u>b</u> ook” – student points to a picture that starts the same from a choice of three
Onset Rime Segmentation	“b-ee” – student points to yes or no if picture matches	“f-an” – student points to a matching picture from a choice of two
Initial and Final Sound Identification	“m” – student points to a matching picture from a choice of three	“ <u>b</u> us” – student points to another picture that starts with /b/ from a choice of three
Blending Sounds into Words	“s-u-n” student points to yes or no if picture matches	“cat” – student moves blocks for each sound and finds a matching picture
Segmenting Words into Sounds	“b-ee” – student points to the number of sounds they hear	Show “house” – student moves blocks for the number of sounds in word and matches to a picture
Deleting and Manipulating Sounds	“train” take away “t” and you have... show ‘rain’ – student points to yes or no	“boat” take away “t” and you have... student points to a matching picture from a choice of three

Data Collection

Data collection in this DBR, used a mixed methods approach. Given the flexibility of data collection in DBR, it usually involves different strategies and methods. Anderson & Shattuck (2012) described data collection involving mixed methods as changeable as the need arises because the focus is to be “authentic and meaningful” (p.17). Cohen et al. (2018) described the advantages of survey data collecting as an efficient method, that allows for both open and closed questions and a way to target a larger group of people at one given time. Since this study used two surveys it also added to the depth of the data being collected.

Survey One

The intent of Survey One was to identify the participants’ understanding of AAC and literacy. Using a mix of open- and closed-ended questions including multiple choice, dichotomous questions, rating scales and check-all-that-apply questions, participants were asked to share demographic information, their experiences with AAC and using literacy with AAC, and to share how they would like to receive more training and support for students using AAC.

Survey Two

Like Survey One, Survey Two used a mix of both open- and close-ended questions. Questions in this survey were designed from the Survey One results to give a more in-depth look at any identified gaps. Participants were able to provide feedback on the PASS-AAC and indicate whether this tool would increase accessibility to a literacy assessment for students using AAC.

Data Analysis and Interpretation

Data collected for this study included both open- and closed-ended questions. Cohen et al. (2018) describes open-ended questions as a way of collecting data that may otherwise go

unnoticed. It allows the participant to share their personal views instead of being guided into one direction by the researcher. However, for some participants open-ended questions may be a barrier and these questions are either skipped or the survey is abandoned. To bridge this barrier, check-all-that-apply questions were used with the option of adding more by writing on the blank by 'other'. Closed-ended questions are described as highly structured, good for comparisons and overall quicker to analyze (Cohen et al., 2018). Even with these merits closed questions also have possible risk of researcher bias and accuracy of participant responses. Data from closed-ended questions were easily transferred into workable data. Open-ended questions were carefully reviewed to discover common themes. Interpretation of all the data helped generate the PASS-AAC as an identified need.

Chapter 4

Findings and Results

The methodology used in this study is design-based research (DBR) using one cycle with four phases. Data collected within DBR included two online surveys. The first survey was sent out during Phase One and the second was sent out during Phase Three. Both surveys used a combination of open- and close-ended questions. By using a mix of open- and closed-ended questions, including multiple-choice, dichotomous questions, rating scales and check-all-that-apply questions, the focus becomes more meaningful and comprehensive (Cohen et al., 2018).

Survey One and Survey Two Demographics

Participants in this study were British Columbia licensed general education classroom teachers, learning assistance teachers and resource teachers. Classroom teachers included a range of Kindergarten to grade 5 teachers, Learning Assistance Teachers (LATs) who provide support for students who have diagnosed or undiagnosed learning disabilities, and Resource Teachers (RTs) who work with students who have been identified with moderate to severe learning differences. Demographic data was collected in both surveys which included their current role (Table 2) and how long they have been an educator (Table 3). Data indicated a fairly even spread among roles in both surveys and the majority of participants had been in education for over ten years.

The final demographic question on Survey One asked if the participants ever taught a student who needed augmentative or alternative communication. The results came to a fairly even split with 54.5% of the participants who have taught someone using AAC. Three-quarters of the educators who said 'yes' to this question have been an educator for more than ten years. The remaining quarter have been in education less than five years but hold a role in

Kindergarten, primary or resource where you have a higher likelihood of meeting someone with AAC.

Table 2

Roles of Participants in Survey 1 (n=22) and Survey 2 (n=14)

Teaching Position	Survey 1 only	Survey 1 and 2	Survey 2 only
Kindergarten	5	2	0
Grade One-Three	6	2	0
Grade Four – Five	5	2	3
Learning Assistance	4	1	0
Resource Teacher	2	2	2

Table 3

Participant's Years as an Educator in Survey 1 (n=22) and Survey 2 (n=14)

How long have you been an educator?	# of participants in Survey 1	# of participants in Survey 2
< 1 Year	1	0
1-10 Years	5	4
11-20 Years	10	7
> 20 Years	6	3

Survey One

Survey One was completed during the first phase of the study. The aim of this survey was to identify educators comfort levels with AAC, how they viewed the importance of literacy with students who use AAC, and how current literacy practices support students with AAC. In addition, the survey looked to define a gap in literacy instruction and identify ways educators would feel supported when teaching students who use AAC. Twenty-two participants took part in Survey One (n=22).

