Augmentative and Alternative Communication (AAC) in Irish Mainstream Primary Schools: Staff Experiences and Inclusive Practices

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This Doctoral thesis is submitted to the Department of Educational Psychology, Inclusive and Special Education, Mary Immaculate College, in partial fulfilment of the requirements for the degree of Professional Doctorate in Educational and Child Psychology (DECPsy).

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Abstract

Background: Inclusive education for students with additional needs has been denoted in Irish educational policies for three decades, as well as in international literature and human rights legislation with increasing emphasis. Research has shown that many students with Complex Communication Needs (CCN) are effectively supported by Augmentative and Alternative Communication (AAC). UNESCO defines AAC as "communication systems used to replace speech either on a regular or occasional basis" (Hersch, 2020, p.51).

Aims: This research question asks how students using AAC are included in Irish mainstream primary schools. A qualitative mixed-methods sequential design was employed to explore the inclusive practices and experiences of staff supporting students using AAC.

Sample: 17 participants took part including primary school teachers and Special Needs Assistants (SNAs) with varying experience in supporting students with CCN who use AAC.

Methods: A survey was delivered online and analysed using Reflexive Thematic Analysis (RTA). Following this, three survey participants (one teacher and two SNAs) who work together to support a child using AAC, took part in semi-structured interviews. Interviews were analysed using Multiperspectival Interpretative Phenomenological Analysis (IPA).

Results: Survey analysis resulted in four overarching themes related to structure, roles of individuals across the school environment, training, and time as both a limitation and a source of hopefulness. Interview participants also discussed barriers and facilitators of AAC use, inclusive practices, social interaction and communication.

Conclusions: Findings indicate that currently AAC is more often used in structured lessons with staff compared to social interactions with peers, although staff sometimes engage in novel, unstructured peer training. Evident across responses were strong feelings related to the

inclusion of this cohort of students. Implications were noted for the choice of AAC, creating opportunities for interactions, and the need for whole-school approaches to staff training and AAC use.

Declaration

This thesis is submitted in part fulfilment of the requirements for the degree of Professional Doctorate in Educational and Child Psychology (DECPsy).

I declare that this thesis is my own work and that I am the sole author. Where the work of others has been discussed, full credit, acknowledgement and reference to their work has been given.

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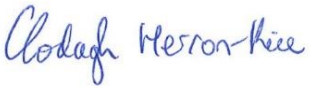
Signed 

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List of Abbreviations

AAC	Augmentative and Alternative Communication
AIM	Access and Inclusion Model
BPS	British Psychological Society
CCN	Complex Communicative Needs
DECPsy	Doctorate in Educational and Child Psychology
EP	Educational Psychologist
EPSEN	Education for Persons with Special Educational Needs
ESAI	Educational Studies Association of Ireland
GET	Group Experiential Theme
IASLT	Irish Association of Speech and Language Therapists
ISAAC	International Society for Augmentative and Alternative Communication
IPA	Interpretative Phenomenological Analysis
KWS	Key Word Signing
MIREC	Mary Immaculate Research Ethics Committee
NCCA	National Council for Curriculum and Assessment
NCSE	National Council for Special Education
NEPS	National Educational Psychology Services
PECS	Picture Exchange Communication System
PET	Personal Experiential Theme
PSI	Psychological Society of Ireland
RTA	Reflexive Thematic Analysis
SGD	Speech Generating Device
SEN	Special Educational Needs
SIM	School Inclusion Model

SNA	Special Needs Assistant
SLT	Speech and Language Therapist
UDL	Universal Design for Learning
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WOE	Weight of Evidence

Chapter 1. Introduction

1.1. Overview

In recent years there has been a legislative drive towards the inclusion of children with Special Educational Needs (SEN) in Irish schools (National Council for Special Education (NCSE), 2011; 2019). Inclusive education is a complex issue that, while embedded in human rights (United Nations Educational, Scientific and Cultural Organization (UNESCO) 1994; 2016) is often difficult to put into practice (Rapp & Corral-Granados, 2021). For children and young people with complex communication needs (CCN) such as those who are nonverbal or minimally verbal, this issue requires careful consideration in order for them to access functional, academic, and social interactions. This is achieved through developing knowledge of the curriculum and social networks in school. Many of these individuals will use Augmentative or Alternative forms of Communication (AAC). UNESCO defines AAC as "communication systems used to replace speech either on a regular or occasional basis" (Hersch, 2020, p.51). AAC are used to support, enhance, or replace verbal communication (Light & McNaughton, 2014) as well as to enable individuals to overcome what the International Society for AAC (ISAAC) refer to as challenges which arise in their everyday communication needs (Burkhart, 2011).

The literature chapter provides contextual information regarding inclusive education and the use of AAC in Ireland. AAC was examined in light of human rights and educational legislation, with a focus on the main forms of AAC used in the Irish educational context (NCSE, 2020). These consist of manual signs such as sign language and Key Word Signing (KWS), Picture Exchange Communication Systems (PECS), and Speech Generating Devices (SGDs). In Ireland, Educational Psychologists (EPs) work across both mainstream and special schools to support children with SEN. This involves direct work with students as well as indirect support provided to school staff and families (Department of Education and Science,

2007). The role of EPs in relation to CCN was examined in light of recent research. Research with EPs has emphasised the knowledge they have in relation to supporting students with CCN in schools and their capability to work with this cohort of students and their teachers (Sedgwick & Stothard, 2019; Vivash et al., 2018).

Considering these interrelating topics of inclusive education and AAC, a systematic review of the use of AAC with peers in mainstream educational settings was conducted. The findings of this review indicated that the inclusion of students using AAC in mainstream education was largely reliant upon the training and experiences of staff, as well as the practices they implemented in their schools. However, these practices varied widely across the included studies, which had a wide geographical reach also. Noteworthy in these findings was that the Irish context was underrepresented in this area. The present study aimed to fill this research gap by considering the question, '*How are children using AAC included in Irish mainstream primary schools?'* In order to answer this question, the research design focused on the aforementioned areas of staff experiences and practices.

The study followed a sequential mixed-methods qualitative-qualitative design (Morse, 2010) which included an online survey and a case study. The empirical stance was based on the interpretivist paradigm. This paradigm emphasises the unique perspective of each individual's experience (Abdul Rehman & Alharthi, 2016; Kumatongo & Muzata, 2021). This viewpoint is suitable for this study as the concept of inclusion can be considered as subjective to the individual (Kruse & Dedering, 2018). Luhmann's systems theory (1995) was selected as the theoretical basis of this study. Luhmann's work examines the subjectivity of inclusion through interacting systems, and the importance of various aspects of different systems as they affect the inclusion of an individual. This theory has been previously applied to inclusive education (Rapp & Corral-Granados, 2021). Luhmann's work also discussed other relevant

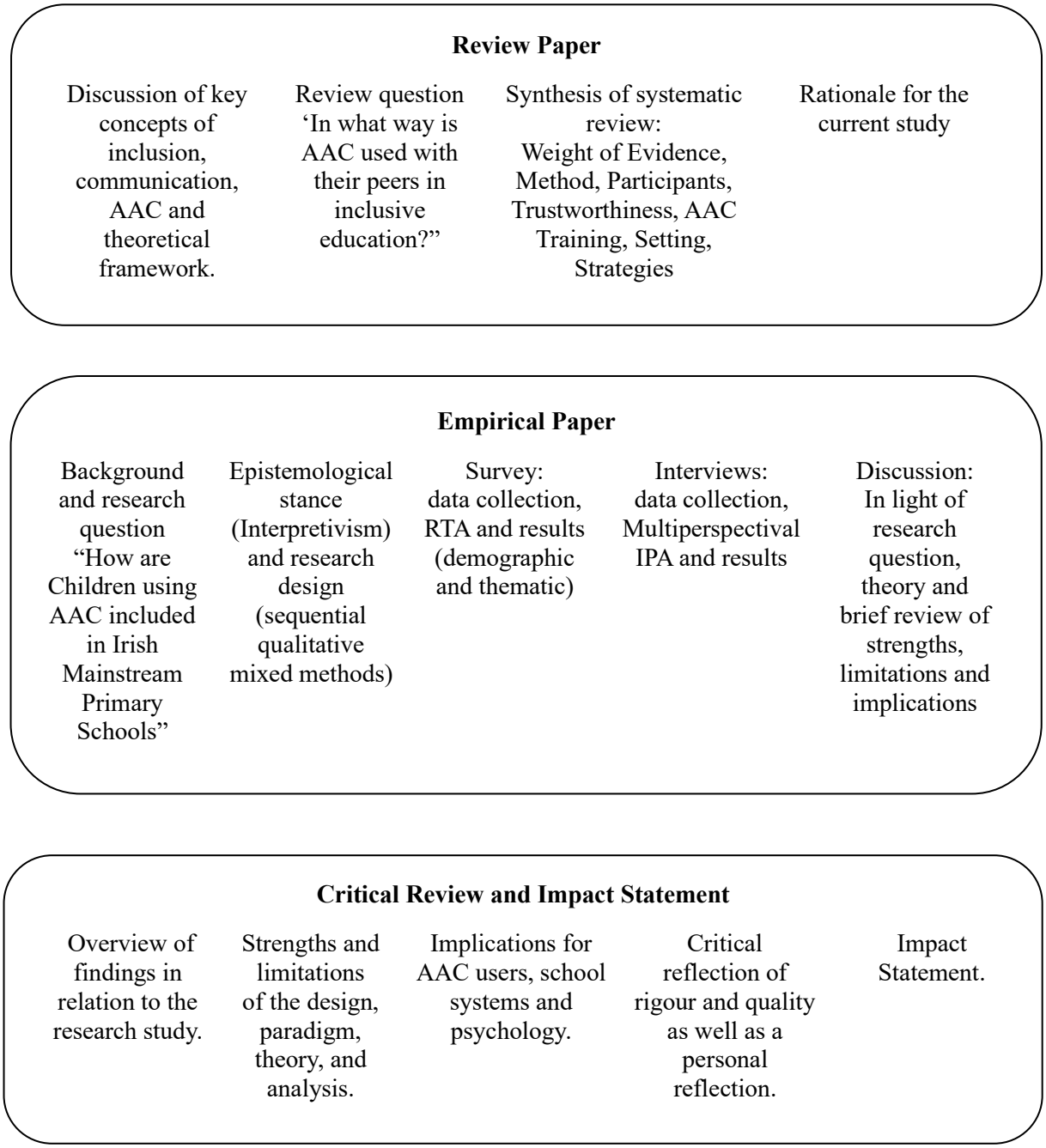
issues related to communication (Rapp & Corral-Granados, 2021) and education (Mangez & Vanden Broeck, 2021) which were applied to the use of AAC in schools in this study.

Phase one of this study consisted of a survey, which was distributed online through direct and snowball sampling, and examined the views and experiences of 17 participants who worked as teachers and Special Needs Assistants (SNAs). For the surveys, Reflexive Thematic Analysis (RTA) (Braun & Clarke, 2021) was selected in order to both acknowledge the subjective nature of the datasets and to gather overarching themes across participant responses. Demographic information is presented in the Empirical paper alongside the four themes which were noted in the analysis. These were entitled 'Structure Versus Freedom', 'Is Presence a Present?', 'Teach it Right' and 'The Duality of Time'. Due to the sequential design, these survey findings were also considered in phase two, which consisted of a case study. Here, three of the survey participants (one teacher and two SNAs) who worked together to support a 10-year-old child using KWS took part in semi-structured interviews. These were analysed using multiperspectival Interpretative Phenomenological Analysis (IPA) (Larkin et al., 2019; Smith et al., 2021). This approach was selected due to its emphasis on unique, individual perspectives and experiences. The findings of this analysis indicated a number of barriers and facilitators to AAC use in a mainstream class, with varying points of consensus and divergence noted across the responses. Further findings related to the communication development of the child, their interactions with peers, and their overall inclusion across school settings.

The final chapter of this study consists of a critical reflection of the strengths and limitations of this design. Applications of Luhmann's systems theory (1995) and relevance to the role of the EP were also discussed at this point. Implications of these findings related to AAC users, to school systems, and to the field of psychology. This thesis concludes with a critical and personal reflection of the research process. Figure 1.1 provides a summary of the outline of this thesis.

Figure 1.1

Overview of Thesis Structure and Content.



Chapter 2. Review Paper

2.1. Overview

This paper begins with a general discussion of the topics of inclusive education, human rights, and communication, before exploring AAC. Evidence for the use of AAC for populations with CCN and in educational settings will follow, with a review of the role of the EP in supporting those with CCN and a discussion of the theoretical underpinnings of communication in inclusive education with peers.

A systematic review follows which examined the question "In what way is AAC used with peers in inclusive education?" The review evaluated 12 studies selected from a comprehensive search. The critical appraisal used Gough's Weight of Evidence Framework (2007). Three of the included studies were considered to be of 'high' quality and relevance overall, while the remaining nine were rated as 'medium' overall. These studies present a variety of methods for including children and young people using AAC with their peers and discussed the impact of these methods for school staff, AAC users, and other students. A synthesis of their findings is provided followed by a discussion. This chapter concludes with the research question arising from this review.

2.2. Inclusion

2.2.1. Defining inclusive education

"Inclusion is seen as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children

of the appropriate age range and a conviction that it is the responsibility of the regular system to educate all children" (UNESCO, 2005, p.11).

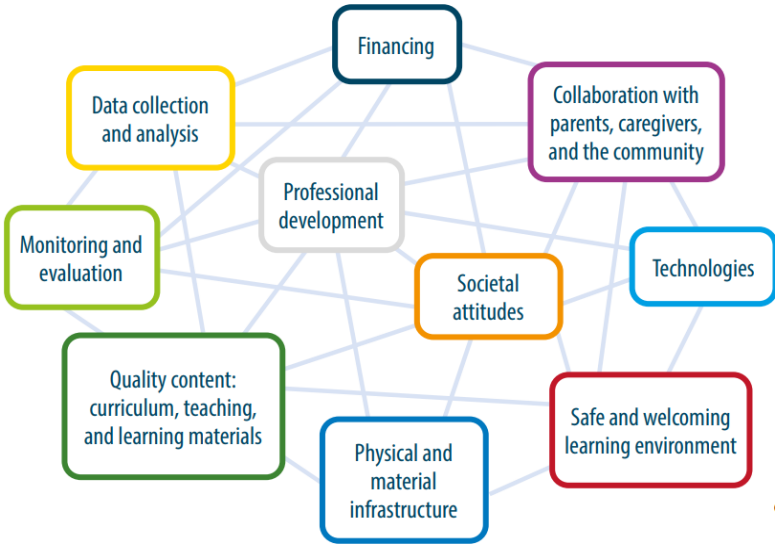
Based on this definition from UNESCO (2005) it is clear that inclusive education should not solely be defined by placement in the same setting as one's peers (Vetoniemi & Kärnä, 2021). When considering inclusive education, research with children with SEN advocates for a broader view that focuses on not only academics, but also on social and interpersonal inclusion (Benstead, 2019). There has been a suggestion that friendships and acceptance from peers are essential aspects for both development and learning, as children who are not included can become vulnerable to disengagement in school, and victimisation (Juvonen et al., 2019). The term inclusion must therefore refer to both the physical environment and to social interactions which take place in school, including relationships with teachers (Hymel & Katz, 2019; Juvonen et al., 2019). Inclusion can also be described as feeling safe and able to express yourself while being supported and stimulated (Inclusion Ireland, 2020).

2.2.2 Policy

Inclusive education is a right of all children, regardless of SEN. This is outlined in the Salamanca Statement (UNESCO, 1994), and the Education 2030 Framework for Action (UNESCO, 2016). The United Nations (UN) Declaration of the Rights of Persons with Disabilities also denotes the right to inclusive education and to engagement in play activities (UN, 2006). Rapp and Corral-Granados (2021) discuss how inclusion has been seen as distinct from integration due to its broader focus on teaching practices. UNESCO (2021) have also outlined how inclusive education is comprised of a number of elements including teaching practices and training, the school and wider community environments, and the support of technology (see Figure 2.1).

Figure 2.1

Aspects of Inclusive Education (UNESCO, 2021, pg.4)



Within the Irish context, the Special Education Review Committee (SERC) (1993) advocated for children with SEN to attend mainstream schools as opposed to the separate, special education settings they had traditionally attended (Kenny et al., 2020). The Education of Persons with Special Educational Needs Act (EPSEN) (2004) outlined further rights for all children to be educated in mainstream schools where possible, regardless of educational need or disability. While a review of the EPSEN Act is underway, recent research indicates that its implementation has been challenged by issues around data collection, use of resources, and school autonomy which result in varying practices (Kenny et al., 2020). Nevertheless, in recent years the Irish government and Department of Education have developed several policies and frameworks aimed at increasing inclusive practices. For example, the NCSE have produced a framework wherein they define inclusive education as requiring the removal of educational barriers as well as the acknowledgement of a diversity of student needs (2011). Additionally, an Access and Inclusion Model (AIM) was created to support inclusion in preschool education (Inter-Departmental Group, 2015), and the School Inclusion Model (SIM) was designed to

allocate resources and staff in a manner which would increase inclusion of students with SEN in primary and post-primary schools (AuCoin et al., 2020; NCSE, 2019). In Ireland, the Special Needs Assistant (SNA) role is designed to support students with care needs in the education system, including those with communicative differences across both mainstream and special education settings (NCSE, 2018). A recent review of educational provision in Ireland entitled *'An Inclusive Education for an Inclusive Society'* has indicated that benefits of inclusive education relate to diversity, increased understanding, and the facilitation of students with SEN to attend their local schools with their siblings (NCSE, 2024). Further positive aspects include increased sense of community and social connections in schools (Hutchinson & Specht, 2020).

Furthermore, inclusive education and diversity are considered part of the 'principles for learning, teaching and assessment' across the Primary Curriculum Framework for primary and special schools (National Council for Curriculum and Assessment (NCCA), 2023). This document outlines how all children will be enabled to "belong and to feel respected, confident, and safe so they can engage in meaningful learning and reach their potential" by ensuring access to resources, developmentally appropriate activities, and consideration of the individual child's abilities, interests, background and language (NCCA, 2023, pg. 32).

Recent NCSE policy advice around inclusive educational provision (2024) also recommends that all schools will be positioned to educate all students, that further planning groups are required within the Department of Education to support inclusive education and for further access to psychological and therapeutic supports in schools. Additional training for teachers and reviews of educational placements for students were also recommended (NCSE, 2024).

2.2.3. Types of Educational Inclusion

Full educational inclusion involves a mainstream class placement. However, for some children, inclusive education might include partial placement in a specialised education

classroom with some integration with same age peers throughout the school day or week (Department of Education, 2023). Integration from special classes into mainstream settings may take place in the general classroom, learning support rooms, a lunchroom, or the school playground or yard. While Ireland has undergone a significant increase in the opening of such classes in recent years (Shevlin & Banks, 2021), the use of special classes is considered an issue of international debate in relation to inclusion. Some research has suggested that special education provides more targeted opportunities for young people with SEN, which in turn promotes transferable skills for adult life (Hornby, 2021). However, withdrawal for learning support, or specialised classrooms are also considered practices less likely to facilitate inclusion and acceptance (Juvonen et al., 2019). A longitudinal study of Irish students, caregivers and school staff reported that withdrawal remains a common practice in Ireland (Rose & Shevlin, 2020). The use of withdrawing children for learning support has also been critiqued for creating a small number of 'expert' special education teachers rather than increasing inclusive practices amongst all staff (Rose & Shevlin, 2020). This is a pertinent finding given that teaching practices have been noted to be a key differentiator between a child being integrated or included into a mainstream class (Rapp & Corral-Granados, 2021). Another key aspect of classroom inclusion relates to the communication skills needed to interact with the curriculum and people in the environment.

2.3. Communication

2.3.1 Definition and Legislation

Communication is defined as "The transmission or exchange of information, knowledge, or ideas, by means of speech, writing, mechanical or electronic media, etc." from an encoder to a receiver (Oxford English Dictionary, 2023). Goldbart (2023) outlines how the way in which we define communication is of great importance to those with intellectual and

communicative differences. An inclusive definition of communication should include both spoken and symbolic or written forms (Beukelman & Light, 2020). Everyone has the right to communicate or express themselves as decreed by the UN Declaration of Human Rights (UN, 1948) and the UN Declaration of the Rights of Persons with Disabilities (2006). Children's rights legislation also includes the right to freedom of expression and opinion (UN, 1990). The right to freedom of expression can be seen to impact on the facilitation of other human rights also (Rvachew, & Folden, 2018) including that of access to learning in education as the individual requires communication skills to engage with the curriculum (Gallagher et al., 2018).

