

Supporting Implementation of Augmentative and Alternative Communication
in Inclusive Classrooms

by

Tresa Marshall

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We accept this thesis as conforming to the required standard.

William McGann

Date: April 14, 2024

Thesis Faculty Supervisor, Vancouver Island University

Dr David Paterson, Dean,

Date: April 14, 2024

Faculty of Education, Vancouver Island University

Abstract

This needs assessment research study posed the question, “What do teachers know and need to know about effective implementation of augmentative and alternative communication (AAC) iPad apps in inclusive classrooms?” An online survey tool was used to collect participant demographics, AAC knowledge and experience, and teacher thoughts or concerns related to AAC implementation. Teacher knowledge varied but about half of teachers who had taught a student who used AAC felt they knew the basics for using and supporting AAC. Most teachers were interested in receiving training if they knew they would have a student using AAC in their class, especially for improving their own efficiency with the device and incorporating the device in the classroom in a universal way. Prioritized recommendations included training, effective collaboration, individualized teacher support, and increased access to iPad communication apps.

Keywords: augmentative and alternative communication, complex communicators, collaboration, special education, inclusion, universal design for learning, teacher training, peer support

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Table of Contents

Abstract.....	iii
Acknowledgements.....	iv
Table of Contents.....	v
Table of Tables.....	viii
Table of Figures.....	ix
Chapter 1-Introduction.....	1
Definition of Augmentative and Alternative Communication.....	1
General Education Classrooms and AAC.....	3
Statement of Problem.....	4
Personal Context.....	5
Overview of the Study.....	6
Chapter 2-Literature Review.....	7
History of Augmentative and Alternative Communication.....	8
Policy and Legislation.....	9
Implementation of Augmentative and Alternative Communication in Schools.....	11
Gaps in the Knowledge.....	16
Chapter 3-Research Methods.....	18

Research Question	18
Methodology	18
Approval Process	19
Recruitment.....	19
Research Ethics Implications.....	20
Data Collection	20
Chapter 4-Results.....	22
Overview of Findings	22
Data Analysis and Interpretation	23
Demographics	23
Experience with AAC	24
AAC Device Knowledge	28
Student Support.....	30
Teacher Questions.....	30
The Most Important Thing to Know	31
Anything Else.....	33
Chapter 5- Discussion.....	36
What Is the Goal?.....	36

Where Do We Start?	36
Value/Significance and Limitations.....	38
Further Investigation.....	38
References.....	40
Appendices.....	45
Appendix A: Letter of Consent.....	45
Appendix B: Survey.....	47
Appendix C: Email Invitation Letter	51
Appendix D: Administrator Introductory Letter.....	53
Appendix E: Email Script for Principal to Send Out.....	55

Table of Tables

Table 1 Participants' Teaching Role	23
Table 2 Participants' Experience with Teaching Users of AAC	23
Table 3 Types of Training.....	25
Table 4 Training Option Preference.....	25
Table 5 Finding Vocabulary	27
Table 6 Modeling Device for Staff	28
Table 7 Supporting Communication Between Students	28
Table 8 Incorporating AAC into Routine Activities.....	28
Table 9 Incorporating AAC into Group Discussions.....	29
Table 10 Adding Vocabulary.....	29

Table of Figures

Figure 1 Types of AAC Used by Students.....24

Figure 2 Types of iPad Apps Teachers Are Comfortable Using.....27

Chapter 1: Introduction

Communication is an interactive, two-way process that includes both understanding and being understood. People use all kinds of ways to communicate including talking, gesturing, tone of voice, body language, writing, and drawing. Communication can take place in person, on the phone, online and through reading and writing. Dawn Braithwaite, a professor of communication at the University of Nebraska, considers a phrase from a poster (author unknown) that described communication as “the Beginning of Understanding.” (Braithwaite, 2021). It is important for people to be heard, recognized, and feel valued for their own contributions and unique selves.

Not everyone is able to communicate in ways that are easily understood. For some people, communication is a more complicated task. A communication disability can affect one or more communication areas. These could include speaking, understanding, reading, and writing. (Communication Disabilities Access Canada, 2023). Complex communication needs (CCN) refers to people who “are unable to communicate effectively using speech alone.” (Edmonton Regional Learning Consortium, 2020, para 1). People with CCN benefit from supports that supplement their communication in ways that are not talking.

Definition of Augmentative and Alternative Communication

All people have the right to engage with others socially and to have ways to express their needs and wants as independently as possible. A variety of supports are available to enhance or replace talking for those individuals living with CCN. The American Speech-Language-Hearing Association (ASHA) describes augmentative and alternative communication (AAC) as “multiple ways to communicate that can supplement or compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders.” (ASHA, 2023, Introduction to AAC, Bottom Line section). There are many reasons that a person may be partially or completely unable to speak. Some reasons relate to conditions

that a person is born with such as autism, Down syndrome, or cerebral palsy. Other causes are acquired after birth, such as laryngitis, dementia, traumatic brain injury, or Parkinson's disease. AAC methods and devices support multiple ways to communicate that can bolster or replace verbal communication for individuals with severe expressive communication disorders (American Speech-Language-Hearing Association, Augmentative and alternative communication (AAC), 2023). As awareness and acceptance of CCN increases, AAC could become an effective and accepted way of communicating.

AAC has no-tech, low-tech and high-tech options. With proper assessment and support, people can learn and employ an AAC option, or variety of options, that best suit their personal circumstances. Some AAC requires no extra equipment and has no or low cost, while other options involve equipment, specialized training, and have associated costs. Any AAC option requires support for successful implementation. Learning AAC is learning another language.

Sign Language is an example of no-tech AAC and has been used in various ways for centuries. In fact, one of the earliest documented references to sign language may be from the fifth century BC in Plato's *Cratylus* (Bauman, 2008). There are a variety of ways for people to access sign language learning including books, apps, websites, videos, tutors and classes. Sign language uses no equipment, but it does require that the communication partners also know sign language. Some other options for no- or low-tech AAC are writing, gesturing, and pointing to photos, pictures, or written letters/words. (Beukelman & Mirenda, 2023).

Voice output communication aids (VOCAs), or speech-generating devices (SGDs), are an example of a high-tech communication system. VOCAS are electronic devices that generate written and/or spoken text (Savard, 2020). There are a variety of options for electronic devices to use for communication. The Prentke Romich Company (PRC) has produced electronic

communication devices since the late 1960s. These speech-generating devices use a variety of language systems that are chosen based on the needs of the user. PRC devices are highly specialized and can cost between \$5,000-\$15,000. The cost and associated training required for these devices limit its wider use and often leaves users dependent on accessing funding sources for purchase and services.

Apps on an iPad are another high-tech option. They provide text-to-speech capabilities and are an accessible, portable, and cost-effective option (Leibs, 2020). AssistiveWare is an app development company that strives to make AAC effective and accepted. They have produced an AAC app, Proloquo2Go, for the iPad and iPhone that has made AAC more affordable and accessible for users world-wide. The app is highly customizable and includes features like VoiceOver, Switch Control, a range of voices to choose from, and a built-in keyboard all to support the unique communication needs of the user (Apple Newsroom (Canada), 2024).

Several options exist for supporting people with communication differences. The more severe a person's communication difference, the more likely that they would benefit from AAC. Factors such as physical ability of the user, cost, and portability should be considered when choosing the best option for a hi-tech AAC device. Having AAC apps available on the same everyday technology widely used by the general population will go a long way to increasing awareness and acceptance.

General Education Classrooms and AAC

In school, much of the learning is facilitated by talking, reading, and listening. Teachers, support staff, and peers play a key role in supporting communication for all students. For students who have impairments in expressive and receptive communication, teachers, support staff, and peers are important facilitators of communication opportunities.

For students with CCN, it is important yet more difficult to include their mode of communication in the day-to-day learning structures of the classroom. As a leader, a teacher's perceptions, training, and experiences play an important role in the quality and efficacy of implementing AAC in the general education classroom. In Tönsing and Dada (2016), a South African study that looked at the extent AAC was implemented in classrooms and teacher's perceptions of the process, quantitative data was used to collect teacher perceptions of the usefulness of AAC, their roles in supporting, challenges experienced, the extent of support from other team members, their competence in supporting, and training needs. They found that teachers saw their role included a variety of tasks to support students in the classroom and reported a variety of challenges. Some tasks included selecting and adding words to the AAC while a challenge was a lack of available support staff to share the added tasks.