Augmentative and Alternative Communication Experiences

AAC comes in two main types: aided and unaided systems. Aided systems include low tech (e. g. PECS [Picture Exchange Communication System], activity boards and communication binders/books), mid tech (e. g., Big Mack, Step-by-Step and Go Talk), and high tech (e. g., tablet or iPad with a communication app or eye-gaze system). Unaided systems consist of what a person can do solely with their body such as vocalizations, signs and gestures, facial expressions and other body movements. For the purpose of this study, results only show educators' familiarity with aided AAC systems. All participants were familiar with low tech AAC. Half of the participants also indicated that they have supported students using mid tech and high tech, with 83% of those indicating high tech only.

Comfort levels among participants ranged from 50% feeling comfortable, 33.3% feeling uncomfortable and 16.7% feeling very uncomfortable with AAC. AAC training support for the participants ranged from coursework, attending professional development, training from a district specialist or no training at all. Participant response indicated that two-thirds of the participants felt they had some level of training to support AAC students, but one-third felt they had no training or experience to support students with AAC. Participants were also asked to share their experience using AAC with academics. Fifty percent of the participants felt somewhat successful using AAC with academics, 16.7% felt unsuccessful and 33.3% felt they had some level of success. When comparing comfort levels with successfully implementing AAC during academics we see similar patterns.

Literacy and AAC

In the next following section of the survey, the participants were asked to focus in on current literacy practices for students who use AAC. Participants were first asked if literacy goals were part of the students Individual Education Plan (IEP). Over half of the participants said that literacy goals were part of these students' IEPs. Approximately a quarter were not sure if this was part of the students' IEP. The remaining participants said literacy was not part of the IEP. These participants also did not think they had an AAC user in their school. In addition, participants were asked to share how they viewed the level of importance of literacy skills for students using AAC (Table 4).

Table 4

Participants Rating of Importance for AAC Users to have Literacy Skills (n=22)

Rating of Level	Number of Participants	Percent of Total
Very important	14	63.6
Important	7	31.8
Moderately important	1	4.5
Slightly important	0	0
Not important	0	0

Participants were asked to identify which elements of reading were most often addressed in their general education reading program. Comprehension was the most targeted element of reading with 91% of participants flagging this element. The next most targeted reading element is phonemic awareness at 77% and phonological awareness as a close third at 73%. When asked how well these reading elements that are used in classrooms would meet the needs of students using AAC, many felt that it somewhat would benefit this group of students if teachers were given the support on how to adapt or modify. Table 5 identifies how participants felt current literacy programs could benefit students who use AAC, but it also describes how

teachers do not have strong feelings of satisfaction about current practices within in these programs.

Table 5

Benefits of Current Class Materials and Teacher Overall Satisfaction for Literacy Programming for AAC Users (n=22)

Current reading elements used would benefit AAC users...	Percent Total	Overall Participant Satisfaction...	Percent Total
To a great extent	4.5	Very satisfied	5
Somewhat	72.7	Satisfied	20
		Neutral	50
Very little	13.6	Dissatisfied	20
Not at all	9.1	Very dissatisfied	5

How best to support literacy and AAC?

Participants were asked to share what areas they felt would help them improve literacy support for students using AAC. The areas that were identified as a common theme included assessment, training in AAC devices, and adapting or modifying current materials. Half of the participants said they wanted more support in all of the areas listed above. The other half of the participants were only looking for support in assessment and adapting or modifying current materials.

Assessment. The district has an assessment binder with a set assessment schedule that is used with all elementary students throughout the district. When thinking about the needs of students that use AAC, participants were asked to describe how well the district assessments meet the needs of these students. Fifteen of the total participants ($n = 22$) indicated they have taught a student with AAC and two-thirds of these participants felt that current district assessments fell in the below average to poor range in meeting the needs of students with AAC.

Participants were asked to describe how literacy skills are assessed with students who use AAC. The following three themes came from the data collected: 62% of the participants shared uncertainty about how to assess students who use AAC, 24% tried to use the district assessments when they could but often felt uncertain about how to administer it to AAC students, and 14% shared that they relied on observations only. Participants were also asked to share their comfort level with implementing a phonological awareness program if they were able to assess students with an adapted assessment tool. Combined results indicate that 71.4% of the participants would feel ‘comfortable’ or ‘very comfortable’ but the remaining participants felt ‘very uncomfortable.’

Training and Support. In the district, professional development is valued and educators have access to various types of professional development. All schools have three early dismissal days per year. These days are often used for assessment and reporting but can also be used as an opportunity for staff to receive in-services or one-to-one training sessions from Learning Services staff. In addition, the district also has five professional days spread out over the school year. Student Services also provide weekly After School Learning Series where Student Services staff provides professional development in areas of their expertise, e. g., Aided Language Modelling by an AAC Support Teacher. For the purpose of this survey, participants were asked what kind of training support would help them implement literacy with AAC. Over half of the participants would want multiple 2-hour AAC and literacy sessions. Another third of the participants would be satisfied to receive a half day of AAC and literacy training. Participants were asked to share insights on what would benefit their school to support students with AAC and to advance their literacy skills. Co-teaching or push-in lessons with the district AAC Support Teacher during literacy blocks were considered most beneficial by 64% of the participants. The

remaining participants (36%) felt that in-school professional development would be most beneficial to advance their literacy skills of students with AAC.

Survey Two
















After completing a literature review and reviewing the data in Phase One of the study, I created the draft PASS-AAC during Phase Two. The PASS-AAC uses picture symbols to present and support AAC users in completing a phonological awareness screen. Survey Two was completed during the third phase of the study. The aim of this survey was to let educators review the PASS-AAC. Feedback was requested on the overall format and layout of both the teacher and student parts of the tool. Implementation questions were framed to reflect what the participants had highlighted in the first survey.