Communication allows for needs and wants to be expressed as well as for facilitating social interactions. Beukelman and Light (2020) outlined the many ways in which effective communication is necessary, including for social interactions, education, medical and personal care, and self-determination. Functional communication includes skills in expressing needs and wants, while social communication is more focused on interacting with others (Light & McNaughton, 2014). Examples of social competence may include taking turns, providing and requesting information, initiation and termination of conversations, as well as developing topics (Light & McNaughton, 2014). It is important to recognise that individuals may evaluate their success in communication differently and have different communication goals to meet their environmental needs, and so students must be taught to communicate competently to meet the needs of their educational setting (Light & McNaughton, 2014). This is especially important for those with communication difficulties.

2.3.2. Complex Communication Needs

The definition of CCN refers to those with difficulties in the production and/or comprehension of spoken or written language (Beukelman & Light, 2020). Milder communication needs may be those which are temporary or delayed but developing in the

appropriate trajectory such as differences in speech sounds, reduced clarity, attention and pragmatic conversation differences, or the impact of a mild, temporary loss of hearing (Irish Association of Speech and Language Therapists (IASLT), 2022; Sword, 2021). More prolonged differences in these areas may be more consistent with CCN, which are needs of a severe nature, affecting the ability to communicate effectively with others and are often associated with, or impacted by a variety of other genetic and developmental needs (Beukelman & Light, 2020). A recent longitudinal study in Ireland of 11,134 children, reported that one in six children aged five and one in twelve children aged nine had speech and language impairments (McConkey et al., 2021). Of those, 0.9% at age five and 0.7% at age nine had limited or no speech (McConkey et al., 2021). In this study, speech and language impairments included difficulties with speech production, clarity, word finding, sentence formation, developmental delay, and included children with little to no speech. For children with more complex educational needs, the NCCA (2022) advocate for the importance of verbal and nonverbal communication, as well as the opportunity to engage with peers. Children who communicate through nonverbal or symbolic forms can face multiple barriers in social integration with peers including access to their form of communication, sufficient training, opportunity, environmental factors, and skill development (Chung & Carter, 2013; Therrien et al., 2016).

Alternative communication strategies may be taught and modelled in the context of a Universal Design for Learning approach (UDL) (Rose & Meyer, 2002). UDL operates on principles of removing barriers to accessing educational instruction and acknowledging students' individual differences (Rose & Meyer, 2002) which has been recommended in the Irish context to support inclusive education (NCSE, 2024). This may include adapting educational instruction to meet the needs of different communication styles. In order to support communication through alternative forms, it is suggested that people must first be

acknowledged, that communication be adjusted to them, and that time is given to listen to them (McLeod, 2018). One of the recommended strategies for those with CCN is a total communication approach (NCSE, 2020). This refers to a process which involves communicating through a variety of forms including "facial expression, body language, gesture, sign, sounds, symbols, written language, pictures, objects of reference and electronic aids" (NCSE, 2020). Some of these alternative forms are referred to as AAC.

2.4. Augmentative and Alternative Communication

2.4.1. Definition

AAC is defined by UNESCO as "communication systems used to replace speech either on a regular or occasional basis" (Hersch, 2020, p.51) as well as strategies that enable individuals to meet their daily communication needs (Burkhart, 2011). AAC is therefore designed to support those with CCN (Beukelman & Light, 2020) by enhancing or replacing verbal speech with other methods of communication including gestures and symbolic forms (Hersch, 2020; Light & McNaughton, 2014). AAC has both a rehabilitative and habilitative function whereby it serves to both create and develop communicative competence (Beukelman & Light, 2020). Sometimes this is with the aim of assisting the production of natural, verbal speech (Howlin et al., 2007; Sigafoos et al., 2003). AAC users may employ these methods full-time, part of the time, and with or without accompanying speech (Donaldson et al., 2023). Through AAC use, both functional and social communication skills can be targeted and supported (Light & McNaughton, 2014). Light & McNaughton (2014) have outlined four key environmental components which support the development of communicative competence amongst AAC users. These are policy, practice, attitude, and knowledge. Table 2.1 demonstrates how these areas are currently applied to the Irish educational and social context for AAC users. At present, there are a number of policies which outline the rights of those with

CCN. There are also individual groups in the community and within education who are in a position to support AAC users.

Table 2.1
Application of environmental supports (Light & McNaughton, 2014) for AAC users in Ireland.

Environmental Supports	Application to the Irish context
Policy	
- For inclusion	EPSEN Act (2004)
- Against discrimination	Education 2030 Framework for Action (UNESCO 2016)
- For AAC funding	
- For UDL	UN Declaration of the Rights of Persons with Disabilities (2006)
Practice	
- MDT delivery of AAC	Role of Speech and Language Therapists
- Funding support	Variety of AAC types available
- Accessible technologies	
Attitude	
- Advocacy and awareness	Charity organisations
- Communication opportunities	Mainstream inclusion
- Appropriate expectations	NCCA
Knowledge	
- Of funding and resources	Training
- Of AAC system	Support from Speech and Language Therapists

2.4.2. Types of AAC

The three most commonly discussed forms of AAC for use in Irish classrooms include manual signs such as Irish Sign Language or KWS, PECS (Bondy & Frost, 1994), and SGDs (NCSE, 2020). Manual signs are considered to be unaided systems, while SGDs and PECS are aided forms of AAC (Pak et al., 2023).

2.4.2.1. Manual Signs. While sign languages are language systems comprised of their own "pragmatics, semantics, syntax and morphology", manual signs are used to "represent concepts, but use spoken word order, syntax, and grammar" (Beukelman & Light, 2020, pg191). KWS is a form of manual signing whereby the body, primarily the hands, are used to form symbolic gestures which denote key words or phrases and are accompanied by the spoken word also (Rombouts, et al., 2017). This use of the spoken language to accompany signs can mitigate difficulties when not all communicative partners have prior signing knowledge (Beukelman & Light, 2020). Therrien et al. (2016) suggest that compared to other forms of AAC, unaided systems such as KWS may have an advantage in unstructured settings, which in primary schools may include the playground or yard. In Ireland, Lámh is a commonly used form of KWS. Bowles and Frizelle (2016) interviewed the peers of children with Down Syndrome who engaged with Lámh in Irish mainstream classes and reported generally positive attitudes by peers towards KWS. These authors interviewed children aged six to eight in two mainstream primary schools in Ireland and their interview protocol asked questions related to who used KWS in their class, how they learned signs, and their attitudes and perceptions of signing and AAC users. It is important to recognise in this study that two of the peers were considered to be the best friends of the children with Down Syndrome and the others were selected randomly by the teachers. When this information is coupled with the author's acknowledged recruitment facilitation by Down Syndrome Ireland and the Lámh Development Office, these findings could be seen to be positively biased. Nevertheless, while peers

recognised the importance of KWS, and also noted that remembering and correctly forming signs was difficult at times, particularly when playing (Bowles & Frizelle, 2016). While these authors posited that these difficulties are possibly linked to the ways in which these children were trained in KWS, they did not interview staff to gain a greater understanding of that learning process in the classroom.

2.4.2.2. Picture Exchange Communication Systems. PECS is a system devised by Bondy and Frost (1994) originally to support children with autism and expressive language difficulties. In the initial stages of PECS, small picture cards are exchanged for items on individulised communication boards in order for children to make requests (Charlop-Christy et al., 2002). A recent systematic review and meta-analysis reported that learning to request can often be effectively supported by similar aided systems (Pak et al., 2023), and many students begin learning to communicate with picture systems for this reason. PECS is commonly used in many settings (Charlop-Christy et al., 2002; Howlin et al, 2007) and according to another recent meta-analysis, effective outcomes of PECS are linked to the training of those delivering and teaching the interventions (Lamb et al., 2018). This study demonstrated that trainers who were trained prior to the intervention and who implemented the child training with fidelity led to more effective PECS use overall (Lamb et al. 2018). The process of learning PECS involves six stages which increase in complexity from the exchange of cards to generalisation across distance, and then discrimination of picture cards. Following these steps, cards are taught to be used in complete sentences and in the present, past, and future tenses. The final phases require learning to use PECS to respond to questions and to comment (Bondy & Frost, 2001).

2.4.2.3. Speech Generating Devices. SGDs are technological versions of aided communication systems. There is a wide variety of software available that can allow someone to push a button, resulting in a programmed voice speaking the request, and the software is often used on devices such as mobile phones or computer tablets (NCSE, 2020). The picture

symbols used on these devices can range from cartoons to real life photographs, and so these can sometimes appear similar to the specific types of pictures used symbolically to represent nouns in PECS (Bondy & Frost, 2001). A comparative study examining the differences in perceptions of children between high-tech and low-tech forms of AAC have suggested that peers are more favourable towards high-tech forms, such as SGDs, with the suggestion that this was due to a perceived greater level of communicative competence amongst high-tech AAC users (Dada et al., 2016).

A meta-synthesis by Ripat et al. (2019) emphasised both the difficulties with SGDs including the sometimes-slow pace of the technology, as well as benefits related to expression of identity, increased empowerment, and allowing individuals to take part in meaningful social interactions. Pak et al. (2023) suggest that learning to use more than one system, such as using PECS and SGDs, may be most effective for situations where one does not work, for example if there is an issue with the technological component. For some AAC users, the presence of needs beyond CCN may also impact on the choice of AAC, such as when they have additional physical needs that require AAC adaptations (do Nascimento Givigi et al., 2022) or when their developmental level may impact on the types of AAC considered to be appropriate for them (Pak et al., 2023)

2.4.3. Research involving AAC Users

There are a wide variety of users who rely upon or are supported by AAC. This can range from those who are deaf or hard of hearing who use sign language (Mukuna & Maizere, 2022), to individuals with aphasia who require support in speech production (Rayer et al., 2022) to those with other complex needs (Crowe et al., 2021). This group includes individuals with autism, genetic disorders such as Down Syndrome or Angelman Syndrome, and intellectual or learning disabilities (Bowles & Frizelle, 2016; Calculator & Black, 2010; Lorah et al., 2022).

For some students, such as those with cerebral palsy, communication systems may require adaptations to facilitate their motor differences (do Nascimento Givigi et al., 2022), or the use of eye gaze or switch technology to communicate (Sowers & Wilkinson, 2023). Therefore, children's motor abilities and developmental level are relevant factors in the selection of AAC (Pak et al., 2023).

The efficacy of AAC for improving communication skills in young children with various needs, including those with genetic disorders, physical disabilities, autism, speech and language difficulties, cognitive and learning differences and other medical needs, has also been demonstrated in recent years (Leonet et al., 2022). Research has shown that children may be effectively taught to request using various forms of AAC (Sigafoos & Gevarter, 2019). However, following their systematic review of the comparative effectiveness of AAC types for the autistic population, Lorah et al. (2022) concluded that future research is required to examine the use of AAC for social functions rather than for simply requesting. This was due to their finding that studies comparing low and high tech AAC systems focused generally on requesting, and while this review found support for high-tech AAC in this way, it does not demonstrate social communicative competence. Therefore, skills which can be taught and developed through or in conjunction with AAC should not be limited to requesting. For example, AAC can also be used to access areas of the curriculum such as literacy (Mandak et al., 2018), and numeracy (Wright et al., 2020), as well as social skills. It should be recognised, however, that where children are responding using AAC, their understanding of the work, and of the concept to which they are responding, is not always clear (Wright et al., 2020). Furthermore, the use of AAC systems such as SGDs requires sustained attention, fluid reasoning, and categorisation skills (Robillard et al., 2013).

In terms of further characteristics which impact on AAC use, Donato et al. (2018) conducted a critical synthesis and found that motivation, interest, differences in initiating

spontaneous communication, fine motor differences, and attention were amongst barriers to AAC use for some with autism. Light & McNaughton (2014) also discussed how psychosocial factors could impact on the development of communicative competence. These may include attitude towards the AAC, confidence, motivation, and resilience (Light & McNaughton, 2014). Students should therefore be appropriately matched to a form of AAC that they can use effectively and comfortably (Pak et al., 2023). Studies evaluating the effects of AAC use on the development of communicative competence must address the issue of participant characteristics in order to examine generalisability across settings (Ganz et al., 2023). The characteristics of the AAC user, are also relevant to the response to peer interaction interventions in schools (Therrien et al., 2016). However, as of March 2024, correspondence with the Department of Education and the NCSE, has found that there are no statistics available concerning the populations of school children using AAC or the types they currently use in Irish schools.

2.4.4. AAC use in Inclusive Education

Previous research has generally focused on the use of AAC in functional interactions with adults and in segregated settings (Crowe et al., 2012; Iacono et al., 2022). However, the generalisability of communicative skills in natural environments for any form of AAC is key (Light & McNaughton, 2014). Research with children without CCN regarding AAC has outlined the need for both functional and social vocabulary (Light et al., 2007). However, some observational case studies of AAC use in a special education classroom have indicated that it is more often used for academic purposes compared to social interactions (Walker & Chung, 2022). A recent scoping review of AAC use in education suggested that functional skills are sometimes required prior to the teaching of other forms of communication (Iacono et al., 2022).

Sigafoos (1999) posited that for children with CCN to be included, it is the responsibility of others to create meaningful opportunities for interactions. This is reflective of the social model of disability. According to this viewpoint, teachers in inclusive settings must deliberately construct and support interactions between students. Kleinert et al. (2023) outline a number of steps which can be implemented to ensure that peers act as communicative partners, and to demonstrate and normalise AAC use. They also suggest that paraprofessionals could play an important role in facilitating peer modelling of AAC (Kleinert et al., 2023), which in the Irish context would include SNAs.

2.4.5. Staff Strategies for Inclusive Communication

Adult intervention and support are often noted as important when children with and without AAC play together (Therrien et al., 2016). Qualitative research examining the views of teachers regarding SGDs reported that implementing AAC in lessons requires intensive support for the child, and that planning around the curriculum and support from paraprofessionals is important (Leatherman & Wegner, 2022). However, this study was predominantly held with special education staff and so findings may not necessarily be generalisable to mainstream teachers (Leatherman & Wegner, 2022). Nevertheless, there have been multiple intervention methods implemented in inclusive settings to encourage interactions between those with and without CCN (Bourque & Goldstein, 2020; Juvonen et al., 2019; Therrien et al., 2016). One such intervention is the Stay Play Talk method employed with autistic children and their peers, whereby peers are encouraged to stay near the child with additional needs, play together or with the same activity, and talk about the play (Sperry et al., 2010). This method has been applied to those using AAC devices with some apparent success (Bourque & Goldstein, 2020).

2.4.6. Child Communication Training

Juvonen et al. (2019) recommend the use of cooperative learning and direct teaching to facilitate inclusion. These activities can be applied to communication instruction, whereby peers become involved in either directly learning an alternative form of communication (such as manual signing), or where students using AAC are supported and encouraged to contribute to group activities with their device. For example, Carter and Maxwell (1998) employed an experimental design to increase peer interaction with AAC, which in this case included picture boards and signing. This study used methods of directly discussing and role playing using AAC with the peers, as well as techniques of asking, waiting, and responding. Due to the experimental nature of the design, teachers were asked not to prompt students to engage, and peer engagement increased overall (Carter & Maxwell, 1998). This process has been replicated in recent years (Young et al., 2022). A systematic review has found that teaching peers to initiate and respond to interactions is generally effective, however, the quality of the studies included in this research was not consistently of a high standard (Therrien et al., 2016). Nevertheless, given the reported success of teaching peers, future research should ask whether peers have received training and what their interactions with AAC are like.

While children with SEN can be excluded due to behavioural differences, some research suggests that meaningful peer contact is an accurate predictor of feelings of inclusion (Pinto et al., 2019). Meaningful interactions may include bonding over shared interests for example, during extra-curricular activities (Juvonen et al., 2019). Vetoniemi and Kärnä (2021) have noted that while marginalisation and low self-concept can be common amongst children with SEN, peer socialisation has been observed to improve a child's sense of belonging. These findings demonstrate the importance of the relationships between students and staff as they promote inclusion, as well as implications for emotional wellbeing. This is considered an important domain of the EP.

2.5. Role of Educational Psychologist

In Ireland, EPs work within the educational and health services. Those who work closely with schools tend to be employed by the National Educational Psychology Services (NEPS) within the Department of Education. In relation to supporting those with SEN, their role includes both direct work with students, school staff, and families, as well as providing a consultative role through advising and supporting schools (Department of Education and Skills, 2007). The children they support directly and indirectly generally have needs in the domains of behaviour, education, social-emotional skills, and communication. While it has been suggested that EPs are in a position to provide support and guidance to schools in relation to speech and language needs, there is little evidence of this taking place in previous research (Sedgwick and Stothard, 2019). In the same author's study, semi-structured interviews with eight EPs suggested that while EPs see speech and language therapists (SLTs) as those who diagnose speech difficulties, they recognise their own position in supporting staff and students in this area and understood the impact of communicative differences on overall learning and psychology. For example, language and communication differences can be associated with poor levels of literacy, academic attainment, and social, emotional, and mental wellbeing and EPs were found to be knowledgeable about a number of strategies used to support communication needs and made recommendations around these during consultations with staff (Sedgwick & Stothard, 2019).

Other research with EPs, SLTs and teachers has also concluded that the role of EPs in relation to speech and communicative needs is complex and not clearly defined, yet EPs are generally in a position to offer support and guidance to schools in relation to communication (Vivash et al., 2018). This particularly referred to the relationship between communication and literacy needs, staff training, delivering evidence-based interventions, and hearing the child's own perspective (Vivash et al., 2018). In another survey study, EPs highlighted the importance of

eliciting children and young people's views and the need to employ multiple methods to do so (Smillie & Newton, 2020). When eliciting the voice of young people with complex or multiple needs, writing, reading, symbols, visuals, and observation tools are adaptations to spoken language that can be used (Hill, et al., 2016). It is therefore of paramount importance that EPs are familiar with alternative communication methods in order to work directly with children with CCN, and to advocate for their voice, opinions and feelings to be heard.

2.6. Theoretical Basis for AAC use

2.6.1. General Theories

By taking into consideration the child's needs, opinions, and environment when using AAC, this topic reflects the biopsychosociotechnical model of disability. Here, the unique abilities and skills of the child, their psychological wellbeing, and the impact of the environment, including technological factors are all considered as relevant interacting systems (Card, 2022). This is contrasted by previous medical or social models which focused solely on the individual or their environment and social constructions respectively (Letšosa & Retief, 2018). In order for a child to be included in the socio-communicative environment of their school, both they and others must learn to communicate effectively together.

Several key psychological theories can be associated with the use of AAC in the context of inclusive education. These include the social learning theory (Bandura, 1977) whereby children learn through modelling. This is a technique often used in AAC studies and has been used with peers and adults (Donato et al., 2018; Kleinert et al., 2023). Behaviourist theories are also central to the use of AAC in learning to request (Skinner, 1963). Furthermore, connecting the individual to their wider environment, and using communication strategies consistently between these environments can be related to Bronfenbrenner's Ecological Systems Theory (1979). While each of these theories has some relevance to the use of AAC in inclusive settings,

multiple theories would need to be combined to explore both communication and inclusive education together. However, a further systems theory that encompasses this area is Luhmann's social systems theory (Luhmann, 1995). Luhmann's work has also explored issues of communication (Rapp & Corral-Granados, 2021) and so the combination of his theories can be seen to unite the core concepts of communication and inclusive education in a cohesive way.

2.6.2. Luhmann's Systems Theory

Luhmann was a sociologist who devised this theory as a way of understanding society, social order, and politics (Mangez & Vanden Broeck, 2021). This theory has been understood to mean that aspects of society are divided into different, but non-hierarchical systems, meaning that no one system is considered of greater value than another (Luhmann, 1988; Mangez & Vanden Broeck, 2021). In this theory, individuals can be excluded or included from these systems (Luhmann, 1995; Rapp & Corral-Granados, 2021), and in many cases, inclusion into a system has been seen as an elimination of exclusory practices (Rapp & Corral-Granados, 2021).