Radici et al. (2018) looked at teacher's perceptions of the benefits and barriers of using AAC with children in the classroom related to teacher training and experience. Results showed that there was a statistically significant difference in the teachers' perceptions of their own abilities between teachers who had experience with AAC and teachers who had no experience in working with AAC. This research suggests that it is important for teachers to be supported with resources and learning opportunities so that they can foster skills for implementing AAC in classrooms.

Statement of Problem

Inclusive education remains elusive for children whose communication does not meet daily functional needs. It is not enough for students who need extra support to just be in the room with typically developing peers for communication to develop. Many students with CCN can benefit from assistive technology and AAC for social and educational opportunities. To

maximize the outcomes for students in school, a purposeful, evidence-based system of AAC implementation needs to be employed. Despite research in ways AAC can support education, the bulk of the research has been done in specialized educational settings (Iacono et al., 2022; O'Regan, Kleinert, et al., 2023). As the number of students with CCN attending inclusive classrooms grows, it is important to examine the interventions reporting positive outcomes for these students in schools.

Currently, generalist teacher education training does not require any specific training in special education. Educators in BC are required to demonstrate a broad knowledge base and understanding of areas they teach. (BC Teachers' Council, 2019). Generally, qualified BC teacher education programs have only one course dedicated to inclusive education. Because of the complexity and individuality of AAC, teachers may need specific support and modeling of appropriate practices in their classrooms (De Bortoli et al., 2011).

Personal Context

As a learning support teacher at both the school and district levels, I engage in a variety of support roles. At the school level, I serve as a case manager for designated students, and at the district level, I act as a support for colleagues. In this dual position, I have opportunities to support student teams and create and deliver professional development for colleagues. Having worked mostly with students using AAC on an iPad, I understand the importance of building teacher knowledge and related skills for implementing and integrating iPad communication devices in the school environment. The school speech and language pathologist (SLP) is an excellent resource for building skills related to a communication device. However, the SLP is usually only in the school one or two days a week with a sizeable caseload of students to support, while learning support teachers (LSTs) and classroom teachers are at the school every day.

As more students who use iPad AAC enter inclusive classrooms, the teachers and LSTs who support them will need to understand how to implement and use the technologies. Understanding what teachers know and need to know about implementing iPad AAC in classrooms will help inform the kinds of training and support needed for future implementation success.

Overview of Study

This research study addressed the following question: What do teachers know and need to know about effective implementation of AAC iPad apps in inclusive classrooms? The researcher hypothesized that due to the small number of students utilizing an iPad app for communication, there would be few teachers who have experience or training using communication apps in the school environment. The researcher also hypothesized that most teachers would want to have AAC implementation support and structures if they were going to have a student in their class using an iPad app for communication.

This study intends to expand on previous studies to fill the knowledge gap about what generalist teachers already know and need to know about the successful implementation of iPad AAC devices in inclusive classrooms. Needs assessment research will be conducted by survey to identify what teachers currently know about using and supporting complex communication for students using an iPad supported AAC device in the inclusive classroom.

Chapter Two: Literature Review

The American Speech-Language-Hearing Association (ASHA) describes augmentative and alternative communication as “multiple ways to communicate that can supplement or compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders.” (ASHA, 2023, Introduction to AAC, Bottom Line section). Additionally, ASHA states that “Choosing aided AAC is a critical, discerning process that involves the ongoing consideration of multiple factors.” (ASHA, 2023, Decisions When Choosing Aided AAC, Bottom Line section). As related professionals assess students and recommend an appropriate AAC system, it is important for school teams to employ an effective implementation system that supports the student, their peers, and school staff to use the system as an effective communication tool.

Studies reviewed in this chapter have researched AAC implementation and use in both specialized and general education settings. Some studies looked at implementation of a variety of AAC systems in schools while others looked at the teacher and specialist knowledge, skills and attitudes related to AAC implementation. Tönsing and Dada (2016), Radici et al. (2018), Walker and Chung (2022), and Andzik et al. (2017) all looked at aspects of teacher training and attitudes related to AAC implementation and use in special education classrooms. Other studies focused on the level of success experienced with the AAC implementation process. Tönsing and Dada (2016), Walker and Chung (2022), Andzik et al. (2017), and Iacono et al. (2016) are studies that examined the factors that affect how successful implementation of AAC is in special education classrooms.

While the overwhelming majority of AAC research and intervention has occurred in specialized or segregated educational settings (O'Regan Kleinert et al., 2023, Iacono, Douglas, et

al., 2022; Iacono Goldbart, et al., 2022), there are some studies that were conducted in inclusive school settings. Iacono Goldbart, et al. (2022) and O'Regan Kleinert et al. (2023), conducted scoping reviews and appraisals of AAC research in inclusive school settings.

History of Augmentative and Alternative Communication

Although it is difficult to say exactly when its use began, sign language is believed to be the oldest AAC system. In ancient Greece, around 385 B.C., Plato wrote about deaf Athenians using their hands to communicate (Bauman, 2008; Mahmarian, 2016).

In 1920, the first known AAC device for persons with severe disabilities was created. The F. Hall Roe Communication Board was used to support communication for people with severe disabilities and had letters and words a person could point to and make words or sentences. The board had notches that allowed for mounting on a wheelchair. It was used by people with cerebral palsy and hospitalized people who temporarily could not speak. (Vanderheiden, 2003; Mahmarian, 2016).

In 1960, the first electric AAC system was invented. It was a sip-n-puff typewriter called a Patient Operated Selector Machine (POSM). It worked by inhaling and exhaling through a tube to operate a typewriter and select letters to spell words. This device was not portable and was for use only at home (Coleman, 2020; Vanderheiden, 2003). Also in the 1960s was the emergence of the Prentke Romich Company (PRC). With a desire to help people with disabilities, PRC started producing communication devices, the very first being a typing system from a discarded Teletype machine. Over time, PRC developed more sophisticated high-tech, dedicated communication devices. PRC devices evolved from a typing system in 1969, through a variety of technologies including the Express 1 in 1979, a microprocessor-based device, to the Express 3 in 1982, the first device that used synthesized speech. From there the company developed portable

devices the Touch Talker and the LightTalker. PRC went on to develop a range of dedicated devices with specialized access points for a variety of complex circumstances.

The first portable communication device, the “Talking Broach,” was invented in 1973. This was a wearable communication aid with a display that fit on a shirt pocket and attached to a keyboard (Coleman, 2020; Mahmarian, 2016).

In 1975, the United States passed The Education for All Handicapped Children Act (EHA). This landmark legislation mandated that all school age disabled children receive public education for free (IDEA, 2023). Reauthorized in 1990, the EHA, or, Public Law 94-142, was the precursor to the Individuals with Disabilities Education Act (IDEA). IDEA required that education for individuals with disabilities take place in the least restrictive environment, that each student have an Individual Education Plan, and that parents be involved (IDEA, 2023). With the passing of this legislation, there was increased focus on special education services and as a result, more AAC devices and advancements in specialized communication emerged (White, 2023).

As technology advanced, so did the options and sophistication of AAC. Now, more than ever before, more people with complex communication considerations have access to AAC. With advancements in touch screens through to the prevalence of cell phones and tablets that have a variety of apps for purchase, accessibility and availability of AAC is substantially increased (McNaughton & Light, 2013).

Policy and Legislation

On December 9, 1975, the United Nations (UN) released the Declaration on the Rights of Disabled People. This sparked a number of new councils, offices, and committees in Canadian

federal government who liaised with disability rights lobbyists to hear their concerns and incorporate them into decision processes (Historica Canada, 2015).

Then, in 1981, the UN declared the International Year for Disabled Persons (IYDP). This cultivated increased levels of public and political interest in Canada about disability rights and led to “disability” being included as a protected category in the Canadian Charter of Rights and Freedoms in 1985. Furthermore, in 1986, people with disabilities were included in the new federal Employment Equity Act. (Historica Canada, 2015).

In 2006, the United Nations General Assembly officially adopted the Convention on the Rights of Persons with Disabilities (CRPD) for the protection of the human rights of all people with disabilities (Inclusive Education Canada, 2020). Then in 2010, the CRPD was ratified in Canada. Article 24 of the CRPD “prohibits discrimination against children with disabilities and mandates the right to inclusive education” (United Nations, 2008). This provided a focus for eliminating barriers for disabled students to participate in typical classrooms and paved the way for education systems in Canada to begin to remove segregated classrooms.