Review of Layout and Questions on Screen

Participants were given access to the newly created phonological awareness screen for students that use AAC. The screen included the student section and the teacher recording section. A sample page from the PASS-AAC is provided in Figure 1. Fourteen participants took part in Survey Two ($n=14$). Overall layout was seen as ‘very satisfactory’ by 71.4% of educators. The remaining educators saw the overall layout as ‘satisfactory’. Educators were asked to give feedback on specific layout features including font style and size, spacing, and clarity of pictures. The majority of educators felt that the style of the layout was satisfactory.

Figure 1

Phonological Awareness Screen for Students Using AAC: Student and Teacher Samples

2b. Rhyme Awareness and Production: Producing			
1			
2			
3			
4			
5			

Phonological Awareness Screen for Students Using AAC	
Name: _____	Age: _____ Grade: _____
Date: _____	Test Administrator: _____
1. Syllables	
1a. Identification: I am going to say a word in parts. Point to the picture that matches the word parts.	
1. ba-oo-oo	_____
2. wa-ter	_____
3. bed	_____
4. to-ty-bug	_____
5. el-e-phant	_____
1b. Production: Look at the picture as I say the word. Point to the number of word parts you hear in the word.	
1. cake (1)	_____
2. telephone (3)	_____
3. rabbit (2)	_____
4. apple (2)	_____
5. cat (1)	_____
2. Rhyme Awareness and Production	
2a. Identification: I am going to say two words. Point to 'yes' if they rhyme. Point to 'no' if they do not rhyme.	
1. cat - hat	yes no
2. house - mouse	yes no
3. pen - pin	yes no
4. spoon - moon	yes no
5. duck - dog	yes no
2b. Production: I am going to say a word. Now look at the picture - point to the picture that rhymes.	
1. cape	ape lake mad
2. hat	horse cat car
3. rug	rope red hug
4. car	cap ring star
5. lick	kick lip log

Participants were also asked to review the content of the questions. All but one of participants were either ‘very satisfied’ or ‘satisfied’ with the question content. The remaining participant was neutral about the content. Participants were also able to share some insight using an open-ended response. The main theme that came from this data relates to the complexity of the questions and baselines and ceiling for different ages. Educators indicated that they are looking for some clarity around where to start on the screen and when would they stop the screen. Another theme that was collected from this data had to do with the type of foils that are used with the questions in the PASS-AAC. For example, participants suggested that using “tub” instead of “bath” or using both “sock” and “shoe” within the same question might confuse some students especially if comprehension is challenging for the individual taking the screen.

Implementation and Training

Overall, the screen was widely accepted among the participants. Many participants did not feel comfortable with current assessment tools for students using AAC. When asked to share

their comfort level with the PASS-AAC, 93% of the participants felt ‘very comfortable’ or ‘comfortable’ using this with students who use AAC. The remaining participant felt more training would be needed to implement it correctly. When participants were asked what kind of training would be helpful, many asked for school-wide professional development or one-to-one support (Table 6).

Table 6

Type of Training needed for Phonological Awareness Screen Implementation

Type of Training	Number of Participants
District Professional Development	1
After School Learning Series	0
School-wide Professional Development	8
One-to-one Support	7

Final Thoughts

Overall, the survey results showed that educators feel that literacy is important for all students including those who use AAC. However, they also felt that current materials are not as satisfactory as they would like. A common thread that was seen throughout the research is that educators are looking for adapted or modified ways to assess students who use AAC as well as training on how to work with AAC during literacy instruction. Overall, there was a positive response to the use of the PASS-AAC as a means to bridge this gap for students who are using AAC.

Chapter 5

Conclusion

Results of this study provide evidence that finding alternate means to assess the phonological awareness skills with students who use AAC is warranted. Participants in the study noted that literacy skills are important for all students, including those who use AAC, but that current assessment methods are not suitable for this population. Phonological awareness and phonemic awareness, the narrower skill within phonological awareness, were both highlighted by participants as one of the most used elements of reading. Seeing a common thread of understanding between what the literature says about the importance of literacy success and phonological awareness (Schuele & Boudreau, 2008; Vandervelden & Siegel, 1999) and the views of the participants shows there is an opportunity to take the PASS-AAC further.

All participants who have been involved with someone who uses AAC indicated that they were familiar with low tech AAC. Students who come into the district are all provided with a low-tech system as other means are being explored. High tech systems have also become much more affordable, so it was no surprise to see that many of the participants had some familiarity with high-tech devices. Moving forward it would be good to see more students having access to high-tech devices since research has indicated that introducing students to a robust communication system or speech generating device (SGD) can significantly increase students' ability to communicate (Beukelman & Light, 2020).

King et al. (2015) described how different methods of assessing students, especially for those who have known barriers, will give an opportunity to take into account the differences between an individual's observed performance and the level of possible development. Results from the data indicated assessment as one of the highest needs to improve literacy supports for

students with AAC. Data clearly indicated that current assessment methods are not working well for students with AAC. It is interesting to note that students in Kindergarten to third grade typically receive the most phonological awareness instruction, yet in my experience, students with AAC usually start developing these skills towards the end of grade 5 and into middle school. It leads one to wonder whether the early use of an effective assessment tool and appropriate intervention would result in earlier development of phonological awareness skills.