Luhmann's theories have also been applied to the area of inclusive education (Rapp & Corral-Granados, 2021), and as it relates to educational systems, the theory refers to a variety of educational settings (Mangez & Vanden Broeck, 2021). Central to Luhmann's concept of education is the idea that education can alter the life of an individual beyond any initial limitations (Mangez & Vanden Broeck, 2021). This concept relates to the teaching of AAC as these forms of communication can enable individuals to engage with the world in ways that may not have been possible without supports due to their CCN. Education is therefore seen as a transformative system wherein the individual child must be a participant and thereby accept the changes and knowledge communicated to them (Mangez & Vanden Broeck, 2021). This aspect of the theory demonstrates the importance of individual preference and choice in AAC

selection and use as previously discussed (Pak et al., 2023). Furthermore, as systems are viewed as equal, this could be interpreted in relation to education, as the idea that academic and social education, while differing, should not be viewed as more or less important than each other. Additionally, social systems must be simplified so as to enable better functioning, and this aspect of his theory has been applied to the use of informational technology in schools (Tubin, 2007). This can also refer to the use of technology in AAC to support students with CCN and reflects the aspect of this theory whereby environments and systems must change or adapt to support an individual to engage and participate in the classroom (Rapp & Corral-Granados, 2021).

2.6.3. Luhmann's Systems Theory and Communication

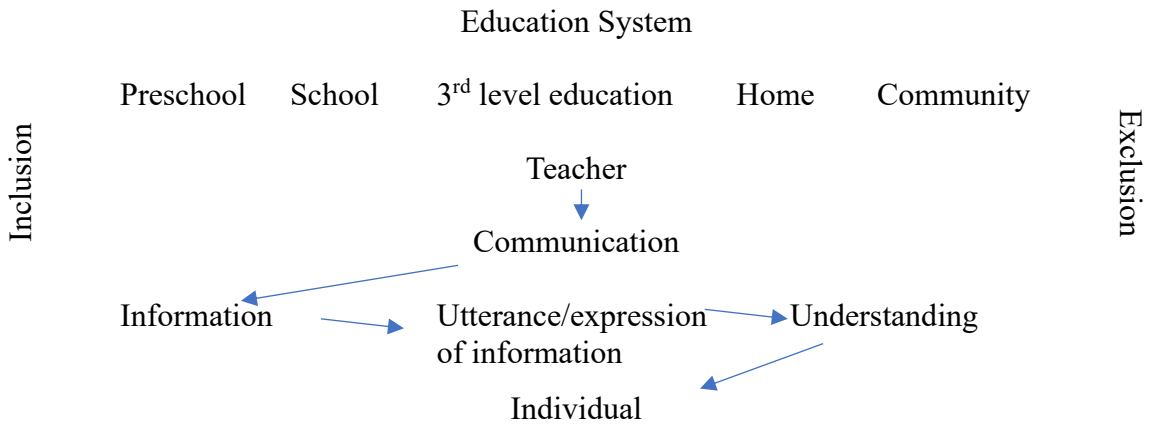
According to Luhmann's work, communication choices made by some individuals can also be exclusionary, such as when someone only communicates verbally and expects the same in return (Rapp & Corral-Granados, 2021). For Luhmann, communication requires information to be expressed and understood (Vanderstraeten, 2000). Luhmann further differentiated between thought and communication, demonstrating that the only way for individuals to understand the thoughts or feelings of each other is through a communication method such as speaking or writing (Rodger, 2022). As applied to this area, children who cannot speak must not be perceived as having no thoughts or feelings, however, equally, for anyone to understand and interact with them, they must be given access to a form of communication.

Therefore, this theory can be seen to advocate for transformative communicative education in a manner which reduces exclusory practices and predetermined ideas of an individual's capability (Luhmann, 2021). However, Luhmann also spoke about the subjectivity and paradoxical nature of assuming the meaning of human rights for someone else (Luhmann & Buitendag, 2022) and so it is vital to give someone a voice in order to understand how they

want to be included in society's systems. The diagram in Figure 2.2 synthesises Luhmann's theories of educational systems and communication between teachers and students. It is important to recognise that inclusion or exclusion can take place at various points between these processes such as within or between different systems, or in the process of communicating and understanding.

Figure 2.2

Overview of Luhmann's Theories



2.7. Systematic Review Rationale

This review paper has so far outlined how access to both communication systems and inclusive education is enshrined in national policies (EPSEN Act, 2004) and human rights declarations (UNESCO, 2016). In general, literature has demonstrated efficacy of various AAC types for children with CCN (Sigafoos & Gevarter, 2019) and their peers (Bourque & Goldstein, 2020). There is growing evidence for the use of AAC in inclusive settings with peers and for the role of adults in mediating these interactions (Therrien et al., 2016). However, a recent scoping review by Iacono et al. (2020) recommended the need for further reviews in this area, particularly focusing on either qualitative or quantitative studies. Given the individual and subjective nature of perceptions of what it means to be included in education (Krischler et al., 2019; Kruse & Dedering, 2018) an examination of qualitative literature would be appropriate.

2.8. Review Question

This systematic review will seek to answer the question "In what way is AAC used with peers in inclusive education?"

2.9 Systematic Review Search Strategy

A systematic literature review was conducted in July 2023 to examine the ways in which children using AAC have been included in mainstream peer interactions. Databases included those relevant to the fields of education, psychology, and linguistics through EBSCOhost. The search terms used can be found in Table 2.2. The forms of AAC included in this review were based upon the NCSE (2020) literature regarding the use of AAC in Irish education.

Table 2.2
Search Terms

Population		Intervention				Outcome
Child* or Young person or Adolescent or Teenager or Youth or School aged or Student or Pupil	AND	AAC or sign language or manual signs or PECS or Picture Exchange Communication System or augmentative and alternative communication or AAC device or speech generating device or SGD	AND	Peers or Peer relations or Friend* or Classmates	AND	Inclusion or Inclusive education or mainstreaming or integration

This resulted in 387 studies. A similar search was conducted in the Journal of Augmentative and Alternative Communication. Broader search terms were required to obtain results from this journal, and these are outlined below (see Table 2.3). This resulted in 453 articles. Four additional studies were found by general searches through internet search providers, and from the references section of other studies, and 26 further studies were added from the aforementioned journals in an updated search in February 2024.

Table 2.3
Search Terms for Journal of Augmentative and Alternative Communication

Population				Outcome
Child*	AND	Peers	AND	Inclusion or Inclusive Education

In total, 844 articles were found, of which 230 were duplicates. Only peer-reviewed journal articles in the English language were considered. A Prisma Flow Diagram (Figure 2.3) demonstrates this process. Titles and abstracts were screened according to the inclusion criteria (see Table 2.4). Due to the nature of the review question, there was a focus on empirical studies, with an emphasis on qualitative, survey, or systematic reviews in line with the guidelines of Pettigrew and Roberts (2006). Additionally, studies included a school-aged population attending mainstream educational settings. Articles excluded at a full text level can be found in Appendix A.

Figure 2.3

Prisma Flow Diagram

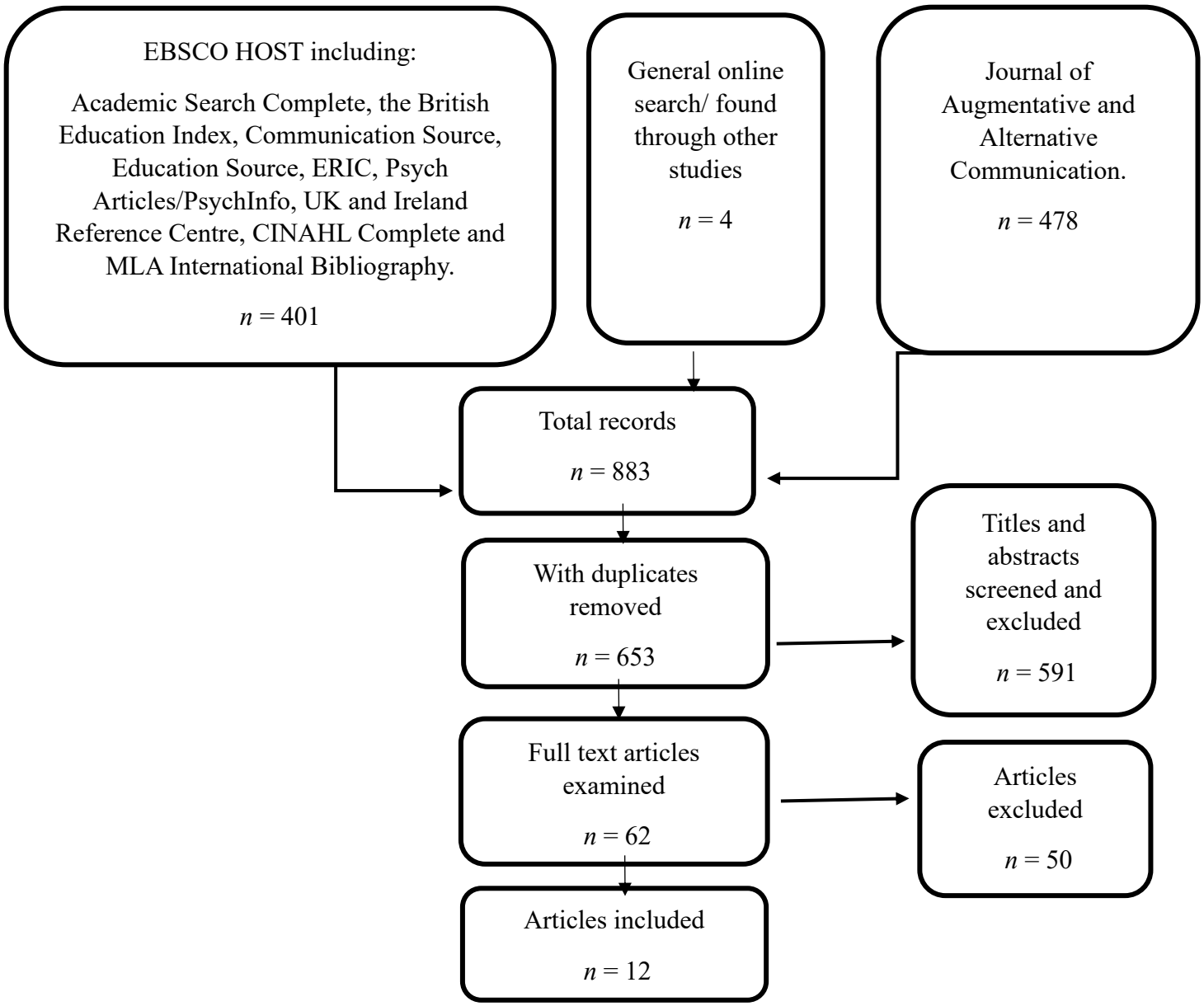


Table 2.4

Inclusion and Exclusion Criteria with Rationale

Inclusion Criteria	Exclusion Criteria	Rationale
Peer reviewed studies	Non-peer reviewed studies	Including only those which are peer-reviewed demonstrated the rigour of the studies involved (Gannon, 2001).
Systematic reviews, qualitative studies, and surveys.	Non-empirical papers, Case control, Cohort studies, Randomised Control Trials	For questions related to processes qualitative research, systematic reviews, and surveys are considered the most appropriate studies to include (Pettigrew & Roberts, 2006).
Mainstream educational settings	Other settings including university or college settings.	In order to examine the effects of peer-interaction in inclusive primary or post-primary education.
Studies examining use of AAC in inclusive ways with others.	Studies which focused on an individual and their learning or use of AAC with adults only.	This review is focused on how those using AAC engage with other students.
Manual signs, PECS, and speech generating devices.	Other forms of AAC	This reviewed is focused on those types listed in the NCSE documents (2020).
Socio-communicative or inclusive outcomes	Other outcomes (for example those related to other academic areas).	This study is focused on inclusion and interactions with peers.

The twelve included studies are listed in Table 2.5. Further details of these studies related to the population, design, AAC, setting, inclusive strategies and outcomes are outlined in Appendix B.

Table 2.5

List of Included Studies

No.	Citation
1	Anderson, K., Balandin, S., & Clendon, S. (2011). 'He cares about me and I care about him' Children's experiences of friendship with peers who use AAC. *AAC: Augmentative and Alternative Communication*, *27*(2), 77-90. https://doi.org/10.3109/07434618.2011.577449
2	Biggs, E. E., & Snodgrass, M. R. . (2020). Children's perspectives on their relationships with friends with and without complex communication needs. *Research and Practice for Persons with Severe Disabilities*, *45*(2), 81-97. https://doi.org/https://doi.org/10.1177/1540796919901271
3	Bowles, C., & Frizelle, P. (2016). Investigating Peer Attitudes towards the Use of Key Word Signing by Children with Down Syndrome in Mainstream Schools. *British Journal of Learning Disabilities*, *44*(4), 284-291. https://dx.doi.org/10.1111/bld.12162
4	Finke, E. H., Finke, E. H., McNaughton, D. B., & Drager, K. D. R. (2009). "All Children Can and Should Have the Opportunity to Learn": General Education Teachers' Perspectives on Including Children with Autism Spectrum Disorder who Require AAC. *Augmentative and Alternative Communication*, *25*(2), 110-122. https://doi.org/10.1080/07434610902886206
5	Kent-Walsh, J. E., & Light, J. C. (2003). General education teachers' experiences with inclusion of students who use augmentative and alternative communication. *AAC: Augmentative and Alternative Communication*, *19*(2), 104-124. https://doi.org/10.1080/0743461031000112043
6	Mukuna, R. K., & Maizere, J. (2022). Exploring the Experiences of d/Deaf and Hard of Hearing Children in a Mainstream School in Zimbabwe: A Narrative Analysis. *American Annals of the Deaf*, *166*(5), 1-21. https://doi.org/10.1353/aad.2022.0000
7	Østvik, J., Balandin, S., & Ytterhus, B. (2017). A 'visitor in the class': Marginalization of students using AAC in mainstream education classes. *Journal of Developmental and Physical Disabilities*, *29*(3), 419-441. https://doi.org/10.1007/s10882-017-9533-5
8	Østvik, J., Ytterhus, B., & Balandin, S. (2018). Gateways to Friendships among Students who use AAC in Mainstream Primary School. *Scandinavian Journal of Disability Research*, *20*(1), 92-101. https://doi.org/10.16993/sjdr.51
9	Sheehy, K., & Budiyanto. (2014). Teachers' Attitudes to Signing for Children with Severe Learning Disabilities in Indonesia. *International Journal of Inclusive Education*, *18*(11), 1143-1161. https://doi.org/10.1080/13603116.2013.879216
10	Soto, G., Müller, E., Hunt, P., & Goetz, L. (2001). Critical issues in the inclusion of students who use augmentative and alternative communication: An educational team perspective. *AAC: Augmentative and Alternative Communication*, *17*(2), 62-72. https://doi.org/10.1080/714043369
11	Walker, V. L., & Chung, Y. C. (2022). Augmentative and alternative communication in an elementary school setting: A case study. *Language, Speech, and Hearing Services in Schools*, *53*(1), 167-180. https://doi.org/10.1044/2021_LSHSS-21-00052
12	Young, A., Clendon, S., & Doell, E. (2023). Exploring augmentative and alternative communication use through collaborative planning and peer modelling: a descriptive case-study. *International Journal of Inclusive Education*, *27*(6), 755-770. https://doi.org/10.1080/13603116.2020.1867383

2.10 Synthesis of Findings

2.10.1. Weight of Evidence

This systematic review used Gough's Weight of Evidence Framework (2007) to evaluate the quality of the twelve included studies. This process involves four stages, the first of which is a quality appraisal known as Weight of Evidence A (WoE A). This is followed by WoE B, whereby the suitability of the studies to address the specific research question is examined. WoE C appraises the studies according to specific criteria outlined by the researcher relevant to the review question. The final stage, WoE D, combines these findings into an overall rating for each study.

For WoE A, the quality indicators outlined by Brantlinger et al. (2005) were employed. These indicators cover a range of types of qualitative study and their respective components, including interviews, observations, document analysis and data analysis. Overall, there are twenty indicators that can be considered across these areas, however, the studies included in this review did not all contain every indicator. As such, each of the studies is rated only on the points applicable to their content. In order to determine what would be high, medium, or low quality, study's ratings were examined as percentages, with over 66.6% of indicators present suggesting a 'high' quality study, between 33.3% and 66.6% considered 'medium' and below 33.3% considered of 'low' quality according to these criteria.

Using this method, five studies were considered to be of 'high' quality. A summary of WoE A ratings and the appraisal can be found in Appendix C. Six studies were rated as being of 'medium' quality. Only, Mukuna and Maizere (2022) was rated as 'low' quality due to a lack of clarity around the interview and observation procedures, as well as little discussion of any inclusive activities.

As all included studies featured a qualitative design they received high ratings according to WoE B (see Appendix D). WoE C refers to review-specific factors (see Appendix E). The first criterion related to the location of the study, with an emphasis on studies conducted in Ireland or the United Kingdom due to the variation in educational practices which take place across countries. Only one study (Bowles & Frizelle, 2016) was conducted in Ireland. The second criterion related to the date of publication. As discussed, there have been international changes in the understanding of, and legal requirements around inclusion. These have been impacted by the UN Declaration of the Rights of the Child (2006), and the UN Declaration of the Rights of Persons with Disabilities (2016). Based on this legislation, more recent studies were rated as more relevant to this review.

The final factor chosen to appraise the relevance of the included studies was the degree to which they discuss strategies which are used to enhance the inclusion of students. This criterion was selected as the nature of the review question was to discover the ways in which students use AAC with their peers. Studies which discussed various strategies were rated as 'high', those which mentioned one or two strategies were 'medium' and those which neglected to discuss the techniques or activities used to include students were deemed as 'low' in terms of relevance.

Finally, the combination of these three results is found in Table 2.6. This weighting is known as WoE D. Based on the scores obtained across WoE A, B, and C, nine studies were rated as 'medium' overall, while three studies were considered to have 'high' ratings. These were Finke et al. (2009), Anderson et al. (2011), and Bowles and Frizelle (2016). The following section synthesises the various elements of the included studies.

Table 2.6
Weight of Evidence D: Overall rating

Studies	WOE A	WOE B	WOE C	WOE D
Soto et al. (2001)	3 (High)	3 (High)	1 (Low)	2.33 (Medium)
Kent-Walsh & Light (2003)	3 (High)	3 (High)	1 (Low)	2.33 (Medium)
Finke et al. (2009)	3 (High)	3 (High)	2 (Medium)	2.66 (High)
Anderson et al. (2011)	3 (High)	3 (High)	2 (Medium)	2.66 (High)
Sheehy & Budiyanto (2014)	2 (Medium)	3 (High)	1(Low)	2 (Medium)
Bowles & Frizelle (2016)	3 (High)	3 (High)	3 (High)	3 (High)
Østvik et al. (2017)	2 (Medium)	3 (High)	2 (Medium)	2.33 (Medium)
Østvik et al. (2018)	2 (Medium)	3 (High)	2 (Medium)	2.33 (Medium)
Biggs & Snodgrass (2020)	2 (Medium)	3 (High)	2 (Medium)	2.33 (Medium)
Walker & Chung (2022)	2 (Medium)	3 (High)	2 (Medium)	2.33 (Medium)
Mukuna & Maizere (2022)	1 (Low)	3 (High)	2 (Medium)	2 (Medium)
Young et al. (2023)	2 (Medium)	3 (High)	2 (Medium)	2.33 (Medium)

Note: scores above 2.5 are considered ‘high’ and between 1.5 and 2.4 are denoted as ‘medium’, lower than 1.5 would be ‘low’ quality.

2.10.2 Methods

As discussed, this review focused on qualitative studies and so interviews and focus groups were commonly used methods across all included studies. Four studies also employed longitudinal designs with more than one interview (Anderson et al., 2011; Finke et al., 2009; Walker & Chung, 2022; Young et al., 2023) which allowed participants to revisit their responses after a certain period or for observations to be made over time. Several studies also conducted

observations as part of their research, however information pertaining to the content of these observations was lacking in some reports (Biggs & Snodgrass, 2020; Mukuna & Maizere, 2022; Østvik et al., 2017; Østvik et al., 2018). Only one study employed an experimental design to encourage the inclusive use of AAC in school (Young et al., 2022). While purely experimental studies were excluded from this review, this study featured qualitative elements in the form of interviews and observations and so was deemed eligible for inclusion. Sheehy and Budiyanto (2014) also featured some statistical analysis of their questionnaire.

2.10.3. Trustworthiness

In ten studies, clear efforts were made to check data with participants to ensure credibility of findings, which is an important aspect of the data-gathering process (Brantlinger et al., 2005). The exceptions were Mukuna and Maizere (2022) whose efforts were unclear on this point, and Sheehy and Budiyanto (2014). Young et al. (2022) showed videos from the initial data collection phase to the class teacher to ensure that the target child's behaviour was conducive with their typical behavioural patterns. Similarly, Walker and Chung's (2022) interview participants were shown observation notes and interview data for discussion.