A landmark decision in 2012 by the Supreme Court of Canada, *Moore v. British Columbia*, ensured that when difficulties were identified for students with a disability, accommodation had to be provided. The Right to Education Project (2017) produced a summary of the case and its significance to the right to education.

The decision confirmed that special education is not a ‘dispensable luxury’ for those with severe learning disabilities, but is ‘the ramp that provides access to the statutory commitment to education made to all children in British Columbia’. School districts are not justified in removing access to special education facilities simply by reason of financial difficulties, and they need to assess alternatives (financial and otherwise)

reasonably available to accommodate special needs before deciding to reduce or remove special education services. (p. 1)

For students with complex communication needs, accommodating and implementing AAC communication support is one such example of an accommodation that must be provided in the education system.

Implementation of Augmentative and Alternative Communication in Schools

Increasingly, researchers are studying the effectiveness of implementing AAC in school settings for students who communicate through augmentative and alternative communication. Examples of the research in specialized education settings include Tönsing and Dada (2016) who did a questionnaire study in South Africa, Radici et al. (2018) conducted a survey in Italy, Walker and Chung (2022) who conducted a descriptive case study in the United States, and Andzik et al. (2017) who did a qualitative interview study in the United States. Additionally, scoping reviews of research from inclusive school settings have been done by Iacono et al. (2022) and O'Regan Kleinert et al. (2023).

Tönsing and Dada (2016) surveyed 26 teachers from six urban school districts in Gauteng province who taught in a special school setting. Of 288 students from twenty-six classrooms, 45% of students had limited speech. Overall, the study found that students used a variety of AAC systems but student access to the systems was limited, adult dependent, and mostly utilized for academics. Teacher factors, such as their competence, confidence and training were identified as influences on AAC implementation. Teacher perceptions of their role in classroom AAC use influenced how it was used. While almost all teachers felt that using AAC during learning was part of their role, less than half felt it was important to support its use for socialization. The researchers wondered if this might be the reason some students were less motivated to use an

AAC tool. Another theme identified was classroom context with inadequate time for implementation being the biggest concern. Issues related to aided AAC equipment were also identified. The researchers noted "...breakage, malfunctioning, getting lost, and limited or inappropriate vocabulary were perceived as minimally to somewhat challenging" (p. 286). Factors affecting other team members, including peers, professionals, parents, and assistants were another theme. There were a variety of factors that hindered and supported AAC implementation including knowledge, skills, and assumptions of team members. Finally, the researchers said that a poor match between the student needs and abilities and the devices they were given proved problematic. Further research was suggested regarding how students are assessed for AAC, how the use of AAC is implemented in the classroom, and how teams collaborate. Note that the small participant group of this study limits the generalizability. In addition, researcher presence when the questionnaires were being completed meant teachers could not remain anonymous which may have affected how teachers responded. All the issues noted by the researchers were somehow related to how the AAC system was chosen, prepared and made available to the student. Interestingly, the overall scores for these issues were quite low, and on a scale of 0-4, were rated as only minimally to somewhat challenging. Although none of the obstacles proved to be very high, lack of time to implement was among the highest.

Radici et al. (2018) conducted a survey that examined teachers' attitudes toward children using AAC in primary schools in Italy and their perceptions of the barriers and benefits of using AAC. Eighty-eight teachers from 18 primary schools in Milan, Italy, participated in this study. They were divided into two groups. Group 1 had 39 teachers who had experience with AAC and Group 2 had 49 teachers with no experience or training in AAC. The results in Group 1 found the most frequent benefit to using AAC was for building relationship and managing problem

behaviours as the AAC device provided a tool to teach the student an alternate way to communicate a problem or frustration that would replace the dysfunctional behaviour. For Group 2, the most frequent reported benefit was improved communication. Both groups reported that they “considered AAC important for the child’s comprehension, integration and autonomy” (p. 289). The most frequent barrier listed by Group 1 was using AAC with teachers and classmates. This may be because of the increased demands placed on teachers to implement AAC interventions while at the same time provide access to the curriculum. The findings are not generalizable to other places, the study was a small sample size, the reported attitudes could be biased for social desirability, and the geographical area was restricted. The authors suggested further analysis could be done about how communication could help children with problem behaviours in the classroom and how AAC could help children interact more with their peers.

Walker and Chung (2022) aimed to address the research question: How are AAC systems implemented within an elementary school setting among students with severe disabilities who have complex communication needs that necessitate the use of AAC? This descriptive case study collected observational data from five students in a self-contained classroom. All students used AAC to support or replace their speech. Observations were done in the school setting to document the communication function, type of AAC system, and the times and activities that the AAC system was accessed. Additionally, there were interviews with the special education teacher and the speech-language pathologist to understand the rationale for the AAC implementation. The study found that a variety of AAC types were used, and interactions included a range of communication functions except for social engagement. AAC was primarily used for academics. There were discrepancies between the observations and the interview data that was collected. Both the teacher and the SLP stated the importance of having communication

supports available for a variety of communication, but in observations, the opportunities were limited to mostly academics and were primarily used during interactions with adults. Students were observed to engage in a range of challenging behaviours and were not reliably provided with an AAC system to try and understand the reason for the behaviour. The authors stated “...there were several instances in which a student’s AAC device was removed in response to challenging behaviour” (Walker & Chung, 2022, p. 176). In an example described, one student was misusing another student’s device so the device was removed and placed in the book bag of the student to whom it belonged. In doing so, the device was no longer readily accessible. The researchers suggested there is a need to continue exploring ways to teach AAC for social communication and that identifying strategies to support AAC use across daily settings could improve user access. Several limitations and suggestions for future research were noted, including the study had a small sample size from one school that was selected of convenience with limited opportunities to observe, thus limiting the ability to make inferences about how AAC is used throughout the school day and with peers.

Iacono et al. (2016) conducted a systematic review of 17 studies of AAC in children with autism. They found strong AAC effectiveness according to the measurements used for review and that the implementation of AAC “appears overwhelmingly to relate to teaching functional communication, with a focus on request” (p. 2355). AAC was also found to reduce challenging behaviour when it was taught as a replacement to the problem behaviour. No matter the type of AAC used, effective implementation considered factors beyond the system used. A concern highlighted from the literature was the dependence on highly skilled teaching approaches that may hinder generalization of the skills from the teaching setting to the real world. An example is the use of PECS where the training environment is highly controlled and taught by specialists. In

this circumstance, it may be difficult to generalize the skills learned to a less predictable everyday setting. The researchers suggested that adopting an eclectic approach where implementation occurred purposefully across a variety of settings may help to mediate this.

Iacono et al. (2022) conducted a scoping review exploring which AAC studies had taken place in inclusive as opposed to specialized school settings. The review yielded 167 studies published from 2000 to 2020 involving students who used AAC, could benefit from AAC, or their peers. Of the 167 studies, only 28 of them were done in inclusive settings. One of the questions they explored was, “What is the evidence for AAC supporting inclusive education?” (p. 965). The researchers reported that their review showed potential for AAC to be supportive in inclusive school settings for students who use or could benefit from using AAC. They found that it was unclear if it was necessary for students to be removed from their inclusive setting to learn how to use their AAC before they could use it in the inclusive setting. They also found that when students were fully included there were opportunities for disabled and non-disabled students to share social spaces and have chances to figure out each other’s communication.

O’Regan Kleinert et al. (2023) systematically reviewed the literature from 1998 through 2022 on teaching or increasing the use of AAC in inclusive educational settings to address their question: “For preschool, elementary, and middle school students with significant cognitive disabilities and CCNs, what intervention strategies have been used successfully in inclusive settings to improve their use of AAC?” (p.3). They located 302 articles and of those, only 17 met their criteria for inclusion. Within the included articles, researchers focused on “any intervention targeting AAC that was implemented in an inclusive educational setting” (p.3, Table 1). The most frequent positively reported intervention was peer-mediated strategies. The involvement of peers in supporting communication for students with CCN was found successful in current

research particularly when peers learned to use and model use of the communication device. Another approach that reported successful results was the use of teaming and structured, collaborative planning that included multidisciplinary team members. In collaborative structures, an emphasis was placed on selection of strategies and targets while tying it all together in the IEP to support consistency across adults and guidance for peers. In an inclusive educational setting, training and support that involves typically developing peers and strong, collaborative team planning produced promising, positive results for implementing and developing AAC.