The development of the PASS-AAC took into account what was currently available for educators, how they felt about what was available and any wishes they had for improvements in their ability to reach students with AAC. The PASS-AAC questions were based on a developmental hierarchy (Pufpaff, 2011; Schuele & Bourdreau, 2008). All participants were satisfied or very satisfied with the order and layout of the PASS-AAC, and felt it had a similar feel to what is currently used throughout the district, and that the new tool would be more accessible for students with AAC.

Limitations and Future Research

Since this study commenced in the middle of the COVID-19 pandemic, the study had to be done in a differently than the typical DBR process. By taking into account the Health and Safety guidelines of the Province of British Columbia, Vancouver Island University and the school district, no direct contact was made between any of the participants and the researcher. Participant sample size is relatively small and might not encompass the views of all educators.

Even though educators were able to review the PASS-AAC, the pandemic precluded a trial with students. Implementing the PASS-AAC with students would allow the researcher to review details like the appropriateness of the foils, the flow of the script, and the need for practice questions. It would make it clearer where the tool's basal and ceiling points should be

set. However, it should be noted that standardizing this tool would be very difficult given the lack of homogeneity in the population of potential test takers. It may be that an extensive body of qualitative data and case study reports would help define the interpretation of the tool's results.

Value and Significance

Positive factors from this study included having educator involvement from a range of teaching roles. The feedback from these participants enabled the study to develop and evolve into something that might have practical implications for them in the future. The study also enabled the researcher to study the link between literacy and AAC. The knowledge gained from this research will in turn provide interactions and capacity building opportunities within schools and the whole district.

Conclusion

Literacy and the impact of being literate reaches all of us in our lifetime. For some of us, gaining literacy will be a seamless process, but for others, like those who use AAC, it requires different access methods and more opportunities. Research has indicated that individuals who use AAC are at a great risk of not developing phonological awareness skills which is a key link in the development of literacy. By developing the PASS-AAC, there may be an increase in awareness of this issue, and it will be evident that further research to develop tools and strategies that will increase access and opportunity for individuals with AAC.

References

- Anderson, T. and Shattuck, J. (2012). Design-based research: A decade of progress in education research? *Educational Researcher* 41(1). DOI: 10.3102/0013189X11428813
- Andzik, N. R., Schaefer, J. M., Nichols, R. T., & Chung, Y. (2018). National survey describing and quantifying students with communication needs. *Developmental Neurorehabilitation*. 21(1), 40-47.
- Barker, R.M., Sittner Bridges, M., & Saunder, K.J. (2014). Validity of a non-speech dynamic assessment of phonemic awareness via the alphabetic principle. *Augmentative and Alternative Communication* 30(1), 71-82.
- Beukelman, David R., & Light, Janice C. (2020). *Augmentative & alternative communication: Supporting children and adults with complex communication needs*. Paul H. Brookes Publishing Co.
- Beukelman, D. R. & Mirenda, P. (2013). *Augmentative and alternative communication: Supporting children & adults with complex communication needs* (4th ed.). Paul H. Brookes Publishing Co.
- Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141-178. Retrieved on January 31, 2019 from <http://www.jstor.org/stable/1466837>
- Cohen, L., Manion, L. & Morrison K. (2018). *Research methods in education, 8th Ed*. Routledge Taylor & Francis Group.
- Cook, B. G. & Schirmer, B. R. (2003). What is special about special education? Overview and analysis. *The Journal of Special Education*, 37(3), 200-205. DOI: 10.1177/00224669030370031001

- Copeland, S. R. & Keefe, E. B. (2018). *Effective literacy instruction for learners with complex support needs, 2nd Ed.* Paul H. Brookes Publishing Co.
- Da Fonte, M. A. & Boesch, M. C. (2019) *Effective augmentative and alternative communication: A handbook for school-based practitioners.* Routledge.
- Dodd, J. L. (2017). *Augmentative & alternative communication intervention: An intensive, immersive, socially-based service delivery model.* Plural Publishing Inc.
- Erickson, K. A. & Koppenhaver, D. A. (2020). *Comprehensive literacy for all: Teaching students with significant disabilities to read and write.* Paul H. Brookes Publishing Co.
- Gillam, S. L., Fargo, J., Foley, B., & Olszewski, A. (2011). A nonverbal phoneme deletion task administered in a dynamic assessment format. *Journal of Communication Disorders*, 44, 236–245. DOI: 10.1016/j.jcomdis.2010.11.003.
- Gillon, G. T. (2018). *Phonological awareness: From research to practice, 2nd Ed.* The Guilford Press.
- Hanser, G. A. and Erickson, K. A. (2007). Integrated word identification and communication instruction for students with complex communication needs: Preliminary results. *Focus on Autism and Other Developmental Disabilities* 22(4), 268-278.
- Hetzroni, O. E. (2004). AAC and literacy. *Disability and Rehabilitation* 26(21-22), 1305-1312. DOI:10.1080/109638280412331280334
- Hourcade, J., Pilotte, E. T., West, E., & Parette, P. (2004). A history of augmentative and alternative communication for individuals with severe and profound disabilities. *Focus on Autism and Other Developmental Disabilities*, 19(4), 235-244.