The sequential or longitudinal nature of some research designs also allowed the interviewers to check the content of their findings during the second meeting. For example, Anderson et al. (2011) created picture books following the first set of interviews which were read with the children during the second interview. Summaries were also provided to participants of the focus groups in Soto et al. (2001), Finke et al. (2009), and to the interview participants in Kent-Walsh and Light (2003).

2.10.4. Participants

Populations interviewed or surveyed across the studies varied from children and young people who used AAC themselves (Mukuna & Maizere, 2022; Østvik et al., 2017; Østvik et

al., 2018), to their peers/classmates, or to their teachers/paraeducators in school. In order to include AAC users in their study, Østvik et al. (2018) employed the use of various forms of AAC. In some studies, such as Soto et al. (2001), additional groups of participants such as speech therapists and parents also took part, however, for the purposes of this review, which is focused on educational perspectives, their contributions to the findings have not been synthesised with those of the educational staff. Furthermore, it is important to note that two studies, both by Østvik et al. (2017; 2018), used the same methods and dataset but described different outcomes in each paper.

Overall, students who used AAC were aged between 5-14, and peers tended to be in the same age range as the AAC users. Peer selection varied across studies. One of the peers of each child with Down Syndrome in Bowles & Frizelle (2016) was selected by the child, while the others were identified randomly. In Anderson et al. (2011), the peer participants were nominated by the class teacher focusing on those who already engaged with the children with CCN. This selection process may have resulted in a positively biased response from these participants.

In many studies, participants also had various other needs beyond those of communication. This includes needs associated with autism (Finke et al., 2009; Kent-Walsh & Light, 2003; Walker & Chung, 2022; Young et al., 2022), cerebral palsy (Anderson et al., 2011; Kent-Walsh & Light, 2003), Down Syndrome (Bowles & Frizelle, 2016; Kent-Walsh & Light, 2003), physical or motor differences (Østvik et al., 2017; 2018), or those who were deaf or hard of hearing (Mukuna & Maizere, 2022).

Adult participants included mainstream class teachers (Finke et al., 2009; Kent-Walsh & Light, 2003; Østvik et al., 2017; 2018, Sheehy & Budiyanto, 2014; Soto et al., 2001; Young et al., 2023), special education teachers (Østvik et al., 2017, 2018; Soto et al., 2001; Walker & Chung, 2022), and paraeducators such as assistants (Østvik et al., 2017, 2018; Soto et al., 2001).

Some studies which focused on adult participants did not give detailed accounts of the communicative needs of the children using AAC (Finke et al., 2009; Sheehy & Budiyanto, 2014; Soto et al., 2001).

Participants were spread across a wide geographical area. This included Ireland (Bowles & Frizelle, 2016), New Zealand (Young et al., 2023), Australia (Anderson et al., 2011), Zimbabwe (Mukuna & Maizere, 2022), the USA (Biggs & Snodgrass, 2020; Finke et al., 2009; Kent-Walsh & Light, 2003; Soto et al., 2001; Walker & Chung, 2022), Norway (Østvik et al., 2017, 2018) and Indonesia (Sheehy & Budiyanto, 2014).

2.10.5. AAC

A variety of forms of AAC were seen across the included studies including high and low technological aided forms and signs. The most commonly reported forms were SGDs and manual signs. In many studies, students appeared to be familiar with multiple forms of AAC (Anderson et al., 2011; Biggs & Snodgrass, 2020; Walker & Chung, 2022). Characteristics and language skills of the AAC user were relevant to the use of AAC in several studies. For example, differences in receptive language and understanding skills were noted by peer participants in Biggs and Snodgrass (2020). Peers here also noted that those who were more proficient with their AAC were easier to communicate with (Biggs & Snodgrass, 2020). Some teachers reported a lack of motivation by some students to use their AAC (Kent-Walsh & Light, 2003). Communication difficulties between those using AAC and their peers contributed in some cases to difficulties in academic and social development (Mukuna & Maizere, 2022). Some findings also related communication skills to social skills (Finke et al., 2009). One of the benefits noted of AAC use in inclusive settings was that some peers in Anderson et al. (2011) recognised how exposure to AAC improved their own communication skills. Furthermore,

peers in Bowles and Frizelle (2016) emphasised the value of KWS and its importance for the AAC user also.

In some SGD cases, the AAC itself was a limiting factor, due to the nature of the words or phrases available on the device (Walker & Chung, 2022) or other technological aspects (Anderson et al., 2011), with some staff preferring for unaided forms such as manual signs to be known also (Kent-Walsh & Light, 2003). AAC was also considered time consuming to learn (Kent-Walsh & Light, 2003) and manual signs could be difficult to remember (Bowles & Frizelle, 2016).

2.10.6. Training

Level of training, general knowledge, or familiarity with the AAC was addressed in several studies. Teachers sometimes reported no experience or training with AAC prior to the introduction of the child to their classroom (Young et al., 2023), and training levels in other studies varied greatly (Finke et al., 2009), with some staff reporting a need for further AAC training (Østvik et al., 2017). In the study by Soto et al. (2011), key elements of effective work by the assistant were discussed in terms of their training as well as their contribution to decision-making. Differences within studies were also observed. For example, one of the teachers in Bowles and Frizelle (2016) had no experience, while the other had completed one module in Lámh which is the form of KWS commonly used in Ireland. Both Kent-Walsh and Light (2003) and Finke et al. (2009) featured participants with limited formal training in AAC but with variation in experience. Wide experiential variation was also reflected in Soto et al. (2001).

Children also demonstrated varying degrees of comfort or efficiency with their AAC. For example, the child in Young et al. (2022) did not appear to answer questions with a clear understanding of their content in the initial data gathering phase, and notably, little information

was given about their receptive language skills. However, students in other studies (Soto et al., 2001) demonstrated effective use of their AAC, and some had several years' experience communicating in these ways (Bowles & Frizelle, 2016).

2.10.7. Setting

In order for a study to be included in this review, a mainstream educational setting with some inclusivity was required. In some cases, this meant that the children were fully integrated into the mainstream class for example in Bowles and Frizelle (2016). However, several studies included students who attend the mainstream class for limited times throughout the day due to their enrolment in special education classes (Biggs & Snodgrass, 2020; Walker & Chung, 2022). It was notable that participants in the Biggs and Snodgrass (2020) study mentioned that proximity and repeated engagement are important for developing friendships. Østvik et al. (2017) further noted that students using AAC who attended mainstream class for part of the day were seen as 'visitors' and their participation and engagement in the class were limited. Overall, having this joint membership across two classes was seen to contribute to marginalisation from peers (Østvik et al., 2017).

Nevertheless, students in Østvik et al. (2018) noted positive interactions in both the specialised classes and mainstream class. Naturalistic opportunities for conversation with those in close proximity was also noted in Anderson et al. (2011). While proximity in class could not always be guaranteed due to special education provision, break times could be seen as opportunities to engage with peers. Sometimes this was facilitated by a reduction in communicative demands. For example, a child in Anderson et al. (2011) observed that activities without communication such as watching a movie were positive forms of peer engagement. While there was also some indication that AAC was used spontaneously in the school yard as well as in the classroom (Bowles & Frizelle, 2016), breaktime communication was not as

evident in all studies (Mukuna & Maizere, 2022). In terms of generalisability, some studies examined the use of AAC across multiple settings in the school beyond the classroom, including the school yard (Bowles & Frizelle, 2016; Østvik et al., 2017), and cafeteria (Walker & Chung, 2022). In one study however, the AAC was not accessible to the children all throughout the school day (Walker & Chung, 2022). This could be considered a limitation of the child's communicate abilities and their rights to communicate, however, Kent-Walsh and Light (2003) emphasised how in their study, access to the AAC device was not considered a guaranteed predictor of inclusion without the requisite training.

Finally, some teachers in Finke et al. (2009) expressed difficulties with environmental factors for their students with autism who used AAC, however, the difficulties described appeared to be more associated with sensory needs related to autism, rather than to the use of AAC. Sensory differences in the environment also affected interactions with mainstream peers in Østvik et al. (2017). Due care must therefore be given to interpreting the findings related to AAC use compared to those related to participant characteristics.

2.10.8. Inclusive Strategies

The discussion and description of inclusive strategies varied across the included studies, with four studies giving detailed accounts, four giving brief information, and four having little information about the nature of inclusive interactions. While full inclusion generally denotes interactions with peers, many studies demonstrated the key role that adults play in organising, facilitating, and training children to engage with AAC. Activities ranged from those implemented by the teacher or paraeducator, such as through facilitating group work or adapting lessons, to activities led more by the other students.

2.10.8.1 Adult Strategies. Adults sometimes seemed to determine when communicative opportunities became available to students (Walker & Chung, 2022), and the

use of AAC was seen to impact on their teaching. For example, teachers were often required to prepare lessons with modifications related to the child's communicative needs (Finke et al., 2009). In Østvik et al. (2017), staff discussed how they had specific goals for student participation and socialisation in class, however, their implementation of strategies was considered to be inconsistent. Some schools have implemented buddy systems or peer-roster systems to facilitate interactions with children with complex needs (Anderson et al., 2011). Conversely, one teacher responded that they relied on the other students to help ensure that they understood the child using AAC (Kent-Walsh & Light, 2003).

One of the primary methods used to increase awareness of AAC and social interactions was through direct teaching, as took place in Bowles and Frizelle (2016) with KWS. Staff in Østvik et al. (2017) described other methods they used to include children using AAC into academic activities such as by altering the class schedule to ensure that activities they enjoyed were taking place during their mainstream integration time. However, Østvik et al. (2017) observed that while staff expressed support for inclusion, the children who used AAC were often not included on a practical level in the mainstream class. Additionally, Sheehy and Budiyanto (2014) indicated that signs were used by teachers only when required by the child and not as part of a continuous signing environment.

Other suggestions by teachers include group work, which was identified as a positive source of interaction for some students (Finke et al., 2009; Østvik et al., 2017). Additionally, the teacher reported that the intervention used by Young et al. (2022) resulted in improved communication amongst the class as a whole. This involved a staged process of modelling using the AAC, asking the partner to respond, waiting, and then either responding, or modelling a response which was based on the work of Carter & Maxwell (1998) (Young et al., 2022). Implementing the SGD into the classroom prior to this study was considered challenging by the classroom teacher, and prior to the intervention the child was limited in terms of inclusion

to two children who accompanied them on a daily task, thus demonstrating some success of this approach (Young et al., 2022). Conversely, while some sports and games were established to facilitate inclusive practices in the study by Mukuna and Maizere (2022), participants still felt excluded due to their communicative differences.

The reliance of children on adult support was also demonstrated in a number of studies. Some peers required continuous support from teachers to engage with the AAC (Young et al., 2022). When AAC was used in unstructured environments such as the school yard, children noted that the lack of adult support resulted in communicative difficulties (Bowles & Frizelle, 2016). In certain cases, classmates of AAC users reported asking teachers to help them to interpret signs (Anderson et al., 2011), and some students even appeared to speak to the child through an adult (Kent-Walsh & Light, 2003). However, Finke et al. (2009) found that prompting was not always necessary to encourage peer interaction as many students were willing to support and play with the AAC user throughout the day.

Finally, some barriers to implementing inclusive strategies were noted. Firstly, staff have reported that AAC training for themselves is necessary in order to facilitate inclusive interactions (Finke et al., 2009). Another example was how Walker & Chung (2022) acknowledge that there were limited opportunities for inclusive practices to be observed due to the child's enrolment in the special education class for the majority of the school day. It is also relevant that other sensory or physical needs may impact on participation in certain activities without appropriate support.

2.10.8.2. Peer Initiation. Spontaneous or peer-led involvement varied across studies. In some cases, teachers relied on peers to support them in helping to programme SGDs (Finke et al., 2009). Some students in Bowles and Frizelle (2016) also discussed how they took the initiative to ask staff for signs when they needed them and tried to incorporate signs into

playground interactions. Amongst peers, it was noted that children bonded over common interests or shared pastimes (Anderson et al., 2011). However, some of the participants in Anderson et al. (2011) appeared to have differing motives for engaging with children using SGDs including reasons related to their perception by others, caregiving, and altruism. This is noteworthy as it alludes to cultural differences in how those with disabilities or SEN are perceived of and reflects the subjectivity inherent in inclusive practices.

Furthermore, there were several examples across studies of a lack of peer involvement or of exclusion. For example, Walker and Chung (2022) described a situation where a child was seated with mainstream peers at lunch and had access to their AAC, however no interactions took place between the children. Participants in Mukuna and Maizere (2022) appeared to have little involvement with any hearing peers and noted that most of their friendships seemed to be determined by communication means. Some students may have also intentionally avoided the playground due to exclusion from peers (Kent-Walsh & Light, 2003).

Other difficulties in peer interactions include how attempts to vocalise or gesture in some inclusive settings were generally ignored or misunderstood by peers (Walker & Chung, 2022) and there were difficulties noted in learning and using KWS (Bowles & Frizelle, 2016). These challenges both demonstrate the importance of effective training for peers and the need for adults to support all children in learning to use and respond to AAC. Finally, the teachers in Kent-Walsh & Light (2003) noted that the social differences between students with and without CCN increased as students aged, which has been reflected in other literature (Smith, 2005).

2.10.9. Outcomes

Despite difficulties related to training and to the technological aspects of some AAC types, a majority of studies highlighted positive outcomes of AAC use. This included benefits

for the child themselves, as well as for others in their school community. For example, peers in Bowles & Frizelle (2016) noted that they enjoyed learning signs and became more aware of their peer's different communication needs. Benefits also included the establishment of real friendships (Anderson et al., 2011). Staff in the study by Soto et al. (2001) also outlined a wide range of positive outcomes for the inclusion of those using AAC that impacted on both students and staff. Some examples of these positive outcomes include peers learning to communicate with those with communicative differences, teachers working in student-centric ways that emphasise high expectations of all students, and the AAC users developing social and communicative skills.

Finke et al. (2009) also highlighted changes in perceptions and attitudes around the use of AAC and some participants discussed how the children using AAC developed academically, socially, and linguistically through mainstream inclusion. Instructional assistants noted that autonomy, self-advocacy, and independence skills development were beneficial outcomes of inclusion for students who use AAC (Soto et al., 2001). Other outcomes related to the academic use of AAC in Walker and Chung's observations (2022). However, for the staff in Østvik et al. (2017), inclusion generally seemed to refer to the child's physical presence in mainstream classes, rather than to their social-emotional or communicative inclusion.

2.11. Discussion

The aim of this systematic review was to answer the question "In what way is AAC used with peers in inclusive education?" Based on the recommendations of Iacono et al. (2022) and the subjectivity inherent in individual's understanding of inclusion (Kruse & Dedering, 2018) qualitative studies were examined. Of the twelve included studies, three were rated as 'high' in terms of quality and relevance (Anderson et al., 2011; Bowles & Frizelle, 2016; Finke et al., 2009), while the remainder were all considered 'medium'. Given that none of the

included studies were rated 'low' overall in terms of quality or relevance, all reported findings are deemed appropriate for discussion in relation to this review question. The following section will outline how the included studies answered the research question, strengths and limitations of the review and implications of the findings for the following empirical study.

2.11.1. In what way is AAC used with peers in inclusive education?

The findings of this review demonstrate that there are various activities and practices that can be implemented to achieve greater levels of social inclusion for those with CCN who use AAC in mainstream schools with their peers. This review particularly emphasises the importance of adult mediation and support in facilitating these interactions. This had been noted in previous literature (Therrien et al., 2016), and is strongly supported here through the responses of individuals across the included studies. An overview of the various strategies used can be found in Table 2.7 which range from structured use of AAC in lessons and adult implemented buddy systems to more child-led interactions.

Table 2.7
Inclusive Strategies using AAC

Strategy	Adult or Peer Led	Studies
Used in Lessons	Adult Led	Finke et al. (2009) Anderson et al. (2011) Østvik et al. (2017) Walker & Chung (2022)
Group Work	Adult Led and Peer Facilitated	Finke et al. (2009) Østvik et al. (2017)
Direct Teaching to Peers	Adult Led	Bowles & Frizelle (2016) Young et al. (2022)
Buddy Systems	Adult Led and Peer Facilitated	Anderson et al. (2011)
Games	Adult Led and Peer Facilitated	Mukuna &Maizere (2022)
Playground	Peer Led	Bowles &Frizelle (2016)
Asking Adults to Interpret AAC	Peer Led	Anderson et al. (2011) Bowles and Frizelle (2016)
Shared Interests	Peer Led	Anderson et al. (2011)

Noteworthy in certain adult-initiated strategies such as pairing children together for play or work, is the implicit facilitation of this strategy by peers. If they choose not to engage with the AAC then the adult's facilitation would fail. Anderson et al. (2011) highlighted the importance of incorporating AAC into what they described as natural classroom interactions as opposed to these structured, facilitated interactions. It could be suggested that incorporating AAC into the natural environment and interactions denotes a higher level of inclusion than arranged interactions, as it suggests a level of acceptance of the AAC in the classroom. In this way, the activities undertaken by peers without adult influence may be more indicative of inclusive practice.

The findings that proximity and repeated engagement facilitate peer inclusion (Biggs & Snodgrass, 2020) suggests that students who move between specialised and mainstream classes may be reduced in their capacity to develop friendships. The included studies also highlighted the difficulties with generating feelings of inclusion where students share joint membership of special education and mainstream classes (Biggs and Snodgrass 2020; Østvik et al., 2017). Given the use of this practice in Ireland, as well as the reportedly frequent use of withdrawal (Rose & Shevlin, 2020) this is a salient finding for the Irish educational context when considering how best to implement inclusive practices.

Findings such as those of (Biggs & Snodgrass, 2020) whereby successful interactions were impacted by the AAC user's independence skills emphasise the complications associated with examining AAC when those who use it may have needs in domains other than communication. Furthermore, Kent-Walsh and Light (2003) noted that motivation of the AAC user was a relevant factor in peer interactions. In these cases, it is important to recall the findings of the literature review related to the importance of AAC matching to individuals (Pak et al., 2023) and the complexity of needs often present for those with CCN (Beukelman & Light, 2020).

It is important to note also, in relation to the application of Luhmann's theories, that studies such as Østvik et al. (2017) highlight the subjective nature of feelings of peer inclusion by demonstrating how staff can interpret activities differently to the researchers or observers. This is a salient point when evaluating the findings of studies discussing the issue of inclusion and emphasises the need for the child's voice to be included where possible (Luhmann & Buitendag, 2022).

2.11.2. Strength and Limitations

An overview of strengths and limitations can be found in Table 2.8.

Table 2.8

Strengths and Limitations

Strengths
Use of established review guidelines (Gough, 2007; Pettigrew & Roberts, 2006).
Studies including child's voice (Mukuna & Maizere, 2022; Østvik et al., 2018).
Addressed research question – examples of peer activities found.
Limitations
Experimental studies may have provided additional practical strategies.
Variance in additional needs across studies.
Only English language studies included.

One limitation of this review is the limited practical guidance available in several of the included studies to illustrate how to include students with CCN in activities with their peers. These studies focused on the processes of inclusive practices without a detailed description of the causal factors involved in establishing interactions. Only one study rated highly in these criteria, and this study notably contained an experimental element whereby peers were trained in a method of joint communication (Young et al., 2023). This review focused on studies which were qualitative in nature however, it is possible that more experimental studies may have provided additional information related to the practice of increasing inclusion. Furthermore, studies in languages other than English were excluded which may have resulted in the exclusion of relevant studies. A further limitation is the various other needs of the participants who used AAC. This is common in students with CCN (Beukelman & Light, 2020) however, it renders comparisons between studies and activities difficult. As previously discussed, participant characteristics can impact on choice and use of AAC (Pak et al., 2023; Therrien et al., 2022). The nature of communicative needs, and their connection with various other needs can create a multitude of confounding variables which must be considered when discussing communicative differences, and motivation in interaction.

Strengths of this review include the following of established guidelines in selecting studies and evaluating their contents in order to effectively answer the research question. These included Pettigrew and Roberts' (2006) guidelines for systematic reviews and Gough's WoE Framework (2007). Clear inclusion and exclusion criteria were also selected according to the review question (Carvalho et al., 2019) and relevant findings and examples of peer interactions were noted from the review. This study also filled a gap in the literature identified by Iacono et al. (2022) as it examined only qualitative studies. Additionally, in light of the previous discussion on the importance of subjective opinion, studies such as Østvik et al. (2018) and

Mukuna & Maizere (2022) which feature the voice of the AAC user further strengthen this review.