Many of the studies reviewed found that teacher and school team experience and attitudes affected how AAC is utilized in classrooms. An additional factor identified was the importance of appropriate assessment to ensure that the AAC system implemented was the best fit for the student (Walker & Chung, 2022; Andzik et al., 2017; Iacono et al., 2016). These findings were shown primarily in specialized education settings and supported in inclusive educational settings as well, especially when peers were trained and involved in knowing and using the communication system. These studies demonstrated that identifying and informing teachers of the common limitations related to implementing AAC in classrooms as well as learning and utilizing promising successful strategies can be foundational in guiding how future supports and implementation structures are developed.

Gaps in the Knowledge

There are several research studies that examined the effectiveness of implementation of AAC in the classroom. Studies have identified some issues that complicate or inhibit the degree to which AAC is successfully implemented in an education setting. Lack of teacher training and experience was a common factor (Tönsing and Dada, 2016; Iacono et al., 2016). Another common factor identified in the research is that AAC supports communication functionally, for

managing problem behaviour and for supporting academics (Radici et al., 2018; Walker & Chung, 2022; Iacono et al., 2016). Many of these studies took place in specialized educational settings with information gathered from experienced and/or specialist staff. A gap identified in the knowledge in this field is the limited data on the most effective implementation supports and strategies for general education teachers and support staff in inclusive classrooms as the day-to-day implementers of an AAC system.

Chapter Three: Research Methods

Research Question

This study investigated the following research question: What do teachers know and need to know about effective implementation of iPad app Augmentative and Alternative Communication (AAC) in inclusive classrooms?

Methodology

The research methodology for this study was a needs assessment conducted using a survey tool. “A needs assessment identifies gaps between current and desired results and places those in priority order on the basis of the costs to meet the needs compared to the costs of ignoring the needs” (Kaufman & Guerra-Lopez, 2013, p.7). A needs assessment gathers large amounts of data for analysis related to existing processes for informing changes. It can provide data about the causal factors for the gaps and correlations among themes that inform what solutions to consider.

Kaufman and Guerra-Lopez (2013) outline six steps in the process for this methodology. First, identify performance objectives. The objective here is to effectively implement AAC iPad communication apps in inclusive classrooms. With the objective defined, the second step is to identify the current status of performance as it relates to the performance objectives. Third, determine the gap between the current and desired performance. Fourth, prioritize the gaps in terms of the cost of closing the gap versus ignoring the gap. Fifth, update the performance objectives. Finally, use causal analysis to identify the source of the gaps and make recommendations for closing them. This methodology is most appropriate for investigating this research question because it provides data related to the problems in current approaches and a measurable plan for improvement.

Approval Process

Research Ethics Board (REB) approval was required for this research to be carried out. An application was submitted to the REB by the principal investigator. The process required submitting a completed application form, a copy of the certificate for completing the Course on Research Ethics (CORE), consent forms, the survey questions, the online survey URL, scripts for the email recruitment letters, and a signed approval letter from the faculty supervisor (See Appendixes A through E).

Once approval was granted by the REB, the principal investigator applied for approval from the school district of focus. Note that in this urban Vancouver Island school district, approval from the principals must be obtained before the district will review the research. This process included completing an application form, providing a copy of the research participant consent form, the survey questions, the online survey URL, scripts for the email recruitment letters, and signed forms of support for the research from the school principals of all participating schools.

Recruitment

Recruitment for this research was done through email. The researcher sent out an email to twenty school principals who had agreed to support the research. The email included two attachments. One was an invitation letter to teachers that described the research, method, and goal (See Appendix C). The other attachment was the consent letter with a link to the survey (See Appendix A). Principals forwarded the invitation email, consent letter and survey link from the researcher to all teaching staff at the school. Intended participants of this study were current elementary level (Kindergarten, Primary grades 1 to 3, and Intermediate grades 4-5) teachers and learning support teachers.

Research Ethics Implications

There are some ethical implications that are important to consider. After considering the content of the research questions, participants of this study could potentially identify themselves as lacking knowledge which could cause them some stress. There was also a degree to which participants could be identifiable depending on the information they provided. This risk was minimal given the anonymous nature of the survey. The survey included an informed consent as the cover page. Informed consent was indicated with a check box (consent/no consent) and implied by completion of the survey. The participants also checked a box to indicate that they were willing to be quoted anonymously.

Data Collection

A survey tool was developed and used to gather data related to the knowledge and experience of general education classroom teachers with AAC and specifically with students using an iPad app AAC system. “Surveys gather data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events” (Cohen, Manion & Morrison, 2013, p. 256). “A survey is a system for collecting information to describe, compare, or explain the knowledge, attitudes, and/or behaviors of a particular group” (Fogli & Herkenhoff, 2017, p. 3). The survey collected data to explore the themes of generalist teacher knowledge and experience with AAC and supporting iPad app AAC systems. There were 17 closed-ended questions that included demographic information and specific questions regarding experience and training with AAC, and three open-ended questions where participants could elaborate on their thoughts or concerns. Any identifiable information in the open-ended questions were removed to protect the anonymity of the participants.

This study utilized mixed-methods methodology with Likert-style fixed responses and open-ended short answer questions. The survey was presented in four sections. The first section collected demographics including confirming elementary level of teaching, years of experience, and teaching position. The second section gathered information related to the participants' familiarity and experience with AAC systems and students who use AAC. Specifically, the questions asked if they have taught a student who was an AAC user, if there were any students using AAC in the participant's school, along with the types of AAC systems the participants were familiar with and related training they had received. The third section gathered data related to the participants' knowledge about using and supporting an AAC system in the context of the classroom including finding and adding vocabulary, modeling use for other staff, supporting student-to-student communication, incorporating AAC into routine classroom activities and group discussions. The fourth section of the survey identified questions teachers have about AAC, what they perceived to be important to know about AAC, as well as if and how teachers prefer to receive training for AAC. The final question of this section gave participants an opportunity to add any other information.

Chapter Four: Results

Overview of Findings

This needs assessment research gathered data to address the research question, “What do teachers know and need to know about effective implementation of iPad app Augmentative and Alternative Communication (AAC) in inclusive classrooms?” Needs assessment research uses a six-step process.

The first step of needs assessment research is to identify the process that the researcher wishes to improve, in this case, for teachers to have the skills and knowledge to effectively implement AAC iPad app communication systems in inclusive classrooms. The second step was conducting the survey. The survey was administered to gather data to determine the current status of teacher knowledge and skills for implementing AAC iPad communication in the classroom as indicated by their responses to the survey questions.

Third, the data collected was analyzed to determine the gap between the current status of teacher knowledge of iPad AAC systems and implementation and the desired objective of effective iPad AAC implementation in inclusive classrooms. Next, identified gaps will be prioritized. Fifth, the requirements will be defined and, finally, recommendations will be made for closing the gaps.

Data Analysis and Interpretation

Quantitative and qualitative data was categorized for analysis. The quantitative survey data related to experience and knowledge was summarized into tables. The data was then analyzed for gaps in current performance related to the desired objective of effective AAC iPad app implementation in inclusive classrooms. Qualitative data was coded and themed according to

participant answers. This data was compared with quantitative data for gaps and potential resource development to triangulate findings and derive recommendations for closing the gaps.

Demographics. Forty-one people from 20 schools participated in this study. For length of teaching experience, 11 people (27%) reported having less than 10 years' experience and 30 people (73%) reported having been teaching for greater than 10 years. Participants were asked to identify their teaching role and this data was combined into three categories; primary (Kindergarten to grade 3), intermediate (grade 4-7), and learning support (see Table 1).

Table 1

Participants' Teaching Role

Teaching Role	Number of Participants
Primary (Kindergarten to grade 3)	26
Intermediate (grade 4-7)	13
Learning Support (including ELL)	14

Experience with AAC. Participants were asked if they had experience teaching a student who used AAC. They selected all that applied from three options: yes this year, yes in a past year, and no. This data is displayed in Table 2.