- Iacono, T. & Cupples, L. (2004). Assessment of phonemic awareness and word reading skills of people with complex communication needs. *Journal of Speech, Language, and Hearing Research* 47(2). DOI: 10.1044/1092-4388(2004/035)
- Katz, J. (2012). *Teaching to diversity: The three-block model of universal design for learning*. Portage & Main Press
- Keefe, E. B. & Copeland, S. R. (2011). What is literacy? The power of a definition. *Research & Practice for Persons with Severe Disabilities* 36(3-4), 92-99.
DOI:10.1080/07434610500243826
- Kent-Walsh, J., Binger, C., & Hasham, Z. (2010). Effects of parent instruction on the symbolic communication of children using augmentative and alternative communication during storybook reading. *American Journal of Speech-Language Pathology*, 19 97-107.
- King, M. R., Binger, C., & Kent-Walsh, J. (2015). Using dynamic assessment to evaluate the expressive syntax of children who use augmentative and alternative communication. *Augmentative and Alternative Communication* 31(1). DOI: 10.3109/07434618.2014.995779
- Koppenhaver, D. (2000). Literacy in AAC: What should be written on the envelope we push? *Augmentative and Alternative Communication*, 16(4).
- Letto, M., Bedrosian, J. L., & Skarakis-Doyle, E. (1994). Application of Vygotskian developmental theory to language acquisition in a young child with cerebral palsy. *Augmentative and Alternative Communication*, 1994(10).
- Light, J., McNaughton, D., Beukelman, D., Koch Fager, S., Fried-Oken, M., Jakobs, T., & Jakobs, E. (2019). Challenges and opportunities in augmentative and alternative communication: Research and technology development to enhance communication and

participation for individuals with complex communication needs. *Augmentative and Alternative Communication*, 2019. DOI: 10.1080/07434618.2018.1556732

Machalicek, W., Sanford, A., Lang, R., Rispoli, M., Molfenter, N., & Mbeseha, M. K. (2010).

Literacy interventions for students with physical and developmental disabilities who use aided AAC devices: A systematic review. *Journal of Developmental and Physical Disabilities* (2010)22, 219-240.

Mason, J. & Sinha, S. (1992). Emergent literacy in the early childhood years: Applying a

Vygotskian model of learning and development. [Unpublished Master's Thesis]

University of Illinois at Urbana Champaign. Retrieved on February 20, 2020 from

https://www.ideals.illinois.edu/bitstream/handle/2142/17977/ctrstreadtechrepv01992i00561_opt.pdf

McNaughton, D. & Light, J. (2013). The iPad and mobile technology revolution: Benefits and challenges for individuals who require augmentative and alternative communication.

Augmentative and Alternative Communication 29(2), 107-116. DOI:

10.3109/07434618.2013.784930

Mirenda, P. (2003). He's not really a reader: Perspectives on supporting literacy development in individuals with autism. *Topics in Language Disorders*, 23(4), 271-282.

PCS and Boardmaker are trademarks of Tobii Dynavox LLC. All rights reserved. Used with permission.

Pufpaff, L. A. (2011). Adapted assessment of phonological sensitivity skills: A preliminary investigation. *Communication Disorders Quarterly* 33(1) 13-22.

Pufpaff, L. A. (2009). A developmental continuum of phonological sensitivity skills. *Psychology in the Schools* 46(7).

- Robertson, C. & Saltar, W. (2018). *Phonological awareness test 2nd Edition: Normative Update* [Examiner's Manual]. Pro-Ed Inc.
- Rohde, L. (2015). The comprehensive emergent literacy model: Early literacy in context. *Sage Publication, January-March*(2015), 1-11. DOI: 10.1177/2158244015577664
- Santrock, J. W., MacKenzie-Rivers, A., Leung, K. H., & Malcomson, T. (2003). *Life-span development: First Canadian edition*. McGraw-Hill Ryerson Limited.
- Schuele, C. M. & Boudreau, D. (2008). Phonological awareness intervention: Beyond the basics. *Language, Speech & Hearing Services in Schools* 39(1).
- Schuele, C. M. & Murphy, N. D. (2014). *The intensive phonological awareness program*. Paul H. Brooks Publishing Co.
- Vandervelden, M. & Siegel, L. (1999). Phonological processing and literacy in AAC users and students with motor speech impairments. *Augmentative and Alternative Communication* 15(3).
- Wagner, R. K., Torgesen J. K., Rashotte, C. A., & Pearson, N. A. (2013). *Comprehensive Test of Phonological Processing 2nd edition*. [Examiner's Manual]. Pro-Ed Inc.
- Wang, F. & Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development* 53(4), 5-23.

Appendix A

Survey One



VANCOUVER ISLAND UNIVERSITY

Survey 1: Augmentative and Alternative Communication and Literacy Survey

“Closing the Gap: Literacy and Students with AAC”

Section 1: Consent

1. I consent to participate in the study, and I allow the researcher to use the data provided as part of the research.
 - a. Yes
 - b. No

Section 2: Demographics

2. In what role are you currently employed?
 - a. Kindergarten Teacher
 - b. Primary Teacher (Grade 1-3)
 - c. Intermediate Teacher (Grade 4-5)
 - d. Learning Assistance Teacher
 - e. Resource Teacher
3. How long have you been an educator?
 - a. Less than one year
 - b. 1-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16-20 years
 - f. More than 20 years
4. Have you ever taught a student who uses Augmentative and Alternative Communication (AAC)?
 - a. Yes
 - b. No