2.11.3. Conclusion

The aim of this systematic review was to examine the ways in which AAC use is conducted with peers in inclusive education. This review has provided a synthesis of considerations for staff implementing inclusive interactions and demonstrated the subjective nature of inclusion in terms of socio-communicative interactions. The findings show that children using AAC can be included into the social communicative environment of mainstream schools, however, studies suggest that adult support is integral to this inclusion for AAC users and their peers (Walker & Chung, 2022; Young et al., 2022). Another key finding is that AAC is most valued when it is used competently, and so training and appropriate support are also essential for the AAC user (Biggs & Snodgrass, 2020). Furthermore, setting, type of AAC, and personal characteristics of the AAC user all impact on the degree to which inclusion takes place. School staff should therefore be cognisant of these factors when they are selecting appropriate activities to facilitate integration with peers during lessons and social opportunities in school.

2.11.4. Implications

Overall, the generally positive outcomes associated with AAC use in mainstream educational settings indicate that AAC can be used inclusively in ways which benefit both the AAC user and their peers. Findings have demonstrated methods in which school staff can include students using AAC into academic or group work activities as well as in games and social interactions. One of the key implications is the aforementioned discussion on peer facilitation of adult interventions. Staff should therefore take care to ensure that the strategies they are implementing are supported by all students in order to maximise their efficacy. Further

implications highlight the need for appropriate matching of AAC types to children (Kent-Walsh & Light, 2003), and as competence was valued by peers (Biggs & Snodgrass, 2020) AAC users should be sufficiently trained in their form of AAC before introducing peer related activities.

2.11.5. Future Research

The findings of this review have indicated the need for future research in the area of AAC use with peers in inclusive settings. Firstly, there is a need for a quantitative systematic review, as indicated by Iacono et al. (2022) in order to supplement these findings with more detailed experimental accounts of the use of AAC in this way. Further consideration in research should also be given to students who spend time in special classes attached to mainstream schools as the findings of this systematic review indicate that there are specific challenges in peer interactions for AAC users who have dual class memberships (Biggs and Snodgrass 2020; Østvik et al., 2017; 2018). Research which encompasses the voices of these young people and their peers would be beneficial in this regard to explore their views as they integrate into different classes.

This review also demonstrates a need for further research in the Irish context, as only one of the included studies was Irish. Future research in Ireland would also benefit from examining the issue of setting given the findings related to class membership (Biggs & Snodgrass, 2020; Østvik et al., 2017) and the use of AAC in unstructured settings (Bowles & Frizelle, 2016; Mukuna & Maizere, 2022). Additionally, the role of training was highlighted in many studies and requires consideration in future research also.

2.12. The Present Study

This present study aims to fill the research gap in the Irish context of inclusive AAC research. The research question asks, "*How are children using AAC included in Irish mainstream primary schools?*"

Chapter 3. Empirical Paper

3.1. Overview

This paper describes the rationale, design and findings of the research undertaken to answer the question *"How are children using AAC included in Irish mainstream primary schools?"* The first section reviews the context of inclusive education and AAC use in mainstream schools. This is followed by details of the methodology including the design, epistemological position, theory, recruitment and piloting, ethics, reflexivity and participants. Data analysis and results are outlined for both phases of this qualitative mixed-methods study, and this chapter ends with a discussion of these results.

3.2. Context

3.2.1 Irish policy context

The government of Ireland has published documentation which calls for deliberate and committed action to increase inclusion in education (NCSE, 2011; NCSE, 2019). This has been supported by continued development of human rights legislation for those with SEN (UN, 1990; UN, 2006; UNESCO 1994; UNESCO 2016). These changes aim to include all children and young people including those with CCN who are supported by AAC and whose communicative competence is impacted by policy and environmental factors in schools (Light & McNaughton, 2014). Yet, as demonstrated by the previous literature review, there has been minimal research into the use of AAC in Irish schools. Furthermore, there is an overall dearth of published knowledge around current communicative practices in Ireland for this cohort of students. For example, the Department of Education and NCSE have no published statistics on the number of children using AAC in schools, nor on the exact types being used. While the NCSE does provide a small number of recommendations around the use of AAC for the parents and teachers of autistic students (2021), there is no nationally agreed upon guidance with

regards to staff training or student awareness of AAC. These existing recommendations relate to modelling, consistency, allowing time to respond, broadening the use of AAC beyond requesting, and allowing for updating as skills progress (NCSE, 2021). They also outline the importance of creating opportunities for interactions and having constant access to the AAC (NCSE, 2021).

Due to the variation of practices found in the literature review, and the lack of information regarding actual staff practices in the Irish context, it is difficult currently to make assertions regarding the inclusion of Irish AAC users in mainstream schools. Further information regarding current staff practices and experiences is first required in order to understand the interactions taking place currently. Having this greater understanding may also enable more efficient facilitation of support to school staff in order to achieve the outcomes recommended in the EPSEN Act (2004) and the Education 2030 Framework for Action (UNESCO, 2016).

3.2.2. Mainstream AAC use

The preceding literature review demonstrated how the use of AAC in mainstream education varies across culture, setting, and individual cases. While AAC is designed for both functional and social communication (Light & McNaughton, 2014), there has been an emphasis in the literature on functional communication with adults (Crowe et al., 2012; Iacono et al., 2022). Some studies have suggested that adult mediation is necessary also for the facilitation of peer interactions (Anderson et al., 2011; Walker & Chung, 2022; Young et al., 2022), while others have demonstrated communicative initiation by classmates (Bowles and Frizelle, 2016; Young et al., 2022). It is notable that despite this emphasis on the role of adult facilitators, many studies demonstrate a lack of consistency in the training received by staff and by fellow students (Finke et al., 2009; Kent-Walsh & Light, 2003; Young et al., 2023). Outcomes of AAC

use have been positively associated with the effectiveness of the training (Lamb et al., 2018), and respondents in some qualitative studies have also emphasised the importance of receiving support in this formal way (Leatherman & Wegner, 2022; Østvik et al., 2017).

The methods of adult facilitation also varied from direct teaching of AAC to peers (Young et al., 2022), to the use of buddy systems or friendship encouraging interventions (Anderson et al., 2011), or modification of teaching and lesson plans (Østvik et al., 2017). In studies which examined AAC in inclusive or social ways, outcomes have related to developing friendships (Anderson et al., 2011), changes in social communicative skills (Soto et al., 2001) and improvements in peer awareness and attitudes (Bowles & Frizelle, 2016; Finke et al., 2009). These findings suggest many benefits to the inclusion of students using AAC in mainstream settings for themselves and for their peers. It is expected that by understanding the experiences of staff using AAC and the practices taking place in mainstream schools, that a greater awareness of needs of all members of the school community will arise, leading to better informed planning in our increasingly inclusive education system.

3.3. Research aim and question

This study aimed to address the research question of *"How are children using AAC included in Irish mainstream primary schools?"* This will include an examination of staff practices and experiences.

3.4. Methodology

3.4.1. Design

A qualitative mixed-methods sequential research design was selected, whereby two phases of qualitative data were collected sequentially and analysed using different forms of analysis (Morse, 2010). Morse (2010) outlines how this design should include an initial 'complete' method which in this case consisted of an online qualitative survey, analysed

through RTA (Braun & Clarke, 2021). This was then enhanced by what the same author calls the 'supplementary' phase which was a case study. The case study in this research was designed to investigate the topic of AAC use in inclusive education more comprehensively, using participants from the same sample and utilising a different form of analysis, which was multiperspectival IPA (Larkin et al., 2019; Smith et al., 2021). Morse (2010) also suggests that the second component is 'incomplete' compared to the first. Here, the case study component can be considered an 'incomplete' method as it only took place with a small sample of the survey participants and only considered the perspectives of three staff members. Therefore, without interviewing other key staff or students, including the AAC user themselves, the data were not saturated. While the use of multiple methods of data collection can lead to difficulties in analysis and combining findings into a coherent presentation (Halcomb, 2019), it also allows for a more comprehensive examination of the issue overall (Morse, 2010).

The survey was designed to gather general qualitative data regarding current staff practices from those who work directly with students using AAC. This was distributed online through Qualtrics (2023) which is considered to be an efficient and economical means of recruiting participants (Shaughnessy et al., 2012). Participants included teachers and SNAs in mainstream primary schools. Primary schools were selected as, in Ireland, relationships between staff and students are consistent in primary schools, where students generally have one teacher for a full year. The use of open-ended questions in this survey allowed participants flexibility to respond in meaningful ways (Shaughnessy et al., 2012). The survey questions were devised following the literature review and consisted of a mixture of pragmatic questions around using AAC in school, and personal experiences relating to its use in inclusive settings. This study also included staff working with students who spent part of their day in special classes where those classes were attached to mainstream schools, which has been common in

other literature also (Anderson et al., 2011; Finke et al., 2009; Mukuna & Maizere, 2022; Østvik et al.,2017; Walker & Chung, 2022).

Only brief information was gathered around the child AAC user. This was a deliberate choice due to a number of factors. Firstly, given the wide range of needs associated with CCN (Bowles & Frizelle, 2016; Calculator & Black, 2010; do Nascimento Givigi et al., 2022; Lorah et al., 2022; Mukuna & Maizere, 2022), AAC users can vary greatly in their individual communication styles, which could be seen to confound the findings related to inclusion. Additionally, as multiple staff associated with one child could take part in the survey, any personal information may refer to any number of children, and due to the anonymous data collection it would be impossible to accurately ascertain the exact nature of the data. Furthermore, the emphasis of this research rests on the use of AAC in mainstream education, rather than on how individual children integrate.

The second phase of the current study focused on one particular class to gather a more in-depth understanding of this phenomenon. As part of this case-study, interviews were conducted with three of the survey participants including a classroom teacher and two SNAs who worked together to support one child using AAC. This allowed for greater exploration of staff experiences regarding AAC use, as well as the practices taking place in the classroom than the survey data could provide. Due to the sequential nature of this design, findings from the survey phase were also expanded upon and explored in this second phase of data collection. The use of synchronous interviews, whereby interviewer and interviewee could see each other, also allowed for the examination and interpretation of social cues, including vocal tone and non-verbal body language where relevant (Opdenakker, 2006).

3.4.2. Paradigm

A research paradigm refers to the combined response to methodological, ontological, and epistemological questions about a piece of research (Abdul Rehman & Alharthi, 2016). This present study was conducted through the interpretivist paradigm which emphasises each individual's unique and subjective experience (Abdul Rehman & Alharthi, 2016; Kumatongo & Muzata, 2021). According to an interpretivist approach, there is no one universal way to perceive of, or to interpret an experience and instead, variances in bias, reference and orientation are all accepted (Aliyu et al., 2014). In this research, it is accepted that individuals will understand the concept of inclusive education differently. It is also likely that due to different contextual factors across schools and communities, the use of AAC may vary between participants, leading to differences in interpretation.

Qualitative methods are commonly used to investigate experiences through an interpretivist lens (Aliyu et al., 2014). This research features a qualitative design and so allowed participants to express their opinions and experiences through survey and interview formats. The interpretivist paradigm is associated with social constructivism and calls for interviews to be conducted through open-ended questions, and with humanity, empathy and internal validation (Humphrey, 2013). Interpretivism is also aligned with in-depth, interpretative forms of data analysis (Kumatongo & Muzata, 2021) and is considered applicable for small scale studies (Humphrey, 2013).

3.4.3 Theoretical Framework

Central to the use of AAC in mainstream settings is the issue of systems of inclusion and exclusion as in Luhmann's systems theory (Luhmann, 1995). The application of this theory to inclusive education and to the importance of supporting students to learn regardless of their disability or additional needs has been discussed in previous literature (Mangez & Vanden

Broeck, 2021; Rapp & Corral-Granados, 2021) and formed the theoretical framework for this current study. Additionally, this study aimed to address key aspects of AAC use as applied to Luhmann's theories including the extension of the meaning of communication (Rodger, 2022) and the transformational aspects of education (Mangez & Vanden Broeck, 2021). Furthermore, the role of school contextual factors including staff opinions regarding AAC were explored (Luhmann, 2021). These aspects were examined in light of Luhmann's work on interacting systems to further examine the issue of inclusive education for those who use AAC.

3.4.4. Ethics

Ethical approval was granted by the Mary Immaculate Research Ethics Committee (MIREC) in December 2022 and were in line with the Psychological Society of Ireland (PSI, 2019) Code of Ethics. As part of this process, a number of procedures were put in place. For example, detailed and clear information sheets are an important aspect of obtaining informed consent (Ennis & Wykes, 2016) and were provided to all participants, accompanied by consent forms. It was stressed to interviewees that for ethical and privacy reasons, the interviews would discuss AAC use and incorporating AAC into education, rather than focusing on the individual child and their personal characteristics. Participants in both the surveys and interviews were reminded of their right to withdraw at any time. All data were also stored and collected anonymously and confidentially.

Taylor and Balandin (2020) caution that studies which examine AAC without including participants with CCN must justify valid reasons for their exclusion. In this case, ethical clearance was also granted for the inclusion of child interviewees. As such, a child safeguarding statement, child friendly information sheets, and child and parent assent and consent forms were developed. Additionally, eligibility criteria were set for the child participants including their stage of psychosocial and cognitive development, age, literacy level, and communicative abilities, in order to ensure that children taking part did so with a full understanding of what

was involved (Erikson, 1963; Piaget, 1971). However, following extensive recruitment through a social media campaign, direct recruitment to all mainstream primary schools across the country and further convenience and purposive sampling in phase two, no children were nominated for inclusion in this study and so interviews took place with staff only. Further details of this recruitment process can be found in the participant section below. It is important to consider the possibility that the eligibility criteria selected for child participants (as outlined above) may have eliminated some potential participants due to the prevalence of other complex learning and developmental needs often associated with those with CCN (Beukelman & Light, 2020; do Nascimento Givigi et al., 2022; Pak et al., 2023).

3.4.5. Reflexivity

The first author has experience working as an SNA with children using various forms of AAC. These experiences helped to develop the initial idea to conduct this research. At various points throughout the literature review, data collection, and data analysis, these past experiences were considered and addressed in terms of their potential impact on this study. In line with the recommendations of Braun and Clarke (2019) and Smith et al. (2021) notes were kept regarding the researcher's own perceptions of the study as data were collected and analysed.

3.4.6. Participants

3.4.6.1. Piloting and Recruitment. The survey was first piloted by one SNA and one teacher. Small changes were made to phrasing and to the flow of questions on Qualtrics (2023). Additionally, the interview protocol was piloted with one teacher. This allowed for slight changes to be made to the order of the questions and for the semi-structured approach to be practiced and reflected upon.

As AAC use is not randomly distributed in the population, random sampling was not deemed an appropriate sampling procedure (Marshall, 1996). The survey was first sent to online special interest groups of teachers, SNAs, parents of AAC users, and SLTs in February 2023. This recruitment strategy yielded a small number of responses and so a foreseen and ethically approved contingency plan was employed in May 2023. All primary schools were then emailed directly using the list of mainstream schools available on the Department of Education's website across the entirety of the Republic of Ireland.

During survey recruitment, information was provided regarding the interviews and participants were asked to make contact if they wished to take part in this second phase. No school indicated an interest in the interviews at this time. For this reason, certain schools were contacted again in October and November 2023. These were selected using convenience and purposive sampling based on the presence of students in their school using AAC. This information was collected through their websites and through personal connections to the primary researcher. A school volunteered to take part in phase two at this time.

3.4.6.2. Survey Participants. In order to take part in the study, all participants were required to be over eighteen years of age, employed as a teacher or SNA, working in a mainstream school, and currently supporting a child using AAC. 17 participants took part in the surveys, or which 12 were teachers, and five were SNAs. As all participants worked in mainstream primary schools, the children they supported ranged in age from approximately five to twelve years. Specific data on children were not collected to maintain anonymity, nevertheless, through their responses, several participants referred to particular child characteristics. For example, four participants referred to their students as having autism and eight participants referred to the children as having some spoken language. One teacher wrote, "those who can speak use their words when they can and are always encouraged to do so". Other children were described as using primarily echolalia, or as being "non-verbal".

3.4.6.3. Interview Participants. The case study centred around three of the survey participants who support a child in mainstream fourth class communicating primarily through KWS (Lámh). This child, who will be hereafter known by the pseudonym Susan, has a genetic disorder and has always attended mainstream school. The interview participants consisted of Susan's mainstream fourth class teacher, her SNA who has supported her full time for almost three years, and another SNA who supports Susan at yard time and on the school bus.

3.4.7. Procedure

Upon following the link to the survey, participants were greeted with detailed information sheets outlining the nature of the study and the use of participant data (see Appendix F). Participants were then required to consent to a number of points on an interactive consent form in order to be eligible to take part (Appendix G). The survey consisted of largely open-ended questions, with participants free to give as much or as little detail as they wished. Following brief demographic questions related to staff role, training, and AAC type, the survey questions allowed participants to discuss the topics of inclusion and AAC. For the full list of survey questions, see Appendix H.

The second phase of this study consisted of semi-structured interviews as part of a case study. Participants were again provided with information sheets and consent forms (see Appendices I and J). Questions were derived from the literature review, with some questions being similar to those of the survey. For example, this phase further explored the topics raised around staff training and experience (Finke et al., 2009; Soto et al., 2011; Young et al., 2023), AAC use in various activities and settings (Anderson et al., 2011; Bowles & Frizelle, 2016; Finke et al., 2009), staff strategies to increase communication (Waker & Chung, 2022; Young et al., 2022) and peer initiation (Anderson et al., 2011; Bowles & Frizelle, 2016). However, using a semi-structured methodology also allowed for a more personal, flexible, and individual

exploration while still maintaining control of the direction of the interview (Mashuri et al., 2022). The interview protocol is outlined in Appendix K.

3.4.8. Approach to Data Analysis

The interpretivist paradigm calls for experiences and phenomena to be examined in depth with an emphasis on the role of interpretation (Kumatongo & Muzata, 2021). Two forms of analysis were selected to explore participant responses in this way. Surveys were analysed using RTA (Braun & Clarke, 2021), while multiperspectival IPA was selected for the interviews (Larkin et al., 2019; Smith et al., 2021).

RTA was chosen due to the position of the author in relation to this research as Braun and Clarke (2019) emphasise the importance of reflexivity and acknowledge researcher subjectivity. Furthermore, the research question central to this study is subjective, as inclusion can have multiple meanings for different individuals (Krischler et al., 2019; Kruse & Dedering, 2018), which is especially relevant as staff were asked to reflect on children's inclusion. The subjectivity of individual conceptions of an experience is also central to the theoretical underpinnings of this research and to the interpretivist paradigm (Aliyu et al., 2014; Braun & Clarke, 2019; Luhmann, & Buitendag, 2022). The use of an open-ended, qualitative survey provided participants with the opportunity to give individualised and personal responses. Furthermore, as the survey yielded short in length but widely varying results, a thematic approach allowed for more meaningful examination of the results compared to a more interpretative, individualistic approach. Therefore, RTA was a suitable form of analysis for this phase of the study (Braun & Clarke, 2019).

However, interviews were analysed using multiperspectival IPA (Larkin et al., 2019; Smith et al., 2021), which was selected for its ability to focus on an individual's unique, personal perspective (Smith, 2011). IPA is considered a suitable form of analysis for studies of

varying sizes including small scale studies such as this (Smith, 2004). Furthermore, phase two examined different perspectives of a shared phenomenon across staff with varying roles in supporting Susan's development. Multi-perspectival IPA allows for the examination and consideration of multiple views both within and between responses (Larkin et al., 2019). Larkin et al. (2019) outline how this multiperspectival approach is suitable for various types of groups including groups which are directly or indirectly related, teams, and dyads. In this case, staff were considered a directly related group who have a shared experience. Additionally, this analysis allows for the system as a whole to be examined which is well placed alongside the systems theory underpinning this research (Luhmann, 1995).

3.5. Phase 1: Survey

3.5.1. Survey Data Collection

Survey data were collected via Qualtrics (2023). The survey link remained active from February to June 2023 (the end of the academic year). It was reopened in December 2023 to facilitate the inclusion of one of the case study participants. 17 datasets were collected which were then downloaded for analysis. Four datasets featured at least one unanswered question, and short responses were common across participants. Data were examined both deductively and inductively by considering the topics outlined in the literature review as well as those discussed during this study's thematic analysis (Proudfoot, 2023).