Table 2

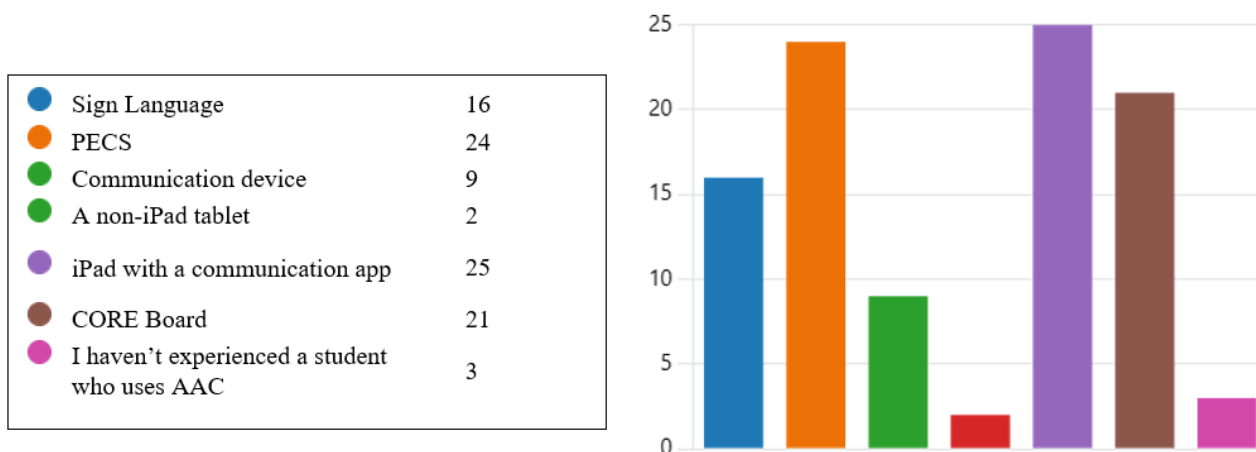
Participants' Experience with Teaching Users of AAC

Have you taught a student who uses AAC?	Number of Participants	Percent
Yes, this year	6	15%
Yes, in the past	15	36%
Yes, both past and present	7	17%
No	13	32%

When participants were asked if there were any students who use AAC attending the school where they teach, 28 participants (72%) responded yes to this question, three responded no (8%), eight (20%) were unsure, and two did not respond. Additionally, participants were asked to select all that applied to indicate what types of AAC they had seen students using. Six AAC types were listed to choose from with one more choice of not having experienced a student using AAC. See Figure 1 for the results.

Figure 1

Types of AAC Used by Students



Next, participants were asked if they had participated in any training on using AAC. There were eight options of training to select from and one option for no training. For clarity, the eight training categories were combined into post-secondary or workshop, students' family or private services, provincial outreach program, and school district service. Participants were able to select all options that applied. The data for this result is displayed in Table 3. The data indicated that close to half of the participants had not participated in any type of training, which is consistent with the findings of Tönsing and Dada (2016) and Iacono et al. (2016), both of which indicated concerns related to inadequate training for teachers in order to effectively support AAC use in school.

Table 3

Types of Training

Type of AAC Training	Number of Participants	Percent
Post-secondary course or ProD workshop	9	18%
Training by students' family/private service	1	2%
SETBC or POPARD	2	4%
School district	14	27%
No training	25	49%

Another question in the survey presented a list of potential training choices. Participants could choose one training option, including no interest in training, and 88% of teachers chose one of the training options. The results are displayed in Table 4. This data is consistent with the findings of Iacono et al. (2016), Iacono et al. (2022), O'Regan Kleinert et al. (2023) all of whom found that teachers indicated a desire for AAC training, and that teacher training was an important consideration of successful AAC implementation.

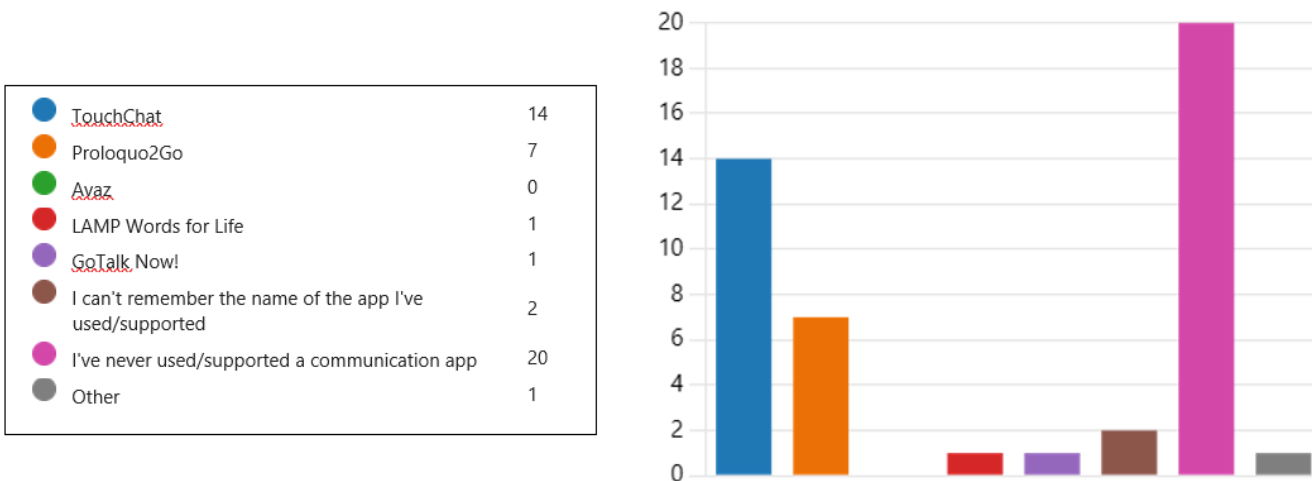
Table 4

Training Option Preference

Type of AAC Training	Number of Participants	Percent
In a workshop from the district learning support team.	17	43%
In a workshop from my school-based learning support team.	5	12%
Informally from a district specialist (e.g., SLP, or AAC specialist)	9	23%
Informally from my school-based learning support team.	4	10%
I'm not interested in training at this time.	5	12%

The survey data from this section revealed that 28 (68%) of 41 participants had taught a student that used an AAC system. Of those participants six (15%) were currently teaching students using AAC, 15 (36%) had in the past, and seven (17%) had taught a student both past and present. This left 13 (32%) of participants who had never taught a student who used AAC. Of the 28 teachers who had taught a student who used AAC, 15 (54%) teachers had participated in AAC training, compared to 13 (46%) who had never participated in AAC training. For the seven teachers who were teaching a student currently and had also in the past the percents were similar with four (57%) who had done training compared to three (43%) without any training. The percentage of participants with experience teaching a student who used AAC was higher than the researcher expected. This could be because teachers with AAC experience may have had a better understanding of AAC and the purpose of the research and so were more likely to choose to participate in the survey. When asked how they would like to receive training on the iPad AAC device, 40 participants responded, and the majority (n=17, 43%) chose that they would prefer training in a workshop from the district learning support team. Finally, participants were asked which iPad apps they were comfortable supporting. There were five apps to choose from plus options to select “I can’t remember,” “other,” or “I’ve never used one.” The results from this question are displayed in Figure 2.

Figure 2

Types of iPad Apps Teachers Are Comfortable Using

AAC device knowledge. In the next section of the survey, participants were asked to identify their level of knowledge for supporting specific AAC related tasks within the classroom or school context including, finding and adding vocabulary, modelling use for other staff, supporting communication between students, and incorporating the device into routine classroom activities. No participants reported a comfort level of “expert” on any question, so this category was not included in the summary tables. The data for these results are displayed in Tables 5-10.