Section 3: AAC Experience

5. What types of AAC have you used with your students? Check all that apply.
 - a. Low Tech (e.g. PECS [Picture Exchange Communication System], Activity Boards, Communication Binders/Books, etc.)
 - b. Mid Tech (e.g. Big Mack, Step-by-Step, Go Talk, etc.)
 - c. High Tech (e.g. tablet or iPad with a communication app, eye-gaze system)
 - d. Other _____
6. How comfortable do you feel using AAC with your students?
 - a. Very uncomfortable
 - b. Uncomfortable
 - c. Comfortable

- d. Very comfortable
7. Have you received any training on how to use AAC? Check all that apply.
- a. Yes, I have taken course work in AAC.
 - b. Yes, I have attended Professional Development on AAC.
 - c. Yes, I have received training from District Specialists (e.g. SLP or AAC Support)
 - d. No, I have never received any training.
8. Besides targeting wants and needs, how successful do you feel AAC was implemented in academic learning?
- a. Very successful
 - b. Successful
 - c. Somewhat successful
 - d. Unsuccessful

Section 4: Literacy and AAC

9. In your school, are literacy goals part of the IEP for students who use AAC?
- a. Yes
 - b. No
 - c. I'm not sure.
 - d. We do not have students with AAC in our school.
10. How important do you feel literacy skills are for students who use AAC?
- a. Very important
 - b. Important
 - c. Moderately important
 - d. Slightly important
 - e. Not important
11. Which elements of reading are most often addressed in your reading programs? Check all that apply.
- a. Phonological Awareness (e.g. sound awareness like rhyming, syllables etc.
 - b. Phonemic Awareness (e.g. single sound awareness like letter-sound correspondence, blending p-a-n, etc.)
 - c. Phonics (e.g. the relationship between sounds and letters like manipulating word families)
 - d. Vocabulary
 - e. Fluency
 - f. Comprehension
 - g. Other _____
12. How well would the elements of reading that are used in your class benefit students with AAC?
- a. To a great extent – I could quickly adapt my current programs for students with AAC.
 - b. Somewhat – I would need some support in how to make adaptations for students with AAC.
 - c. Very little – My current program would be hard to adapt for students who use AAC.
 - d. Not at all – I would need full support on how to implement my current program for students that use AAC.
13. Overall, how satisfied or dissatisfied are you with your current literacy program for students using AAC?
- a. Very satisfied
 - b. Satisfied
 - c. Neutral
 - d. Dissatisfied
 - e. Very dissatisfied

Section 5: Literacy Training and AAC

14. Which area do you feel you and your team could use extra support to give a well-rounded literacy program to students using AAC?
- How to assess the literacy levels of students using AAC.
 - How to use different AAC devices.
 - How to adapt or modify literacy lessons so increase access for students using AAC.
 - I feel there is a need for training in all of the above.
 - Other _____
15. What level of training in literacy to support students using AAC would most benefit your district?
- 2-hours of general professional development in AAC
 - A half-day of professional development in AAC and literacy
 - A full-day of professional development in AAC and literacy
 - Multiple 2-hour sequential sessions of professional development in AAC and literacy
 - Other _____
16. What level of training in literacy to support students using AAC would most benefit your school?
- 2 hours of general professional development in AAC
 - A half-day of professional development in AAC and literacy
 - Co-teaching with an AAC Specialist during a literacy block
 - Push-in lessons for students for student-specific support from an AAC Specialist
 - Other _____

Section 6: Literacy Assessment and AAC

17. How are literacy skills for students with AAC assessed in your school?
- We only use observations.
 - We use the District Assessment binder when we can.
 - We ask Student Services specialists to assess these students.
 - We are not sure how to assess these students.
 - Other _____
18. In your experience, how well does the District Assessment for literacy support students who use AAC?
- Excellent support
 - Above average support
 - Average support
 - Below average support
 - Poor support
 - Not sure – I have never had a student who uses AAC.
19. Do you feel that your current assessment tools for phonological awareness could be implemented with students who use AAC?
- To a great extent
 - Somewhat
 - Very little
 - Not at all
20. If you could identify a baseline for phonological awareness for students using AAC, how comfortable would you feel implementing phonological awareness instructions with these students?
- Very comfortable
 - Comfortable
 - Uncomfortable
 - Very uncomfortable
21. Is there anything else you would like to add about literacy instructions for students using AAC?

Appendix B

Survey Two



VANCOUVER ISLAND UNIVERSITY

Survey 2: Phonological Awareness Screening Tool for AAC

“Closing the Gap: Literacy and Students with AAC”

Section 1: Consent

1. I consent to participate in the study and allow the research to use the data provided as part of the research.
 - c. Yes
 - d. No

Section 2: Demographics

2. In what role are you currently employed?
 - f. Kindergarten Teacher
 - g. Primary Teacher (Grade 1-3)
 - h. Intermediate Teacher (Grade 4-5)
 - i. Learning Assistance Teacher
 - j. Resource Teacher
3. How long have you been an educator?
 - a. Less than one year
 - b. 1-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16-20 years
 - f. More than 20 years
4. Were you able to participate in Survey #1 of this research project?
 - a. Yes
 - b. No

Section 3: Review of Layout -- *Reviewing the Phonological Awareness Screen for students who use AAC.*

5. After reviewing the screening tool “Phonological Awareness Screen for Students Using AAC”, how would you rate the overall layout?
 - a. Very satisfactory
 - b. Satisfactory
 - c. Neither
 - d. Dissatisfactory
 - e. Very dissatisfactory
6. In what areas could the layout be improved on the **student section** of the screen? Check all that apply.
 - a. Font style
 - b. Font size
 - c. Spacing

- d. Clarity of pictures
 - e. I find the current layout satisfactory.
 - f. Other please describe _____
7. In what areas could the layout be improved on the **administrator section** of the screen? Check all that apply.
- a. Font style
 - b. Font size
 - c. Spacing
 - d. Observation notes space
 - e. I find the current layout satisfactory.
 - f. Other please describe _____

Section 4: Review of Questions -- *Reviewing the Phonological Awareness Screening Tool for students who use AAC.*

8. After reviewing the screening tool, how would you rate the overall questions and questions types?
- a. Very satisfied
 - b. Satisfied
 - c. Neither satisfied nor dissatisfied
 - d. Dissatisfied
 - e. Very dissatisfied
9. In what ways could the clarity of the questions and question types be improved? Please describe.