3.5.2. Survey Data Analysis

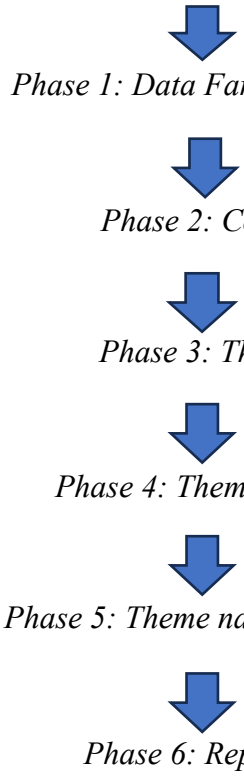
Braun and Clarke (2021) outline six steps to conducting thematic analysis (see Figure 3.1) which will be discussed below in relation to this data. In RTA, differentiating between codes and themes is essential (Braun & Clarke, 2021). Codes are examined through an organic process, not predetermined by existing ideas (Braun & Clarke, 2021). Themes are generated following the codes through a shared topic, however, within that topic there can exist multiple

meanings (Braun & Clarke, 2019). The generation of themes is an active process that requires an open approach to coding, focusing on the data itself (Braun & Clarke, 2021).

Figure 3.1

Outline of RTA Procedure

Reflexive Thematic Analysis Procedure as outlined by Braun and Clarke (2021)



Phase 1: Data Familiarization. The data sets were read multiple times to facilitate understanding and to form initial impressions of the responses. Reflexive considerations were noted at this time also.

Phase 2: Coding. Initial codes were developed while reading through the datasets. Codes related to both semantic and latent content. Following the guidelines of Braun and

Clarke (2021), datasets were not coded line by line but rather as an overview of the responses. Each dataset was coded separately, and codes were then viewed together as a whole. Examples of individual datasets with codes can be found in Appendix L.

Phase 3: Themes. All codes were then gathered together without accompanying quotations into one table to form themes. Codes were colour coded into groups to ensure that all codes were considered. In line with RTA procedures, themes were not determined based on the questions asked in the survey (Braun & Clarke, 2021). Fifteen initial themes were combined together into four primary themes with varying subthemes, as can be seen in Appendix M.

Phase 4: Theme review. Themes were re-examined in line with the initial codes and overarching themes were developed. The datasets were re-read in light of these themes and slight alterations and adjustments were made to ensure their appropriateness to the data.

Phase 5: Theme naming and definition. The themes were further developed and given names in order to express their meaning, which were considered both in terms of the data itself and in relation to the research question.

Phase 6: Reporting. This report was written, and extracts and quotations were carefully selected to represent the data and themes.

3.5.3. Survey Results

Before presenting the themes, the initial data gathering questions related to AAC type, setting, and professional role are presented as demographic points for discussion. An overview of participant information can be found in Table 3.1.

Table 3.1

Participant Overview

Participant	Role	AAC	Formal Training	Informal Training
1	Teacher	KWS	No	Yes - through co-workers
2	SNA	KWS - Lámh	Yes Module 1	Yes- through co-workers
3	SNA	PECS, SGD	No	No
4	Teacher	SGD	-	-
5	Teacher	SGD	-	Yes- through SLT
6	Teacher	KWS – Lámh, PECS	Yes Lámh Module 1	Yes – through co-worker
7	SNA	KWS- Lámh	-	-
8	Teacher	SGD	No	Yes – through co-worker
9	SNA	SGD	No	Yes – through SLT
10	Teacher	SGD	Yes (courses with SLT)	No
11	Teacher	KWS - Lámh	Yes Module 1	No
12	Teacher	PECS, KWS – Lámh	No	Yes – through co-workers and observations
13	Teacher	SGD	Yes (online)	No
14	Teacher	SGD	No	Yes – through co-workers and online
15	Teacher	Lámh, PECS	-	-
16	Teacher	KWS - Lámh	No	Yes – through co-workers
17	SNA	KWS - Lámh	Yes Lámh tutor course	No

Key: SNA = Special Needs Assistant, KWS = Key Word Signing, SGD = Speech Generating Device, PECS = Picture Exchange Communication System, SLT = Speech and Language Therapist, - denotes questions left unanswered

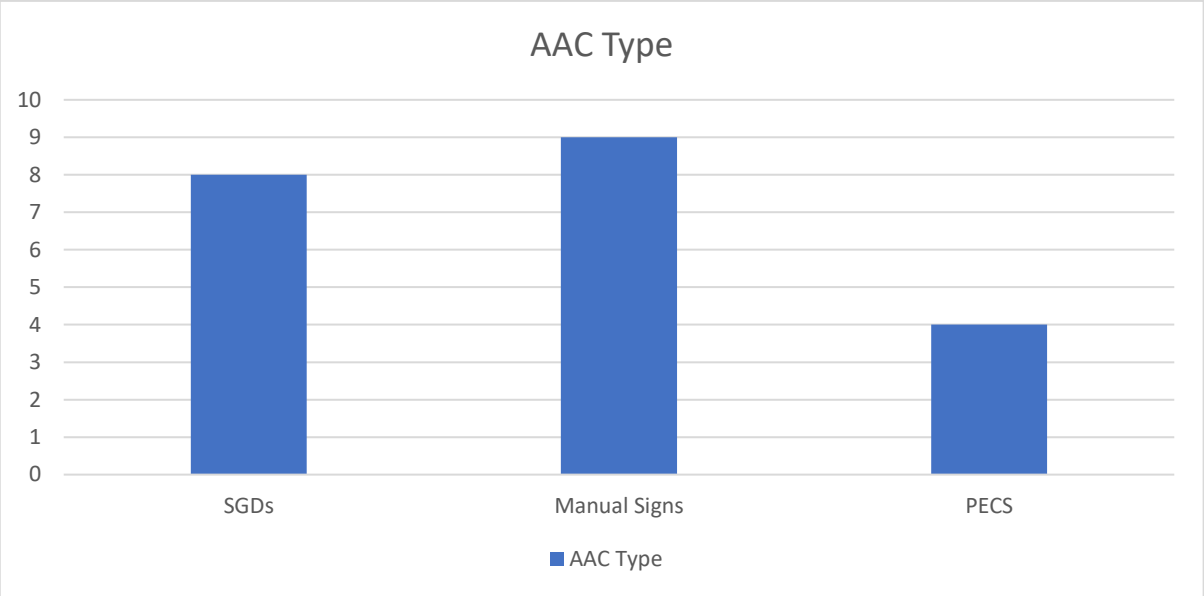
3.5.3.1. Training. As noted, a majority of participants identified themselves as teachers. Participants were asked about the training that they had received either formally through courses, or informally through discussions with fellow staff, parents, or pupils. Six participants noted that they had received formal training. Of these, four were teachers and two were SNAs. Formal training was split between Lámh courses, and SGD training. Notably, no participants reported obtaining formal training through a PECS course.

In terms of informal training, information was often received from other staff (n = 6), and this was generally reported by teachers. Informal training was observed across responses related to all three forms of AAC examined in this study. One teacher also reported making observations of PECS and Lámh use in other schools. Four respondents (all teachers) reported receiving informal support from the child's SLT. In all four cases, this was related to SGDs. Only five participants noted any informal training provided to other students in either the classroom or as a whole-school approach in assemblies.

3.5.3.2. AAC. This study was focused on three forms of AAC, namely manual signs, SGDs, and PECS. Several participants referenced working with more than one form of AAC. In some cases, this was due to their role in supporting more than one child. The most commonly reported forms of AAC were KWS (n = 9) and SGDs (n = 8) (see Figure 3.2). Notably, a majority of participants simply wrote "iPads" for SGDs, and only three named the exact application used. In all three cases, this was the *TD Snap* application. With regards to manual signs and KWS, all but one participant noted the form, which was Lámh. PECS was the least common form of AAC reported (n = 4).

Figure 3.2

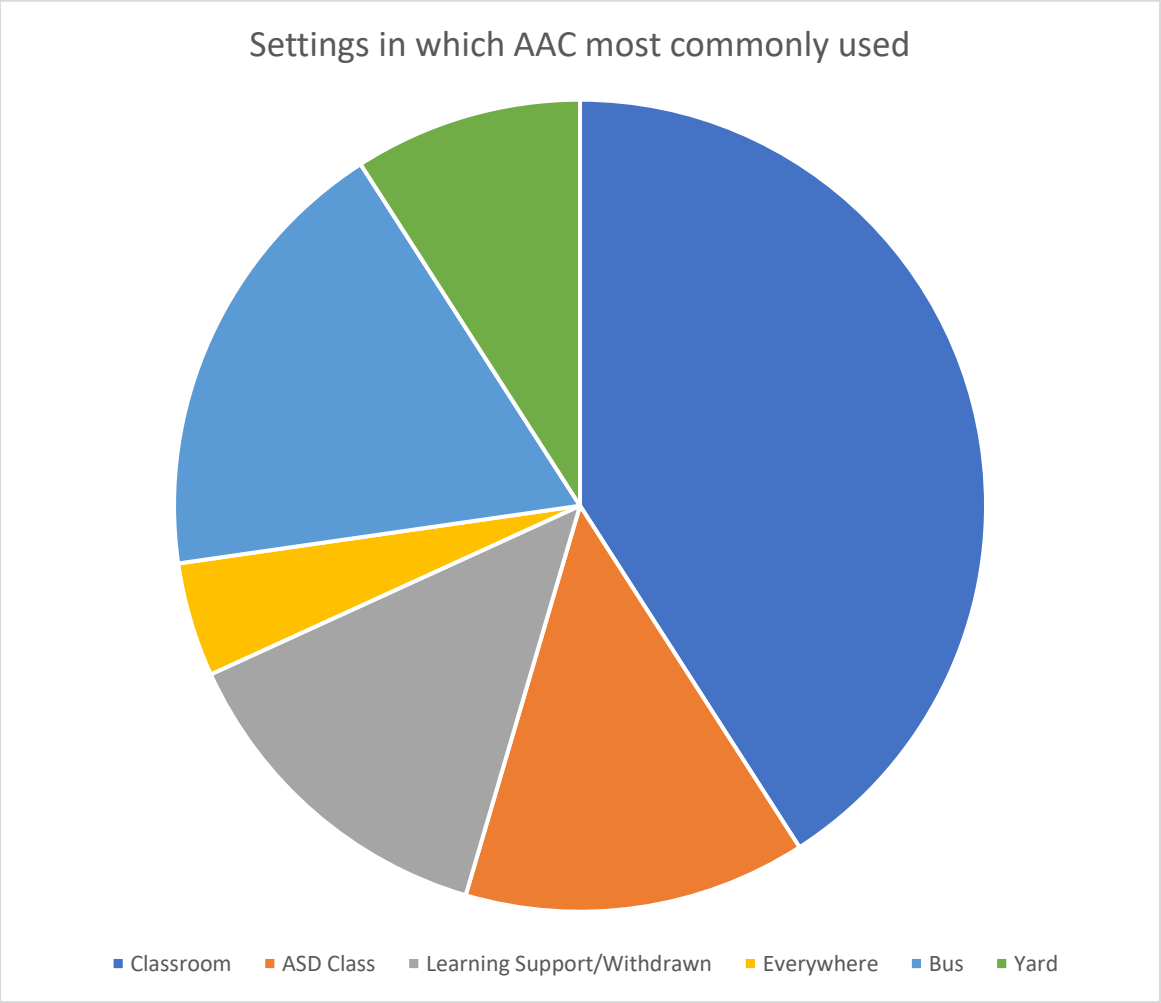
AAC Type



3.5.3.3. Setting. All participants worked in mainstream primary schools. Five participants specifically referred to the child as being part enrolled in a special education class, with particular reference made to special classes for children with autism. Participants were asked to note the location in the school in which interactions with the AAC took place most frequently. The pie chart below demonstrates the frequency with which each setting was noted (see Figure 3.3). The most commonly described setting was the classroom (n = 9). Other responses indicated use on the school bus (n = 4), or the yard (n = 2). One participant indicated that the AAC is used “everywhere”, and one responded with “all day”.

Figure 3.3

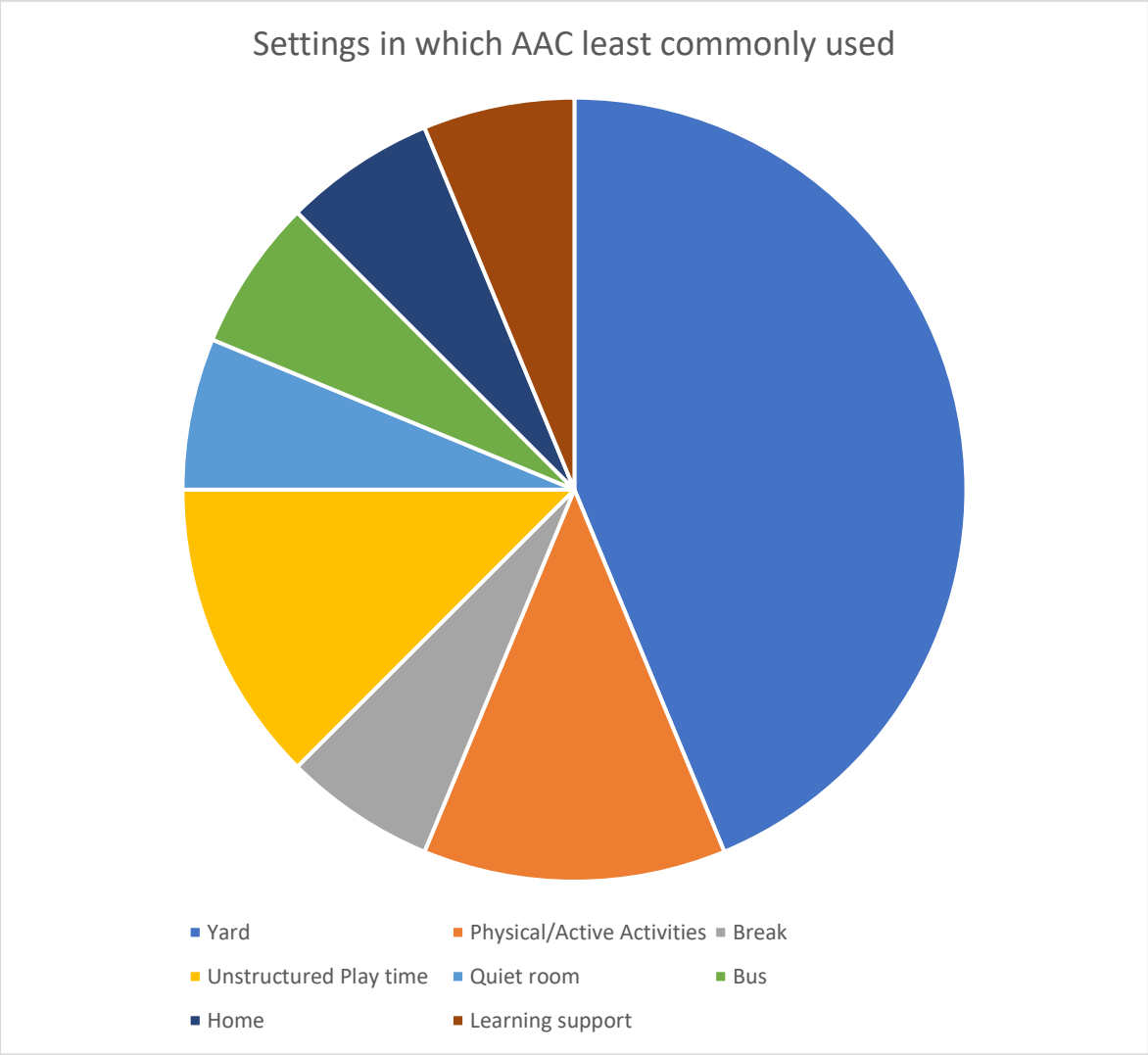
Setting in which AAC most commonly used.



Participants also discussed the settings in which the AAC was least likely to be used. Here, 'yard' was by far the most common response (n = 7) (see Figure 3.4). It is important to recognise that other responses also related to "unstructured play time", physical or active activities, and break may be referring to the same location. One teacher explained why this area was least likely to reflect AAC use when they said, "Yard because pupil runs and us *[sic]* free to play". The child in question was reported to use an SGD. Other locations mentioned include the bus (n = 1), learning support (n = 1), and the quiet room (n = 1).

Figure 3.4

Setting in which AAC least commonly used.



3.5.4. Survey Themes

Four overarching themes were developed through the thematic analysis. The following section details the findings of these themes in relation to the areas of staff practices and experiences which are addressed to answer the question "*How are children using AAC included in Irish mainstream primary schools?"*

Two overarching themes were noted in response to questions of staff practices (see Figure 3.5).

Figure 3.5

Q. 1. What are the practices used to facilitate inclusion?

3.5.4.1 Theme 1: Structure Versus Freedom. The first theme developed through the data analysis was that of structure versus freedom (see Table 3.2). This title was selected due to the contrast between the structured way in which children used their AAC in lessons compared to the lack of AAC use in 'free' or unstructured settings. Notable also in this theme was the reported sense of freedom and relaxation that accompanies being able to communicate regardless of setting and activity.

Table 3.2.

Quotations for theme 'Structure versus Freedom'

Use in lessons	Use with peers	Use in free time	Freedom in AAC use
"I type a sentence and use the speaker to call it out. I encourage the child to type out an answer to a question, I will start the sentence and the child will enter the missing word."	"Children are engaged in learning the language."	"Least often used in "yard, break and active activities."	"The child is more engaged and seems more relaxed when staff can communicate through Lámh"
"Used to introduce a lesson, get their input, spark their interest levels, to include them in the song or poem and to engage their fine motor skills."	"Child training and reverse integration where someone gets to talk about all they've learned."	Least often used in "Yard because pupil runs and us free to play."	"Freedom to play and encouragement."
"mainly functional with adults working with the child."	"A sit-down session between two children and taking turns using the iPad to communicate."	Least used during "physical activities."	

The first subtheme revolves around the structured ways in which AAC is generally used. Across all datasets, there was a clear emphasis on functional and academic communication, particularly with regards to expressing vocabulary, needs, wants, and engagement with the curriculum. This was noted by both teachers and SNAs. The examples in the first column of Table 3.2 emphasise structured lessons, and a clear academic focus of AAC

use. Other examples included using AAC for requesting, modelling, sentence completion, choice making (notably with SGDs), understanding lesson content, giving instructions, responding to questions, and other specific curriculum-based skills. For example, “Lámh is used for teaching and learning vocabulary as well as reading.” Furthermore, the structured use of AAC extended to several peer interactions. In the second column of Table 3.2 are various examples of these highly organised activities designed to encourage or illicit peer interactions. These opportunities were organised as one participant said that “Peers need to know how to use the device also.” Engagement with peers was noted to take place across settings, however specific staff practices referred to structured, controlled interactions where peers are trained in responding to the AAC.

The second aspect of this theme can be seen in the contrast surrounding the concept of freedom. Firstly, a lack of free interactions was reflected during the discussion on setting. A majority of participants pointed to unstructured environments as being less likely to feature AAC use such as “yard, break and active activities.” These findings, when related to aided systems such as PECS or SGDs, implied a sense of burden in the way in which these forms are used in different environments, as without them the child is “free to play.” An important distinction was observed in the contrast between AAC as limited in the sense that it cannot be used in free play environments, and the sense of freedom and independence it brings to some students. For example, “The child is more engaged and seems more relaxed when staff can communicate through Lámh”. Furthermore, one teacher felt that “Freedom to play and encouragement” supported peer interaction.

Overall, given that AAC was noted far more frequently in structured, controlled environments and activities compared to free, unstructured, spontaneous use, it appears that staff value preparation when using AAC with, and between students.

3.5.4.2. Theme 2: Is Presence a Present? This theme examines the roles of both adults and other students as they interact with the AAC user and the impact that they can have on communication. The title of this theme was selected to reflect how those in the environment with the AAC user may support their development, however, their presence was also seen at times to be more negatively coded. Selected quotations are outlined in Table 3.3.

Table 3.3

Quotations for theme, 'Is presence a present?'

Adults	Peers
"The teacher is not using the AAC."	"The child using AAC has very limited understanding, and the types of play that engage him are not the types of play that his peers enjoy"
"Staff with old school ideas about SEN and difference."	"Child is more focussed on AAC than other children."
"A lot of suggestions were given to the class teacher but not the SNA - I would like access to this to familiarise myself further."	"The child is included more in lessons and on the yard."
"The child is more engaged and seems more relaxed when staff can communicate through Lámh."	"Child can say "play" to ask the child to play."