Table 5

Finding Vocabulary

Comfort Level	Number of Participants	Percent
Never used/supported an AAC communication device	13	34%
Seen an AAC communication device, but not sure how to use	8	17%
I know the basics	14	34%
I'm comfortable and have more to learn	6	15%

Table 6

Modeling Device for Staff

Comfort Level	Number of Participants	Percent
Seen an AAC communication device, but not sure how to use	9	33%
I know the basics	13	46%
I'm comfortable and have more to learn	6	21%

Table 7

Supporting Communication Between Students

Comfort Level	Number of Participants	Percent
Seen an AAC communication device, but not sure how to use	8	29%
I know the basics	14	50%
I'm comfortable and have more to learn	6	21%

Table 8

Incorporating AAC into Routine Activities

Comfort Level	Number of Participants	Percent
Seen an AAC communication device, but not sure how to use	9	32%
I know the basics	15	54%
I'm comfortable and have more to learn	4	14%

Table 9

Incorporating AAC into Group Discussions

Comfort Level	Number of Participants	Percent
Seen an AAC communication device, but not sure how to use	12	43%
I know the basics	11	39%
I'm comfortable and have more to learn	5	18%

Table 10

Adding Vocabulary

Comfort Level	Number of Participants	Percent
Seen an AAC communication device, but not sure how to use	18	64%
I know the basics	5	18%
I'm comfortable and have more to learn	5	18%

In terms of teacher knowledge for helping a student find vocabulary on their device, for the 28 participants with AAC experience, the data showed that 50% (n=14) felt they knew the basics and 26% (n=8) reported that they were not sure how to do that task. This result was similar to participants' knowledge for modeling the use of the AAC device for other staff with 46% (n=13) and supporting communication between students with 50% (n=14) reporting that they knew the basics and 32% (n=9) and 26% (n=8) respectively, reporting that they were not sure. For the same three questions, 21% (n=6) of participants reported feeling comfortable with those tasks. Data was just slightly different for knowledge of incorporating the device into routine classroom activities and group discussions with 54% (n=15) and 39% (n=11) respectively, of respondents reporting that they knew the basics, 14% (n=4) and 18% (n=5) reporting that they were

comfortable with these tasks, while 32% (n=9) and 43% (n=12) reported that they were unsure of how to do these tasks. This is consistent with Walker and Chung (2022) and Iacono et al. (2016). The findings of Walker and Chung indicated a need to continue exploring ways to teach AAC for social communication and identify the most suitable strategies to support AAC use across daily settings. Similarly, Iacono et al. suggested that adopting an eclectic approach where implementation occurred purposefully across a variety of settings may help to generalize the skill.

Student Support. In Section 5 of the survey, teachers were asked to answer questions based on a hypothetical scenario in which they learn that a child who uses an iPad AAC device will be a student in their class in the near future. Participants were asked what questions they would have about the AAC app on the iPad and what they thought would be most important for the teacher to know how to do.

Teacher Questions. Three themes emerged from the first question including training, purpose, and classroom use.

The largest theme that emerged from teacher questions centered on training. Teachers asked a variety of training and app functionality questions, e.g., “Can we receive formal training?”, “What are the steps – where do you begin?”, “How easy is it to learn?” Other teachers asked: “How do you add new vocabulary?”, “Is it customized? Do you need an account? Is it free?”, and “How (do I) access and use (the app)?”

Another theme that emerged from teacher questions was related to how the student would use the AAC app. One participant asked, “Does the student already know how to use it? Will they use it to communicate with peers as well as teachers?” Another teacher asked “Is it supposed to be used for the student to communicate their needs primarily? Does it have the

capabilities for conversations with peers?” One other person asked, “How does the student use it?”

Some teachers asked questions about how the communication app would be used in the classroom including, “How (do I) teach the class as well to be able to communicate with the student?”. One other teacher asked, “How can it be incorporated in a UDL way?”. Another teacher said:

Engaging other students in the class to have conversations back and forth (would be important). We would need a class device for all students to use. I think this would also encourage the non-verbal student to use their own AAC more often if he saw others in the class using it.

The Most Important Thing to Know. When participants were asked what they thought would be the most important thing for the teacher to know how to do, three major themes emerged: training and support, effective use of the device, and building classroom connections.

Many teachers expressed that training was the most important thing for teachers. In total, the word “training” or “trained” appeared in responses 31 times. Participants wrote, “Get paid training at the beginning of the year or even at the end of June BEFORE the student enters class. The district is not very good at giving us a heads up and timely training.”, “Have time to practice and training.”, “have training and mentorship (regular check ins)”, “would love a training session or pro-d on how to use it.” Teachers also wrote, “Have the Inclusive Learning Teacher trained as well so the classroom does not have to work in isolation.”, “I think it would be important for a teacher to have training, as well as time to work with the app.”, and “with the exception of a picture program (years ago) have not been trained or even shown how to use them myself.” One

teacher wrote a much longer response than others and referred to how important training was for the teacher, student, peers, and families:

I feel that the most important thing for a teacher to know is how to navigate through the pages on Touch Chat/Nova Chat to be able to help the student communicate with the teacher/EA/classmates/friends. It can be overwhelming as there are so many icons. I feel that fading the icons not needed (at the time) is very helpful. I would love to see students become comfortable with using the AAC device even if just saying "Good morning" through the social page. As the child becomes more fluent in using the device it will become his or her voice and then others will be able to engage with their classmate/friend. Proper training in our school district is paramount. I feel that when the AAC device is often given to a student, there is a lot of training that needs to happen with the classroom teacher and the EA for the device to be used properly. We just don't seem to have enough training established in our school district. And the training needs to be more than just the school SLP (i.e., once a week). The AAC teaching needs to be given by an expert ... preferably by an AAC specialist with follow-ups for the student/family. Lastly, parents of the child need the training too (at least offered) as it is new to them. Thus, I feel that the ACC device will be used at home more often if the parents know how to use it.

Many participants expressed that it would be important to know how to use the AAC device effectively and efficiently. One participant said, "(It would be important to) understand how to use the device and troubleshoot any problems on the spot", another participant said "Help the child. What if they are stuck?" and one other wrote, "Understand how it works - how the student uses it, how to trouble shoot". Other teachers wrote, "I think ease and speed is important

to facilitate quicker modelling.”, “When and how to use the device effectively.”, and “Access the language needed quickly”.

A third theme that emerged for this question related to building connections. Participants wrote, “Build connection with student and other students to build connections with the student”, “how to support both the student and their peers.”, “Communicate with the student.”, and “integrate the app into the classroom routines so that all adults and peers can use it.” Other teachers wrote, “Implement the communication device as authentic communication.”, “communicate and support communication with and between students.”, and “How to include students that use AAC in group discussions.”

Anything Else. In the final survey question, participants were asked if there was anything else they would like to add. Two themes emerged from the final comments: training and other support team staff.

Training emerged again in this question. Participants specifically referred to accessing training from AAC specialists. One teacher said,

it (training) should be from someone who actually knows how to do it, often we go to "workshops" with district people or with our school-based people and they are also learning the system and we are to figure it out together...this is not a good use of time.

Another participant wrote, “I would love to see our school district have specialist workshops for using ACC devices delivered throughout the school year.”

A third teacher wrote, “I would love district training so I could implement AAC and prevent delays.”

A second theme from this question related to how other school staff could be a support. One participant wrote,

Often the EA is the only person who knows how to use the device and then becomes the only person planning and programming for the students. At least the LSTs and Case Managers should have training and could/should be doing this work.

Another teacher wrote, “It is useful to know people in the school to ask questions when stuck.”

A third teacher wrote,

It would be great for our SBT to have the knowledge to train as the help would not seem so distant and removed from the school. Our SLP has been instrumental in training and is accessible daily but only in the school once a week. It is important that the classroom teacher feel supported and comfortable to use the device.

It was surprising to the researcher to see how often teachers referenced training in every one of the short answer questions. Participants repeatedly expressed a concern over a lack of time and training opportunities or an interest in engaging in training. This is consistent with the findings of Tönsing and Dada (2016) and Radici et al. (2018) both of which found that teacher training influenced teachers’ knowledge, skills, and assumptions related to AAC implementation. It would seem to indicate that providing teacher training and ongoing support would be a high priority strategy for improving AAC implementation successes in inclusive school settings.

As well, the researcher was encouraged to see the number of comments and questions related to peer connections and inclusion. It is important for AAC to be viewed as an element of universal design for learning (UDL) and not as an isolated skill focused on a single individual.

This was also emphasized by Iacono et al. (2016), Iacono et al. (2022), and O’Regan Kleinert et

al. (2023), all of whom reported positive outcomes when students using AAC were fully included, and peers were involved in supporting AAC.

Chapter Five: Discussion

What Is the Goal?

Everyone, including all people with disabilities, has the right to education. AAC is crucial in supporting students with CCN to improve outcomes in academics, social interaction, and independence. As was evident in the comments made by teachers, not only is it important for teachers to have more training but it needs to be well supported over time to achieve the desired outcome of effective implementation of AAC in inclusive classrooms.

Where Do We Start?

Supporting teachers in implementing AAC is key to improving overall student outcomes. Some strategies to assist educators include Professional development and training, peer collaboration, and individualized support.