Section 5: Implementation and Training

10. How comfortable would you be using this assessment tool with students using AAC?
- a. Very comfortable
 - b. Comfortable
 - c. Uncomfortable
 - d. Very uncomfortable
 - e. Not sure – I need more training
11. What kind of training would be most beneficial for you to implement this assessment tool?
- a. Attending a district Professional Development Day
 - b. Following several After-School Learning Sessions
 - c. Attending a school-wide Professional Development session
 - d. One-to-one support from a district specialist
 - e. Other (please describe) _____
12. Is there anything else you would like to add about this assessment tool that wasn't addressed in the questions above?
- _____

Appendix C

Introduction Letter One



VANCOUVER ISLAND
UNIVERSITY

Dear Administrator,

October 26, 2020

My name is Grietha van Gameren and I am the Augmentative and Alternative Communication (AAC) Support Teacher in your district. I am currently completing my Master of Education in Special Education through Vancouver Island University. I am in the final phase of my graduate degree and will be working on my research study over the next couple of months. My topic of study will explore literacy access for students who use AAC. The research is a two-part study, and this is the first recruitment request for this research study.

In order to keep the anonymity of the participants and the data collected, we kindly ask you to forward this email and all attachments to the following people in your school:

- all classroom teachers
- learning assistance teacher(s)
- resource teacher(s)

Although participation is voluntary, we encourage your school staff to participate.

If you have any questions, please email me at viu.research2020@gmail.com

With kind regards,

Grietha van Gameren
M.Ed. Student

Appendix D

Introduction Letter Two



VANCOUVER ISLAND
UNIVERSITY

Dear Administrator,

December 10, 2020

My name is Grietha van Gameraen and I am the Augmentative and Alternative Communication (AAC) Support Teacher in your district. I am currently completing my Master of Education in Special Education through Vancouver Island University. I am in the final phase of my graduate degree and will be working on my research study over the next couple of months. My topic of study will explore literacy access for students who use AAC. The research is a two-part study, and **this is the second and final survey and recruitment request for this research study.**

In order to keep the anonymity of the participants and the data collected, we kindly ask you to forward this email and all attachments to the following people in your school:

- all classroom teachers
- learning assistance teacher(s)
- resource teacher(s)

Although participation is voluntary, we encourage your school staff to participate.

If you have any questions, please email me at viu.research2020@gmail.com

With kind regards,

Grietha van Gameraen
M.Ed. Student

Appendix E

Recruitment Poster One



VANCOUVER ISLAND
UNIVERSITY

Researcher:

Grietha van Gameren

Topic of Research:

“Bridging the gap: Literacy and AAC”

Topic Description:

The purpose of this two-part research is to gather data on the understanding of phonological awareness skills with students who use Augmentative and Alternative Communication (AAC). This study intends to identify the gap in identifying baseline phonological awareness skills for students who use AAC. The knowledge gap could help develop a Phonological Awareness Screening Tool for teachers to use with students that use AAC.

Participants:

- Elementary Classroom Teachers
- Learning Assistance Teachers
- Resource Teachers

Voluntary Participant Role:

- Participating in a 10-20-minute anonymous online survey.

Survey Link:

<https://forms.gle/g5eGH7SN3AM37p98A>

Appendix F

Recruitment Poster Two



VANCOUVER ISLAND
UNIVERSITY

Researcher:

Grietha van Gameren

Topic of Research:

“Bridging the gap: Literacy and AAC”

Topic Description:

The purpose of this two-part research is to gather data on the understanding of phonological awareness skills with students who use Augmentative and Alternative Communication (AAC). This study intends to identify the gap in identifying baseline phonological awareness skills for students who use AAC. The knowledge gap could help develop a Phonological Awareness Screening Tool for teachers to use with students that use AAC.

Participants:

- Elementary Classroom Teachers
- Learning Assistance Teachers
- Resource Teachers

Voluntary Participant Role:

- Review the draft Phonological Awareness Screen for Students who use AAC.
 - Part 1: Student Section
 - Part 2: Test Administrator Section
- Complete a short survey about the content of the Phonological Awareness Screen.

Survey Link:

<https://forms.gle/ghkaUtPBRaWPxb7QA>

Appendix G

Letter of Consent One



VANCOUVER ISLAND
UNIVERSITY

Participant Letter of Consent

Survey 1: Augmentative and Alternative Communication and Literacy Survey

“Closing the Gap: Literacy and Students with AAC”

Student Researcher

Grietha van Gameren
Master of Education in Special Education
Vancouver Island University

Faculty Supervisor

William McGann
Faculty of Education
Vancouver Island University
William.mcgann@viu.ca

Research Purpose:

My name is Grietha van Gameren, and I am conducting this research study as part of my Master of Education in Special Education at Vancouver Island University. The purpose of this two-part research is to gather data on the understanding of phonological awareness skills with students who use Augmentative and Alternative Communication (AAC). This study intends to identify the gap in identifying baseline phonological awareness skills for students who use AAC. The knowledge gap could help develop a Phonological Awareness Screening Tool for teachers to use with students that use AAC.