With regards to adults, many of the interactions noted were focused on functional, or academic communication with adult staff members. While participants emphasised how adults play an instrumental role in facilitation, teaching, and encouragement, there were also several references to staff attitudes and biases that may impact negatively on AAC use and understanding. For example, references were made to "Staff with old school ideas about SEN and difference", and to "SLTs with an interest in helping this pupil." There were also inconsistencies noted by two SNAs, with one reporting that the teacher was not using the AAC while they were, and in the other case that training had only been offered to the class teacher. In another instance, the teacher stated that they were supported through informal training "from SNA who is proficient in Lámh". Furthermore, one SNA discussed how vital the SNA role was for the AAC user to learn to communicate "Myself and previous SNAs have taught the child to communicate using Lámh." These findings demonstrate complex roles and significant differences in experiences with regards adult knowledge, attitudes, and facilitation of interactions.

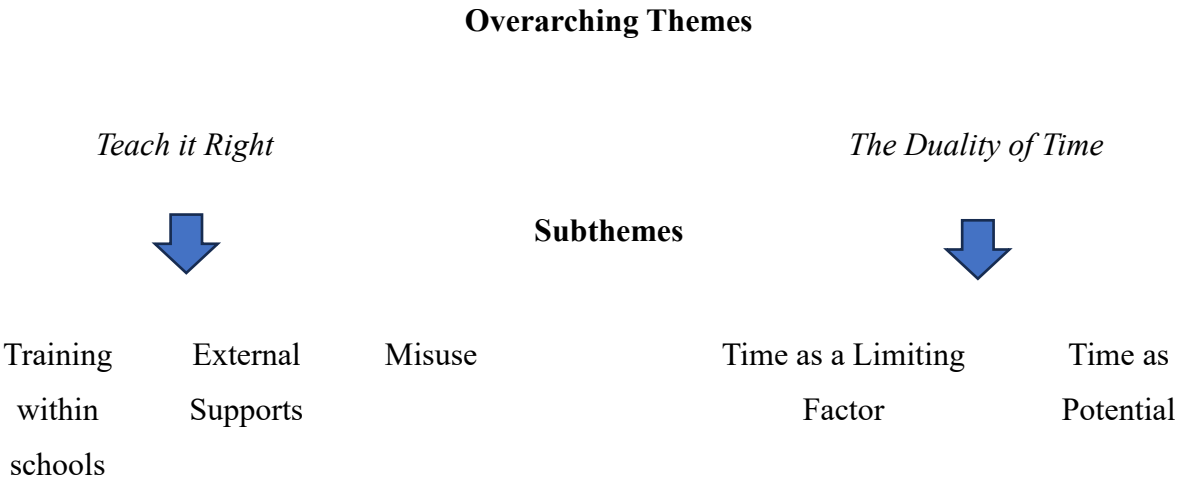
Similarly, there was a dichotomy noted with peers' presence in the environment. On one hand, children who accessed and used AAC were considered to be included with other students, particularly during play times. One teacher stated that AAC "creates inclusion" by allowing for children to communicate with their classmates. However, several other participants noted a complete lack of peer interaction. In some cases, this lack of engagement was associated with the AAC user's own interests and differences, for example "the child using AAC has very limited understanding, and the types of play that engage him are not the types of play that his peers enjoy". One SNA noted how the students in their class are both highly motivated to learn and use AAC, "Yes! Children make a huge effort to communicate using Lámh" while also being unsure around its usage "Peers may feel embarrassed or nervous. The fear of getting it wrong." This example effectively demonstrates the complexity of peer

involvement with AAC, particularly when they have not been sufficiently prepared or trained by adults. Overall, this theme indicates how individual actions, personality traits, and opinions can impact on the extent to which AAC is used with others in inclusive settings.

The following two themes are discussed in terms of their response to the experiential aspect of this research (see Figure 3.6)

Figure 3.6

Q.2. What are staff's experiences when using AAC in inclusive settings?



3.5.4.3. Theme 3: 'Teach it Right'. This theme was concerned with the need to be taught to use AAC effectively, particularly with regards to staff training and the variety of sources from which they received formal and informal training. This encompassed three subthemes including within school training, seeking external supports, and misuse of AAC. Quotations can be found in Table 3.4.

Table 3.4

Quotations for theme "Teach it Right"

Training within schools	External Supports	Misuse
"From peers and from observations of other schools in how they operate."	"Watching Dizzy Deliveries on RTE."	"The only negative is that sometimes the other children in the class will take the iPad to play with it and this can cause problems."
"The Lámh user and the SNA teach the children in the class Lámh signs on a weekly basis."	"The SLT came in for an hour one day and gave a brief introduction into using core words."	"Other children can get distracted by his iPad or take it or use it when not supposed to."

With regards to support which takes place within and across schools, it is important to note that where staff received training from observations, or from fellow staff, there is no quality control of the nature of the training. Nevertheless, it is clear that seeking support in this informal way is critically important to staff, and a widespread practice amongst this participant sample. Many participants noted that they received support "Through other staff", "through staff teaching in school" and by "Asking a staff member who teaches Lámh outside of school for signs that I do not have access to on the Lámh website." Staff also provided training to students, and in some cases, this was the responsibility of the SNA rather than the classroom teacher, "The Lámh user and the SNA teach the children in the class Lámh signs on a weekly basis."

A second subtheme related to the need for external guidance. Many participants discussed how they had either accessed training or information from external agencies, from

their own research online, from SLTs or parents, or from television programmes which feature KWS, whereby the "whole class regularly watches RTE show *Dizzy Deliveries*." For example, one teacher described how they were trained "by sourcing and completely *[sic]* courses myself." Courses were often sourced online or from charity organisations, and some participants described the training as being short, online presentations, or only introductory/level one. One SNA said that they were "Literally, exploring it myself" with regards to the SGD.

This need for both internal and external training and support was compounded by the references to misunderstanding or misuse of AAC. In particular, this related to the use of SGDs. For example, one teacher noted that "Other children don't know how it works so don't understand that the child is communicating with them." There were other references made to using the device for playing with rather than solely as the child's voice. This emphasises the need for student training and staff support in facilitating and engaging others with AAC. Therefore, this theme demonstrates how the child, their classmates, and staff all need specific, targeted support as well as opportunities to communicate together. This was particularly evident when participants were asked about further interventions that were needed, and many pointed to the area of training.

3.5.4.4. Theme 4: The Duality of Time. This theme focuses on issues of familiarity and time as related to AAC use (see Table 3.5). This incorporated two conceptualisations of time. Firstly, time was a limitation and as a finite resource, but time also had the potential to support future interactions.

Table 3.5
Quotations for theme, 'The Duality of Time'

Time as limiting factor	Time as Potential
"Lack of time to practice the gestures with the whole school."	"She is only using the iPad a couple of months, so hopefully this will increase over time."
"Teaching the other children, the time it takes to do this."	"Pupil understanding and exposure... it's very new to them"

Time as a limitation was coded for staff, AAC users, and their peers. The issue of not having sufficient time to work with the AAC was highlighted repeatedly. Some participants emphasised how time is needed for them to set up AAC systems, and this was particularly true of those using SGDs. One teacher observed that they required "A balance of basic training first then time to explore and set up the device specifically for the individual child and constant tech support", while an SNA noted that the staff had received limited time to train in using the SGD, "The SLT came in for an hour one day and gave a brief introduction into using core words." In these examples, time is linked to the concepts of training and access to the AAC system. From the perspective of inclusion, it is noteworthy that a limitation of encouraging peer use of AAC was the "time it takes" to teach the other students.

Implicit in the responses, however, was also a sense of optimism and hopefulness regarding time. Some participants highlighted how the AAC was 'new' to the children, with one noting that "She is only using the iPad a couple of months, so hopefully this will increase over time." AAC use was also new to some staff, and again, there was a sense of optimism in the potential for future change "However as a class teacher, I am learning with this student being new to my class. I personally would benefit from more training in communicating with AAC." In this way, familiarity with the AAC was emphasised as an important factor in students'

AAC use and learning. Furthermore, the finding that many participants highlighted the new nature of the AAC, coupled with earlier acknowledgements of highly structured, one-to-one interactions suggests that functional use of AAC is required before moving on to more social uses. This point was raised in a previous scoping review also (Iacono et al., 2022). The need to learn and become familiar with the AAC, as noted for staff and students demonstrates the role of time as a resource, which is often limited. It is noteworthy to consider how several staff also discussed accessing their own training and support outside of work, which, again, implicitly refers to time demands during the school day.

3.5.5. Summary

The findings of the surveys demonstrate the complexity of introducing AAC into mainstream schools. The research question central to this study asks, *"How are students using AAC included in Irish mainstream schools*?" The surveys addressed this question through an examination of staff practices and experiences. Findings indicate that there is wide variety in the types of AAC used in mainstream schools as well as the preparedness of teachers and SNAs in implementing AAC in inclusive ways. The types of settings considered to be inclusive also varied from full time mainstream placements to partial integration from special classes into the mainstream class or yard.

The surveys indicated that AAC use, regardless of type, is more commonly encouraged in structured environments and activities compared to more spontaneous interactions. Participants also indicated that currently, peer interaction appears to be less frequently employed than one-to-one adult interactions. In terms of inclusive practices, there was also an indication that being in the mainstream class or working with mainstream staff was not necessarily indicative of inclusive interactions and that differing views, opinions and perceptions of AAC impacted on inclusion.

Regarding staff experiences and views, these findings emphasise that proper training is essential for staff in order to feel prepared to do this work. The trainings obtained were often self-explored and conducted in staff's personal time, often rendering them limited and restrictive. However, implicit in the staff experience was the element of hopefulness with regards to using AAC and a general feeling that further benefits for the child and for themselves would arise with additional training and time.

3.6. Phase 2: Interviews

3.6.1. Interview Data Collection

The case study revolved around a 10-year-old student in mainstream fourth class of primary school. This child will be referred to as Susan. Susan is a Lámh user and communicates occasionally through some spoken language. Interview participants included her classroom teacher, her SNA, and her bus escort who also works as an SNA on yard with Susan. Of these, the classroom teacher had no formal Lámh training, the SNA is a Lámh tutor, and the bus escort/SNA has completed Lámh module one training. Two of the three interviews took place online using *Microsoft Teams* and one took place in person. Interviews lasted approximately thirty minutes and were recorded using a digital recording device. In line with the recommendations of Smith et al. (2021), reflective notes were kept following each interview related to the researcher's own opinions and experiences of the interview process.

3.6.2 Interview Analysis

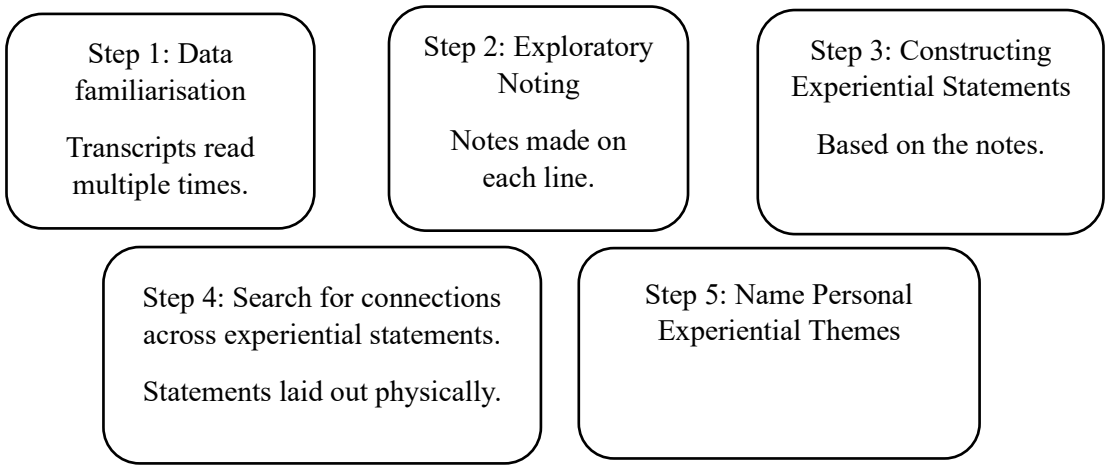
In order to conduct a multiperspectival analysis of the interviews, Larkin et al. (2019) outline the need to first analyse the data sets individually. IPA analysis has recently been updated to include the following steps (Smith et al., 2021). Firstly, the data must be read multiple times in order to ensure maximum understanding and familiarity. This step was undertaken alongside the transcription process. Each transcript was analysed separately,

focusing on each person's individual experience. The second stage of analysis involved taking notes while reading through the transcripts. Smith et al. (2021) outlined how these notes can include simple summaries, interrogative questions, interpretations, specific language choices, or conceptual statements. The transcript and notes were reread, and changes were made where required (see Appendix N for samples).

Following this, experiential statements were constructed (see Appendix N). This was again at an inductive level focused on the participant's own experiences. During this stage, the focus of analysis is placed on the notes gathered during stage two as opposed to the transcript itself. The fourth stage involves searching for connections across the experiential statements. Smith et al. (2021) recommend that all experiential statements are written out individually on pieces of paper and laid out in random order before being grouped together. Examples of this process can be found in Appendix O. The groupings then became Personal Experiential Themes for each participant (PETs). PETs and accompanying quotations for all three participants can be found in Appendix P. During this process the research question was kept in mind to ensure relevance of the PETs to this study. PETs were then re-examined and named. This entire process (see Figure 3.7) was replicated across all three participants.

Figure 3.7

IPA Steps. From Smith et al. (2021)



PETs for all three participants were combined in Table 3.6 to form Group Experiential Themes (GETs). Each GET was considered separately in terms of overlap, conflict, reciprocity or complementary experiences, and paths of meaning which are the key elements of multiperspectival analysis (Larkin et al., 2019). Overlapping ideas are considered points of consensus while conflicting views are divergent points. Paths of meaning refer to either shared experiences which are viewed differently, or similar views attributed to different experiences (Larkin et al., 2019). The results section outlines these points in relation to the five GETs followed by a summary of the main lines of argument in terms of addressing the research question (Larkin et al., 2019).

Table 3.6
Group Experiential Themes

Personal Experiential Themes (PETS)	Group Experiential Themes (GETS)
Changes are required beyond the child. (Participant 1) Staff's knowledge of signs is a barrier. (Participant 2) There are barriers within the class and whole school. (Participant 3)	Barriers
Staff facilitate inclusion through their actions. (Participant 1) Direct training is not the most beneficial way to learn Lámh. (Participant 2) Staff need to change how they view signing. (Participant 3)	Facilitators
Effective Lámh benefits society, understanding and emotion regulation. (Participant 1) The link between communication and inclusion is complex. (Participant 2) Communication has wide-reaching benefits. (Participant 3)	Communication
There are multiple conditions needed for peer inclusion. (Participant 1) Peer's engagement is dependent upon others. (Participant 2) Peer relationships are valued. (Participant 3)	Social Inclusion
Peer learning of signs is generally unstructured. (Participant 1) Teaching Lámh signs to peers is a limited approach. (Participant 2) Staff's role in inclusion. (Participant 3)	Inclusive Practices

3.6.3. Interview Results

The aim of the interviews was to answer the research question *"How are children using AAC included in Irish mainstream primary schools?"* through an in-depth examination of staff

experiences and inclusive practices. Five broad areas were noted amongst all three participants as GETs. These included barriers and facilitators to inclusive use of AAC, communication in general with AAC, social inclusion with peers, and inclusive practices used by staff.

3.6.3.1. Barriers. Barriers are outlined in Table 3.7. There was generally consensus amongst participants that staff's lack of knowledge, and in some cases, perceived lack of effort was a barrier to inclusion across the whole school.

Table 3.7
Multiperspectival Analysis of GET: Barriers

Personal Experiential Theme	Participant 1 (bus escort/SNA)	Participant 2 (teacher)	Participant 3 (SNA)
Changes are required beyond the child.	(P1's Theme)	Consensus with issues around staff training. Reciprocity with relying on other's support. Consensus of frustration.	Consensus with need for staff to do more. Consensus of frustration.
All teacher's limited knowledge of signs is a barrier.	Consensus	(P2's Theme)	Consensus (with different reasoning)
There are barriers within the class and whole school.	Consensus whole school approach needed. Reciprocity of lack of teacher training.	Reciprocity of time barrier. Reciprocity of lack of teacher training. Consensus whole school approach needed.	(P3's Theme)

Both the bus escort/SNA and the teacher held reciprocal views that many members of the school community were reliant on others to communicate, including Susan "she'll instigate almost a conversation with me to look - then look back at the children… so if she wants me to ask them something or talk to them she'll look at me to almost translate" (teacher). There was

also a consensus that people not knowing signs was frustrating for Susan “she’ll get… a little bit frustrated if she’s trying to sign something that I’m not familiar with… she gets annoyed when she knows I don’t know the sign” (bus escort/SNA). This was equally frustrating for some adults “I’ve actually seen people turn their back and you wouldn’t do that to any child… it’s frustrating and then she’ll come to me, and she’ll be signing and telling me” (SNA).

Those who work with Susan in the classroom held reciprocal views around time as a limiting factor for teachers. The classroom SNA described how they had offered after-school Lámh training, however many teachers declined to attend due to reported time constraints, “I think there’s lots of people at the moment that are saying I don’t have time for that” (SNA). While the classroom teacher also acknowledged their lack of training, they approached that as a more systemic issue with regards to school calendars, schedules and whole-school priorities, “because the school day is so hectic teachers who are all teaching with Lámh often don’t get a chance to communicate with each other.” This point also demonstrates limited peer support amongst teachers.

A divergent barrier was noted by the bus escort/SNA with regards to their working environment. Unlike the other participants, this SNA was restricted by the seating on the bus and saw the environment as a limiting factor. Nevertheless, they tried to facilitate interaction as best they could “I have to keep turning around to her so, it-it’s hard to - like I’m not facing her when I’m trying to sign but I do try to turn my body, so she sees as much as...” While the other SNA had no physical environmental barriers, they did reference the environment as a barrier when others do not know how to communicate with Susan “people just didn’t want to work with this child because of her behaviour and actually the behaviour was communication, it was our fault it was the - it was her environment.”

The bus escort/SNA was also the only participant to raise the issue of inaccurate signs. While the process of learning signs was apparently complicated due to Susan's occasional misuse of signs, it was evident that there was inconsistency amongst staff and peers "they might make a sign and I'm going um that's not the sign I recognise for bread and then I'll go and check"

Regarding paths of meaning for this theme, while all three participants acknowledged the lack of teacher training as a barrier, there was a sense from the SNAs that this was due to having too many other school initiatives "but I think with a teacher maybe there's too much you know - too much other things to do." However, the teacher felt they were too time constrained to seek training "I think the main barrier is just the time, and the finding the time for the day, because there's always, em, one training…" The classroom SNA noted that in the past they felt the responsibility for using Lámh had often been placed solely on them "It was very isolating, and I felt very separated, and… this was awful but there were times when I thought why should I be doing this when other people just aren't?"

3.6.3.2. Facilitators. All three participants emphasised the importance of staff's role in facilitating inclusive use of Lámh (see Table 3.8). They also highlighted elements of consistency and experience in learning signs, with the teacher noting that "I think you really need to give the time and dedication to it or else it would just filter out over time like it possibly has done." Both the teacher and classroom SNA also discussed how staff and students can benefit from sharing knowledge and relying on the support of others. For example, the teacher was particularly grateful for the support of the classroom SNA "her level of Lámh that's how I pick up on it, it's mainly by, watching her and asking her."

Table 3.8

Multiperspectival Analysis of GET: Facilitators

Personal Experiential Theme	Participant 1 (bus escort/SNA)	Participant 2 (teacher)	Participant 3 (SNA)
Staff facilitate inclusion through their actions.	(P1's Theme)	Divergence with importance of training. Consensus around experience and whole-school approach.	Consensus with whole-school approach from staff needed.
Direct training is not the most beneficial way to learn Lámh.	Consensus: consistency and experience. Divergence: benefits of teacher training.	(P2's Theme)	Reciprocity in terms of relying on others to communicate.
Staff need to change how they view signing.	Consensus: everyone needs to communicate.	Reciprocity of attitude/feeling change when signs are learnt.	(P3's Theme)

A whole-school approach was also considered beneficial and was generally characterised in this school by novel approaches such as through songs at assemblies. Both the classroom teacher and bus escort/SNA discussed how short-lived these efforts can be "so there is a willingness in the school to-to give it a go but… once something like that is finished it just falls away." The classroom staff also held the consensus that attitudes and feelings towards KWS changed when they saw the positive outcomes for the child and for communication, "until you're actually working with a child that can benefit from that type of communication you just don't realise how-how amazing it is" (SNA).