Professional Development and Training. The data heavily supported both a need for teacher training and a desire by teachers to participate in training opportunities. An important way to begin is through progressively building knowledge. To really see positive results and encourage curiosity and learning, it is not enough for teachers to know just the basics of AAC implementation. They need to feel confident with their skills and possess a willingness to learn more. Providing teachers with targeted training sessions on AAC systems, strategies and best practices will lay out a foundation of basic skills to begin with. Ongoing support through collaboration with AAC specialists, SLPs and other experts would serve to enhance teacher knowledge and skill development.

Peer Collaboration. Strong collaborative support structures are another good strategy to support AAC implementation. By providing time and support for teachers, paraprofessionals,

and support staff to collaborate, these teams will have opportunities to explore resources that fit the current learning environment and for tweaking strategies and activities in a timely way as complications arise. Additionally, this would allow time to build and adapt suitable programming that is in line with IEP goals and provides the student using AAC meaningful access to prescribed learning outcomes. Not only would it be beneficial to support collaboration within the school environment, but also across the district or even the province. Fostering a supportive network of educators would provide a forum for educators to share their experiences, troubleshoot challenges and exchange ideas.

Individualized Support. People are unique. Every teacher and student have their own set of experiences, skills, and challenges. This already complicated combination is further influenced by group dynamics that come as a natural part of inclusive classrooms and school communities. Specialists, paraprofessionals, and other inclusive education experts can consider tailoring support to the needs of the teacher and specific students they work with. By providing coaching, mentoring, and ongoing feedback, teams can address individual challenges and teachers can build their toolbox within a supportive and encouraging framework.

Increased Access to Technology. A number of participants expressed interest or had questions about incorporating AAC in a universal way for all students in the class to learn and use with their classmate who is an AAC user. However, in every classroom this researcher has observed or supported where there was a student using an AAC iPad app, there was only one device in the room and that device was the voice for the AAC user. This means that currently, if the device was used to support communication among classroom members, that one device would have to be passed back and forth or somehow shared between the communication partners. This in itself is quite limiting. Opportunities for others to practice with the device are

difficult to orchestrate and group discussions difficult to facilitate with such restricted access to the technology. Increasing the number of iPads with the AAC app available in the classroom would support training efforts, increase more natural communicative opportunities, and potentially decrease the complexity of facilitating group discussions.

Value/Significance and Limitations

It is the hope that this study contributes to helping teachers, school districts, and researchers to better understand teacher skills and knowledge of AAC implementation and identify potential areas of resource and professional development that supports teachers to build the competencies needed for successful AAC implementation in inclusive classrooms. Some limitations of the study to consider are that the survey was self-administered so participants did not have the opportunity to ask questions or clarify information. If a survey question was misunderstood by the participant, the information given may have skewed the data. There is also the possibility that participants may have over or under reported by giving socially desirable responses. Additionally, the participant group is small and localized to one urban Vancouver Island School District and may not be generalizable to the entire school district or to other school districts.

Further Investigation

It seems, in my experience as a learning support teacher, that there are too few AAC experts available for supporting with AAC in the school context and this has resulted in inconsistent systems and structures in place to support teachers and school teams with AAC implementation. It may be interesting to consider an interdisciplinary investigation of the science of implementation compared to structures used currently in inclusive school settings for implementing AAC. Many professions, for example medicine, are influenced by rapidly

developing science and technology that routinely affects how they do their work. In these circumstances it is imperative that staff learn and implement any changes that provide better outcomes as they arise. These systems and structures could be analyzed and compared to those used currently in schools to look for parallels and explore opportunities to refine the processes in schools and potentially improve AAC implementation successes.

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Appendix A: Letter of Consent



VANCOUVER ISLAND
UNIVERSITY

Augmentative and Alternative Communication Survey

*Participant Consent**Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms***Principal Investigator**

Tresa Marshall, Student Researcher
Master of Education
Vancouver Island University
tmarshall@stuvancouver.ca

Faculty Supervisor

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

Section 1: Consent**Purpose**

I am a student in the Master of Education in Special Education at Vancouver Island University (VIU). My research, entitled *“Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms,”* aims to identify what elementary teachers know and need to know about implementing augmentative and alternative communication (AAC). I hope that my research will identify areas of teacher knowledge about AAC implementation that could benefit from professional development.

Description

You are being asked to voluntarily complete this online survey. The survey includes multiple choice and open-ended questions on topics related to knowledge of Augmentative and Alternative Communication. The survey will take five to ten minutes to complete. You do not need to know anything about AAC to participate in this study.

Risk of Harm and Benefits

There are no direct benefits or expected risks to you in taking part in this study. It is hoped that the research will contribute to identifying areas of teacher knowledge about AAC that could benefit from professional development.

The survey is anonymous – that is, no personally identifiable information will be collected.

Management of Research Information/Data

The internet provider for the duration of this project is Rogers together with Shaw. The website indicates that personal information may be stored or processed in or outside Canada, with appropriate safeguards, but may be subject to the laws of the jurisdiction where it is held ([Privacy Policy - Rogers](#)).

Please be aware that *Microsoft Forms* is being used to collect your survey responses. Survey data will be stored on servers located in the United States, and thus data you provide would be subject to *Microsoft Forms* data management and privacy policies. (see [Microsoft Privacy Statement – Microsoft privacy](#))

I will download all survey data to my personal, password protected computer. All survey data will be deleted three years after the completion of the project, approximately May 2027.

Use of Research Information

The results of this study will be included in my master’s thesis, and may also be used for professional development opportunities, conference publications, presentations, and published in peer-reviewed journals. Anonymous quotations from participants may be included in my master’s thesis.

Participation and Withdrawal

Participation in this research study is entirely voluntary and you are free to withdraw at any time while you are completing the online survey. Refusal to participate or withdrawing from the research study will not have any adverse effects or consequences. If you decide to withdraw at any point while completing the survey, the data associated with you will not be recorded. You can withdraw before completion of the survey by closing the browser window. Once you complete and submit the online survey you are no longer able to withdraw your participation as this study does not collect identifiable data.

Because your personal identity will not be collected, withdrawal from the study would not be possible once you click on the ‘submit’ button at the end of the survey.

Consent and Conditions of Consent

I consent to participate in this research in accordance with the conditions described above. Yes No

I consent to being quoted anonymously in the products of the research. Yes No

Commitment of Principal Investigator

I, Tresa Marshall, promise to adhere to the procedures described in this consent form.

Concerns about your Treatment in the Research

If you have any concerns about your treatment as a research participant in this study, please contact the Vancouver Island University Research Ethics Board at reb@viu.ca or (250) 740-6631.

If you would like to participate in the study, you can access the online survey by clicking the link below.

Link to Online Survey: <https://forms.office.com/r/iFULU4gxn7>

This copy of the consent is for your records only. Consent will be obtained by answering the consent question on the first page of the online survey.

Appendix B: Survey



VANCOUVER ISLAND
UNIVERSITY

Augmentative and Alternative Communication Survey

*Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms***Principal Investigator**

Tresa Marshall, Student Researcher
Master of Education
Vancouver Island University

Faculty Supervisor

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

Section 1: Consent

1. I consent to participate in this research in accordance with the conditions described in the Consent Form attached to the email invitation.

Yes

No

2. I consent to being quoted anonymously in the products of the research.

Yes

No

Section 2: Demographics

3. Are you a current elementary (Kindergarten to grade 5) teacher in British Columbia?

Yes

No

4. How long have you been working as a teacher?

Less than 1 year

1-5 years

6-10 years

11-15 years

16-20 years

Over 20 years

5. What do you currently teach? Check all that apply.

Kindergarten
 Primary (grade 1-3)
 Intermediate (grade 4-7)
 Music/Strings
 English Language Learners
 Learning Support
 Other (specify _____)

Section 3: Augmentative and Alternative Communication Experience

6. Have you taught a student who uses Augmentative and Alternative Communication (AAC)?
 Some examples of AAC are sign language, PECS (Picture Exchange Communication), TouchChat, communication device, Proloquo2Go. Check all that apply.

Yes, I am teaching a student who uses AAC this year
 Yes, I've taught a student who uses AAC in the past
 No

7. Are there any students who use AAC attending the school where you teach? Check all that apply.
 Some examples of AAC are sign language, PECS (Picture Exchange Communication), TouchChat, communication device, Proloquo2Go.