Description:

Survey 1: “Augmentative and Alternative Communication and Literacy Survey” will take 10-20 minutes. In this survey, you will be asked to share your knowledge about AAC and early literacy skills. Prior experience with either AAC or Literacy skills for students with AAC is not a prerequisite for participation. Data will be collected using Google Forms.

Risk of Harm and Benefits to Participate:

Your participation is voluntary, and there is no expectation for you to take part in this research, despite any professional relationships that we may have. You can discontinue participation at any time. However, once you submit this survey, there is no way to withdraw consent. All responses will remain anonymous. No identifying data is collected.

There are no direct benefits to you for completing this survey. However, the information you provide will contribute to the larger body of knowledge regarding literacy and AAC.

Data Storage and Management:

The survey will be completed using Google Forms. Since Google Drive stores data on servers located outside of Canada, data will not be protected by Canadian privacy legislation and may be accessed by a foreign government(s) in accordance with its/their laws. Please see the Google Privacy Policy for full details. <https://policies.google.com/privacy> All data will be password protected on the researcher’s personal computer and destroyed a year after completing this thesis (April 2022).

Use of Research:

The data collected in this questionnaire will be used to write a thesis on early literacy and AAC. A link with the completed thesis will be provided through Vancouver Island University. Information may also be shared at conferences, professional development opportunities, presentations and published in peer-reviewed journals.

Participation and Withdrawal:

Participation is voluntary and anonymous. You may withdraw from the survey at any time by either refusing consent or closing your browser. Since this study does not collect any identifiable information, it is impossible to withdraw or request a copy of your data after the survey has been submitted.

Consent:

I have read and understand the nature of this study and give consent for the research to use the data collected in this survey to benefit the research study. This letter of consent is for your records and does not have to be returned to the researcher. Consent will be obtained by answering the first question in the survey.

Concern:

I, Grietha van Gameren, will adhere to the procedures described in this consent letter. If you have any concerns about this research or my conduct during this research study, please contact the VIU Research Ethics Board at reb@viu.ca or by contacting my Research Supervisor, William McGann, at William.mcgann@viu.ca

Appendix H

Letter of Consent Two



VANCOUVER ISLAND
UNIVERSITY

Participant Letter of Consent

Survey 2: Phonological Awareness Screening Tool for AAC

“Closing the Gap: Literacy and Students with AAC”

Student Researcher

Grietha van Gameren
Master of Education in Special Education
Vancouver Island University

Faculty Supervisor

William McGann, R-SLP
Faculty of Education
Vancouver Island University
William.mcgann@viu.ca

Research Purpose:

My name is Grietha van Gameren, and I am conducting this research study as part of my Master of Education in Special Education at Vancouver Island University. The purpose of this two-part research is to gather data on the understanding of phonological awareness skills with students who use Augmentative and Alternative Communication (AAC). This study intends to identify the gap in identifying baseline phonological awareness skills for students who use AAC. The knowledge gap could help develop a Phonological Awareness Screening Tool for teachers to use with students that use AAC.

Description:

After reviewing the draft Phonological Awareness Screen for students who use AAC, you are asked to complete a short survey. Survey 2: “Phonological Awareness Screening Tool” will take 10-20 minutes. In this survey, you will be asked to share your thoughts about the Phonological Awareness Screening Tool. Data will be collected using Google Forms.

Risk of Harm and Benefits to Participate:

Your participation is voluntary, and there is no expectation for you to take part in this research, despite any professional relationships that we may have. You can discontinue participation at any time. However, once you submit this survey, there is no way to withdraw consent. All responses will remain anonymous. No identifying data is collected.

There are no direct benefits to you for completing this survey. However, the information you provide will contribute to the larger body of knowledge regarding literacy and AAC.

Data Storage and Management:

The survey will be completed using Google Forms. Since Google Drive stores data on servers located outside of Canada, data will not be protected by Canadian privacy legislation and may be accessed by a foreign government(s) in accordance with its/their laws. Please see the Google Privacy Policy for full details. <https://policies.google.com/privacy> All data will be password protected on the researcher’s personal computer and destroyed a year after completing this thesis (April 2022).

Use of Research:

The data collected in this questionnaire will be used to write a thesis on early literacy and AAC. A link with the completed thesis will be provided through Vancouver Island University. Information may also be shared at conferences, professional development opportunities, presentations and published in peer-reviewed journals.

Participation and Withdrawal:

Participation is voluntary and anonymous. You may withdraw from the survey at any time by either refusing consent or closing your browser. Since this study does not collect any identifiable information, it is impossible to withdraw or request a copy of your data after the survey has been submitted.

Consent:

I have read and understand the nature of this study and give consent for the research to use the data collected in this survey to benefit the research study. This letter of consent is for your records and does not have to be returned to the researcher. Consent will be obtained by answering the first question in the survey.

Concern:

I, Grietha van Gameren, will adhere to the procedures described in this consent letter. If you have any concerns about this research or my conduct during this research study, please contact the VIU Research Ethics Board at reb@viu.ca or by contacting my Research Supervisor, William McGann, at William.mcgann@viu.ca