Yes, there is a student in a higher grade than I teach.
 Yes, there is a student in a lower grade than I teach.
 Yes, there is a student in the same grade that I teach but not in my class.
 Yes, there is a student in my class.
 No, there are no students at my school using AAC.
 I'm not sure if there are any students at my school using AAC.

8. What types of AAC have you seen students using? Check all that apply.

Sign Language
 PECS (Picture Exchange Communication System)
 Communication device (not a regular tablet or iPad)
 A non-iPad tablet with a communication app
 iPad with a communication app
 CORE Board (a colourful page or board with pictures and words on it a person points to)
 I haven't experienced a student who uses AAC

9. Have you participated in any training on using AAC? Check all that apply.

Yes, I've taken a college/university course on AAC
 Yes, I attended a ProD workshop
 Yes, I was trained by the student's family
 Yes, I was trained by a student's private service provider
 Yes, I was trained by SETBC
 Yes, I was trained by POPARD
 Yes, I was trained by a school-based therapist (such as the school SLP)
 Yes, I was trained by a district support person
 No, I have not received training

10. Which iPad apps for communication are you comfortable using/supporting?

TouchChat

Proloquo2Go

Avaz

LAMP Words for Life

GoTalk Now!

I can't remember the name of the app I've used/supported

I've never used/supported a communication app

Other

Section 4: AAC Communication in the Classroom

Answer questions 11-16 based on the AAC communication system you are most comfortable using/supporting.

11. How knowledgeable are you with helping a student find vocabulary on their communication device?

I've never used/supported an AAC communication device

I've seen an AAC communication device, but I'm not sure how to use it

I know the basics

I'm comfortable and have more to learn

I'm an expert and can teach others

12. How knowledgeable are you with modeling the use of an AAC communication device for other staff?

I've seen an AAC communication device, but I'm not sure how to use it

I know the basics

I'm comfortable and have more to learn

I'm an expert and can teach others

13. How knowledgeable are you with supporting communication between other students and the student using an AAC device?

I've seen an AAC communication device, but I'm not sure how to use it

I know the basics

I'm comfortable and have more to learn

I'm an expert and can teach others

14. How knowledgeable are you with incorporating an AAC device into routine classroom activities?

I've seen an AAC communication device, but I'm not sure how to use it

I know the basics

I'm comfortable and have more to learn

I'm an expert and can teach others

15. How knowledgeable are you with incorporating an AAC device into group discussions?

I've seen an AAC communication device, but I'm not sure how to use it

I know the basics

I'm comfortable and have more to learn

I'm an expert and can teach others

16. How knowledgeable are you with adding vocabulary to the AAC device?
- I've seen an AAC communication device, but I'm not sure how to use it
 - I know the basics
 - I'm comfortable and have more to learn
 - I'm an expert and can teach others

Section 5: Student Support

Answer questions 17-18 based on learning that a student who uses an iPad AAC device will be in your class.

17. What questions do you have about the AAC app on the iPad?
18. What do you think would be the most important thing for the teacher to know how to do?
19. How would you like to receive training on using the iPad AAC device?
- In a workshop from the district learning support team.
 - In a workshop from my school-based learning support team.
 - Informally from a district specialist (e.g., SLP, or AAC specialist)
 - Informally from my school-based learning support team.
 - I'm not interested in training at this time.
20. Is there anything else you would like to add?

Appendix C: Email Invitation Letter



VANCOUVER ISLAND
UNIVERSITY

Augmentative and Alternative Communication Survey

*Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms***Principal Investigator**

Tresa Marshall, Student Researcher
Master of Education
Vancouver Island University

**Faculty Supervisor**

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

Dear School District 61 Elementary Teachers,

I am writing to invite you to participate in a study. I am a student in the Master of Education in Special Education at Vancouver Island University (VIU). My research, entitled "Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms," aims to identify what elementary teachers in the Greater Victoria School District know about using and supporting students who use augmentative and alternative communication (AAC). My hope is that my research will identify knowledge gaps that could help develop professional development opportunities.

Participant Selection:

You are receiving this invitation to participate in the study because you are employed by the Greater Victoria School District (SD #61) as an elementary teacher. The survey has been approved by the school district.

What will you be asked to do?

If you choose to participate in this study, you will be asked to complete an online survey about your experience using and supporting augmentative and alternative communication (AAC). The survey will take approximately 10 minutes to complete. Examples of AAC will be provided in the survey. You do not need to know anything about AAC in order to participate in this study.

Your Participation:

Participation in this research study is completely voluntary and you are free to withdraw at any time while you are completing the online survey. Refusal to participate or withdrawing from the research study will not have any adverse effects or consequences. If you decide to withdraw at any point while completing the survey, the data associated with you will not be recorded. Once you complete and submit the online survey you are no longer able to withdraw your participation as this study does not collect

identifiable data. Your participation in this research study is confidential from both the researcher and your employer.

What type of information will be collected?

You will be asked to answer demographic questions about yourself, questions relating to your experience teaching students who use AAC and questions asking you to rate your knowledge of AAC.

Consent

If you would like to participate in this study, please read the attached consent letter. This consent letter is for your records only, consent will be obtained electronically via the online survey. Please review the information carefully. You can access the online survey by clicking the link at the bottom of the consent letter.

Thank you for taking time to consider participating in my research.

Tresa Marshall

Appendix D: Administrator Introductory Letter

VANCOUVER ISLAND
UNIVERSITY*Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms***Principal Investigator**Tresa Marshall, Student Researcher
Master of Education
Vancouver Island University
[REDACTED]**Faculty Supervisor**Bill McGann
Faculty of Education
Vancouver Island University
William.Mcgann@viu.ca

Dear Administrator,

I am a student in the Master of Education in Special Education program at Vancouver Island University and am working on research entitled “Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms”. I would like to include the experiences of elementary level classroom teachers in my study. I have received approval from the school district to conduct this research.

My research aims to identify what elementary teachers know and need to know about implementing augmentative and alternative communication (AAC) in inclusive classrooms. My plan is to conduct a needs assessment survey about teachers’ existing knowledge, comfort, and experience. I will then analyze/interpret the results to see where needs exist and subsequently create recommendations to improve professional development opportunities for teachers. The goal is to identify some possible areas of improvements that could allow teachers to better implement the use of augmentative and alternative communication in their classes.

Teachers would be invited to complete an anonymous survey through Microsoft Forms that should take around 10 minutes to complete. The survey begins with basic demographic information (role within the school and years of experience) and then a blend of multiple choice and open-ended questions that will ask teachers to consider and reflect on what they know, their experience already and what they wonder about in relation to supporting students using augmentative and alternative communication in their classroom. (See attached questionnaire)

I am requesting that you forward the email invitation below with the attached invitation and consent letters to staff. Interested participants would use the link at the bottom of the consent letter to then fill out an anonymous online survey at their discretion. It can be completed on their mobile devices or computer by clicking on the link. You will not be involved in administering or collecting the surveys.

If you have any concerns regarding the ethical considerations of this study, please contact Chris Turner (VIU Research Ethics Officer) at reb@viu.ca or Bill McGann (Thesis Supervisor) at William.Mcgann@viu.ca.

Thank you in advance for making this study possible.
Sincerely,
Tresa Marshall

Appendix E: Email Script for Principal to Send Out

Hello Teachers,

Can you spare five or ten minutes to help me out with a research project?

My name is Tresa Marshall, and I am currently completing my master's degree in inclusive education at Vancouver Island University. I am conducting a study titled, *"Supporting Implementation of Augmentative and Alternative Communication in Inclusive Classrooms."* Through this research, I hope to identify areas of professional development that would support teachers with implementing iPad communication systems in their classrooms.

The study consists of an online survey that would take five to ten minutes to complete. You do not need to know anything about iPad communication systems to participate in the survey.

This request is a personal one, and I would be most appreciative of your participation. It is hoped that the information gathered would assist in answering my research question: *"What do teachers know and need to know about effective implementation of iPad app Augmentative and Alternative Communication (AAC) in inclusive classrooms?"* Please note that participation is completely confidential, I will have no way of identifying who has participated. Declining to participate or withdrawing during the survey will not prevent me from completing my master's thesis. Please find the invitation and consent letters attached. The link to the survey is at the bottom of the consent letter.

Thank you for taking the time to consider my request for your participation.

Sincerely,

Tresa Marshall