Both SNAs explicitly emphasised that one of the most beneficial facilitators of inclusive AAC use would be for every member of the school community to have knowledge of signs as they felt that "we're all in this together." The classroom SNA further noted that they

should “Explain what it is, explain how effective it is and explain how inclusive it is” because “something so simple as using a few signs has changed that child and actually now people are warming to that child.”

In terms of paths of meaning, there was some agreement around the importance of consistent practice, exposure and experience, with the bus escort/SNA referring to Lámh as like “any language - you do forget it if you’re not using it constantly.” However, the SNAs spoke more about the importance of direct teaching of other students than the teacher, “I do think it would be nice if maybe every class teacher just spent maybe 10 minutes – just 10 minutes a week will do, teaching the class 5 signs” (SNA). Additionally, with regards to peers, only the teacher described benefiting from the prior learning of Susan’s classmates, “a lot of the children would know the colours in their Lámh signs which they would have learned when they were younger which is great”.

A further path of meaning was noted around the importance of training, “I would be very interested in learning it and if the school introduced some sort of classes I know there would be a lot of people… that would be very keen to do that” (bus escort/SNA). While all participants believed that training had value, the bus escort/SNA and the teacher valued direct experience to a greater extent than that of the classroom SNA, “if we had had time to do the training, but then I suppose with any language if I’m not using it on a daily basis, I eh I-I don’t think I would be able to remember anything either” (teacher). It is notable that the SNA who promoted training more than the others was the participant with the highest level of official Lámh training.

3.6.3.3. Communication. With regards to communication (see Table 3.9), both SNAs discussed how beneficial being able to communicate through Lámh was for Susan. They noted how she was more understood through using AAC and observed benefits for her emotional

regulation, “It’s a huge impact on their confidence, on their behaviour not just communication - on everything” (SNA). There was also a consensus between the bus escort/SNA and the teacher with regards to the impact of Susan’s other needs on her communication. In this regard, these additional needs beyond those of communication were seen as difficulties in terms of promoting communication through AAC. Regarding academic differences, her teacher described Susan’s inclusion as “meeting [her] own individual goals but that [she’s] included within the learning in the classroom to as much as [she] can be and to as much as… it won’t be upsetting [her].”

Table 3.9

Multiperspective Analysis of GET: Communication

Personal Experiential Theme	Participant 1 (bus escort/SNA)	Participant 2 (teacher)	Participant 3 (SNA)
Effective Lámh benefits society, understanding, and emotion regulation.	(P1’s Theme)		Reciprocity: child being understood. Reciprocity: benefits to the child.
The link between communication and inclusion is complex.	Consensus: child’s other needs.	(P2’s Theme)	Divergence on perspective of child’s other needs.
Communication has wide-reaching benefits.	Consensus: relationship between child’s needs and communication.	Reciprocity: change in feelings through learning Lámh.	(P3’s Theme)

Furthermore, in terms of the impact of the child's additional needs on their communication, the SNA who spends most time with Susan clearly outlined their belief that her other needs often derive from communication difficulties. In particular, they emphasised how Susan was misunderstood because of this, "a couple of years ago she was labelled as a-an uncontrollable child em, that shouldn't be in a mainstream setting em, but all of those negatives were to do with her communication." Conversely, the teacher was of the belief that Susan's behavioural difficulties hindered her communication and inclusion "unfortunately… as she's gotten older she's not really fully able to access the curriculum as much as the other students so I was more … unsure or worried about how I would integrate her into the mainstream classroom."

As a point of divergence, it was notable also that the classroom teacher did not discuss the emotional or behavioural benefits of communication. While the bus escort/SNA outlined benefits of communicating, it was evident in their response that Susan's other needs impacted on the extent to which she could comfortably communicate with her peers, "She wants to communicate… but she also repeats things quite a lot so sometimes em her SNA will ask us to stop, just to let her calm down because she gets quite worked up" (bus escort/SNA).

Both the teacher and classroom SNA also reported changes in themselves from learning Lámh. The teacher spoke about improved confidence and comfort when interacting with Susan after becoming more familiar with KWS. It was notable that this topic brought about strong emotions in both of these participants. There was a palpable sense of wonder and awe in the words and tone of the classroom SNA when discussing the effects of communication, "oh, wow I cannot tell you how effective Lámh has been." Additionally, there were acknowledged feelings of guilt from the teacher prior to their learning of Lámh in their previous communication difficulties with Susan, "I just felt bad that I could tell she was getting frustrated that she couldn't communicate directly with me."

A further divergent point lay in how only the classroom teacher believed that KWS was more important for Susan to learn than for others, “not so much me speaking to her as she can understand what I’m saying, it’s more when she’s trying to communicate back to me.”

3.6.3.4. Social Inclusion. When discussing peer relationships, there was a reciprocal sense amongst all participants that Susan is generally isolated from her peers (see Table 3.10).

Table 3.10

Multiperspectival Analysis of GET: Social Inclusion

Personal Experiential Theme	Participant 1 (bus escort/SNA)	Participant 2 (teacher)	Participant 3 (SNA)
There are multiple conditions needed for peer inclusion.	(P1’s Theme)	Divergence: benefits of teaching peers. Reciprocity child’s isolation in the class.	Consensus: child’s isolation in the class. Divergence: benefits of teaching peers.
Peer’s engagement is dependent upon others.	Consensus that peers need adult support.	(P2’s Theme)	Consensus: peers need adult support.
Peer relationships are valued.	Reciprocity of peer isolation.	Reciprocity: peer isolation.	(P3’s Theme)

The bus escort/SNA outlined how Susan engages in differentiated work and so her differences in communication add to her isolation, "she's already if you want to use the word different from the class with her work, and now her speech and her communication…" Examples of needs which were seen to impact on her peer inclusion were her behavioural and sensory needs, her emotional regulation, academic differentiation, and her physical seating position in the classroom. It was noted that due to these differences, Susan can become overwhelmed by multiple sequential social interactions "if they see a positive interaction between her and another child then… if they're beside her they'll try again. But then that can get almost too overwhelming again" (SNA). Her classroom SNA highlighted how Susan can also be isolated from some adults due to their lack of comfort with or awareness of Lámh, "it's very isolating for her and it's… it-it how frustrating must it be to be trying to tell somebody something, but they just turn their… [back]."

There was also consensus that peers generally require the support of adults to interact with Susan through Lámh "in order to help the children like… you have to help the adults first to help the children" (bus escort/SNA). This is partially explained as being due to their lack of knowledge and training in Lámh, as well as Susan's emotional reactions to interactions. Current peer interactions include being encouraged by staff to initiate or respond to Susan, with the teacher trying to "give the children the encouragement to keep trying with it." Additionally, peers sometimes seek out adults to translate Susan's Lámh or to ask for Lámh signs with which to engage Susan.

All three participants also agreed that her peer's current learning of Lámh is generally achieved in unstructured or novel ways. Peers also reportedly "pick up" signs through watching adults in the classroom and on yard. The only point of divergence noted in the area of social inclusion lay in the teacher's views regarding the benefits of unstructured learning compared to both SNA's views regarding the benefit of directly teaching even as few as "5 signs a week."

The classroom teacher was also the only participant to acknowledge a conflict between wanting to support interactions and wanting to promote independence "you try and like leave her off to communicate just with them but then you -it's that fine line of do I step in now to actually enable communication."

There was a path of meaning noted in the interest of other students to engage with Lámh. The classroom teacher and bus escort/SNA described moments when Susan's peers were generally less interested in signing, and these were often times when they had signed but had not received the response they had been expecting from Susan. The bus escort/SNA noted that sometimes "if they say hello to her she tends to just walk off." Conversely, the classroom SNA was more positive about the peer's interest in signing, "it's just so lovely to see even the children… actually come up to that child and just say *hello* and bring her into - or bring them into her little world."

3.6.3.5. Inclusive Practices. In terms of practices discussed by participants, one of the areas of consensus noted was that a whole-school approach was needed with regards to signing, "we need to have a whole school Lámh course" (SNA). It was suggested that it was the role and responsibility of every member of the school community to know some basic signs so that they could communicate with Susan and other Lámh users across the school environment, "I think if it was more of a whole-school approach like that if they were seeing the signs on the wall" (teacher). This point applied not only to staff, but also to students. In particular, all three participants referenced the positive aspects of inclusion when all students signed during assemblies (see Table 3.11).

Table 3.11

Multiperspectival Analysis of GET: Inclusive Practices

Personal Experiential Theme	Participant 1 (bus escort/SNA)	Participant 2 (teacher)	Participant 3 (SNA)
Peer learning of signs is generally unstructured.	(P1's Theme)	Consensus: but more value placed on unstructured learning.	Consensus.
Teaching Lámh signs to peers is a limited approach.	Consensus: modelling and novel uses. Divergence: teaching.	(P2's Theme)	Consensus: modelling and novel uses. Divergence: teaching.
Staff's role in inclusion.	Consensus: teaching and modelling to peers. Consensus: whole school and teacher's role.	Reciprocity: demonstrating to/teaching peers. Consensus: whole-school approach. Reciprocity: teachers could do more.	(P3's Theme)

There was also consensus across participants that the current approach to teaching signs to classroom peers was appropriate. The teacher noted this about watching *Dizzy Deliveries,* "we all take the time and then when the woman signing on the screen comes up we'll all try and like learn it so, like I think that is a really nice way to integrate it." In this regard, all participants agreed that Lámh was appropriately taught, modelled, and practised by peers in unstructured environments and activities, "I have noticed music or em, sports lessons are probably the best way to go with regard to this individual child em, for inclusion and to give the children the chance to use Lámh" (teacher). Susan's classroom SNA noted that "kids just like to get involved don't they and kids just like to… they mimic the role model, they mimic the adult" emphasising the importance of adults in promoting inclusive use of AAC. The teacher noted that while this is a beneficial form of inclusion it is limited by the differentiated learning approach that Susan requires "I think also if I was modelling it more… with everybody…but again when I'm interacting with the child it's more one-to-one, so they'll see

me speaking to her… but they'll often not be involved in the conversation." This issue constituted a path of meaning, however, as discussed, there were divergent views amongst the teacher and SNAs with regards to the value of directly teaching signs to peers compared to an approach based on modelling and exposure. In the past, peers had been included in direct teaching practices, and the classroom SNA emphasised the benefits which they had noticed when peers had been taught signs, "in one of the classes I was with there was em, three signs a week and the kids absolutely loved it."

3.6.4. Summary

Larkin et al. (2019) outlined the following elements of a multiperspectival analysis: overlap, conflict, reciprocity, paths of meaning and lines of argument. Overall, areas of overlap or consensus included issues with teacher training, feelings of frustration, the need for a whole-school approach to AAC, the impact of other needs on communication, and the importance of modelling signs to peers. Conflict or divergence was noted in the physical barriers for the bus escort, the observation of inaccurate signs, the role of training compared to experience, perspectives of the child's other needs, and benefits of direct teaching for peers. Reciprocal views were observed regarding barriers such as time and training, relying on others to communicate, changes in attitudes, benefits of AAC, and Susan's isolation from peers. Across participants, paths of meaning were centred around teacher training, the importance of consistent practice and experience, and the general interest of other students in AAC.

Additionally, the following lines of argument were noted. Firstly, with regards to inclusive practices, there was a general sense that more needed to be done to support Susan in her inclusion in the communicative environment of the school. While differences were noted in participant's beliefs with regards to responsibility for further efforts, it was clear in their

discussions of facilitators and barriers that more emphasis and support was required across the whole school.

In terms of responsibility, there was also a notable difference between the behaviours of adults and children in Susan's environment "it's just *sort of sad* and as I said kids will actually come up to say look she did this what does that mean or how do I sign this … but adults tend not to" (SNA). Furthermore, with regards to the current use and encouragement of Lámh, there was an overall sense that more training and experience were required of both staff and students. Again, there were differing views as to how students in particular should be trained, however it was a clear line of argument across all participants that current inclusion was limited by a lack of peer knowledge of KWS.

Social inclusion with KWS was evidently a complex process dependent upon awareness of difference, interest, prior knowledge, adult facilitation, opportunity to observe signs, and positive interactions with Susan. Across responses was the clear sense that small efforts are beneficial for promoting inclusion of AAC users. These include acknowledging the child, learning even a few signs weekly, putting up posters of Lámh signs around the school or signing songs in assembly.

In terms of staff experiences, one line of argument was the explicit and implicit strong emotions around the topics of communication and inclusion. This was evident in a number of ways, including guilt and sadness in not being able to communicate, "it really hurts me when I know that I'm not understanding the signs she might be saying" (bus escort/SNA), "I just felt that I wasn't doing my best for her I suppose in the fact that I couldn't-couldn't be an easy two-way communication if it was just one-to-one" (teacher). There was also a sense of pride when signs are learned, "oh I know what that is and I was able to translate that and that was really helpful" (teacher). Furthermore, staff expressed clear passion in their beliefs regarding

inclusion, “so why isn’t it taught in school… you know as part of the curriculum?” (bus escort/SNA). Finally, value was noted in learning Lámh. Lámh was deemed beneficial to Susan, to her classmates in terms of their diversity awareness, and to her staff as they learned to communicate with and support her. There were also clear links established between perceptions of Susan, which had changed when she developed her signing knowledge, as one SNA observed that “now people are warming to that child.”

3.7. Discussion

The aim of this study was to answer the question *‘How are children using AAC included in Irish mainstream primary schools?* Based on the literature review, this question was addressed through the examination of both current staff practices and staff experiences. This was achieved through a qualitative mixed-methods design including an online survey and a case study consisting of three semi-structured interviews.

3.7.1. How are children using AAC included in mainstream Irish primary schools?

General Findings.

The frequency of interactions with mainstream peers reported amongst survey participants was highly variable. While Susan, the child central to the case study was fully mainstreamed, special class placements were noted in several survey responses. Partial placement, or integration into mainstream classes is considered a form of inclusive education in Ireland (Department of Education, 2023) however, it is less inclusive compared to full participation in a mainstream class. It is also important to recall the findings of other literature where participants reported that repeated interactions and proximity were beneficial to inclusion and engagement (Biggs & Snodgrass, 2020), and these can be limited when children must move between classrooms throughout the day (Walker & Chung, 2022). However, despite her full mainstream placement, interview participants were of the opinion that Susan was not

included in her class due to a lack of interactions with her peers and a high level of extensively differentiated one-to-one work. These findings suggest that the mainstream placement alone is not sufficient for inclusion, which is aligned with UNESCO's definition of inclusion (2005) and previous research (Vetoniemi & Kärnä, 2021).

The finding that students with CCN in mainstream classes can be isolated due to differentiated work indicates that needs other than those of communication can impact on inclusive activities and peer interactions. This is an important consideration for those with CCN and additional needs (Beukelman & Light, 2020). This study also found evidence for the impact of the environment, opportunities to interact, and AAC skill and training for children with CCN as was outlined by Chung and Carter (2013) and Therrien et al. (2016). This indicates that the process of inclusion for an AAC user requires effective training, environmental changes with regards to attitudes and exposure to AAC, and sufficient opportunity for peer engagement. These points were evident across the surveys and interviews. With the addition of other social, behavioural or learning needs that can impact on a child or young person's development (Crowe et al., 2021; Lorah et al., 2022), it is important for staff to be flexible and considered as they seek out appropriate opportunities for interactions with peers.

3.7.2. How are children using AAC included in mainstream Irish primary schools?

Inclusive Practices.

With regards to inclusive practices, the literature review suggested that staff play a key role in determining which interaction opportunities are afforded to AAC using students (Therrien et al., 2016; Walker & Chung, 2022). The findings of this study indicated a variety of practices used by staff to facilitate inclusion. In the classroom, survey participants emphasised very focused, academic, and structured interactions. This applied both to one-to-one staff interactions with the AAC user and to adult facilitated peer conversations. There was

generally a lack of unstructured, spontaneous or free responses noted in the surveys. In the interviews, structured interactions were present on a one-to-one basis with adults, however, due to Susan completing differentiated classwork, interactions with peers were reportedly easier to facilitate during lessons such as art and P.E. While her peers appeared to engage in some free and spontaneous use of AAC on the yard, it was notable that Susan's responses appeared to be of a very rehearsed and adult facilitated nature, "she'd say, 'I am ready' and she'd have to reply in that way" (teacher). Her more spontaneously initiated conversations were confined to staff, who she generally approached for communication.

In terms of encouraging peers, other studies have found that training and modelling AAC are effective ways to facilitate interactions (Bowles & Frizelle, 2016; Donato et al., 2018; Therrien et al., 2016). These findings were also present across both phases of this study, with a particular emphasis on modelling discussed in the interviews. However, there were divergent opinions amongst interview participants with regards to the value of also providing structured KWS lessons to peers. Peer initiation was also demonstrated in the interviews with an emphasis on peers asking for support with signs as in Anderson et al. (2011) and Bowles and Frizelle (2016). Notably, these two studies also involved the use of manual signing. No survey participants using SGDs or PECS indicated that peers sought support from adults. This may be due to the voice output on SGDs which can be easily interpreted as language. Similarly, PECS images resemble real-world objects which again, are easier in terms of understanding their meaning compared to signs. While the nature of KWS should eliminate the need for all communication partners to understand signs (Beukelman & Light, 2020), when used by minimally verbal individuals the process could be seen to more closely resemble sign language than KWS. Interview participants indicated strongly that a whole-school approach to KWS was necessary as an inclusive practice, as without wider familiarity and training, the child is limited to communicate with only certain individuals.

Finally, individual characteristics of the AAC user and of others in the environment impacted on the success of these inclusive practices. For example, there were references to staff members whose own perceptions of additional needs and understanding of CCN were limited or considered to be unhelpful as they had "old school ideas about SEN and difference." Similarly, there were mixed receptions and interest of AAC by peers which resulted in differing levels of interaction amongst participants as was evident in other studies also (Kent-Walsh & Light, 2003; Mukuna & Maizere, 2022). While interview participants differed in terms of their interpretation of the impact of these additional needs on the child's communication, all three recognised them as being a relevant aspect of the child's inclusion.

3.7.3. How are children using AAC included in mainstream Irish primary schools? Staff Experiences

Variations in terms of staff training and experience with AAC were noted across this study and have been reflected in previous literature (Bowles & Frizelle, 2016; Finke et al., 2009; Kent-Walsh & Light, 2003; Østvik et al., 2017; Soto et al., 2001). Participants also reflected generally on the importance of AAC training. The nature of the interviews allowed for further discussion around this experience, and it was clear that the staff member with the highest level of formal training expressed the most benefit in training. Furthermore, there were also clear attitudinal changes relevant amongst staff and students in several studies (Bowles & Frizells, 2016; Finke et al., 2009; Kent-Walsh & Light, 2003; Mukuna & Maizere, 2022; Soto et al., 2001). This was again reflected in some of the case study participants as they discussed how using KWS regularly demonstrated the value of AAC for the child and for those communicating with them.

Similar to the findings of the literature review (Bowles & Frizelle, 2016; Soto et al., 2001; Young et al., 2022), participants also reported varying degrees of training and experience

amongst the AAC users. Many of this study's survey participants suggested that their students were at the beginning stages of learning to use their AAC and there was an inherent hopefulness in staff's discussion of how the children might develop in their communication skills. However, there was also a sense of pressure with regards to the time needed to facilitate this learning. The time it takes to effectively integrate AAC use into lesson plans has been noted in previous research (Leatherman & Wegner, 2022). The interviews again allowed for further discussion around issues of time constraint and frustration in that regard. Interview participants in the present study outlined how AAC use was one of many priorities in a school and that efforts to introduce further training or peer support were limited by time. This is an important experiential finding as it demonstrates the difficulties staff members experience when trying to implement inclusive practices alongside other curricular and Department of Education policies.

Due to time constraints in schools, staff often reported seeking their own training in their personal time. Perhaps due to the lack of formal training for staff and students, there was an apparent lack of direct teaching of AAC to peers and several instances of AAC misuse were reported also. In the interviews, these experiences of misuse were explored further, and a clear sense of frustration was evident due to a lack of clarity and consistency with AAC users. With regards to accessing training and support, it was notable that there were conflicting experiences in terms of support from SLTs and there was no reference to EP involvement amongst this sample.

Finally, staff's experiences were often expressed in terms of passionate and strong emotions. This was due to a number of factors including the strong bond experienced between SNAs and the children they support, as well as the complex emotions associated with feeling that you cannot communicate with a child in the classroom. Staff also felt passionately about the different ways they defined inclusion, which is reflective of the subjectivity of beliefs

around inclusion and inclusive education (Kruse & Dedering, 2018; Luhmann, & Buitendag, 2022).

3.7.4. Application of Luhmann's Theories

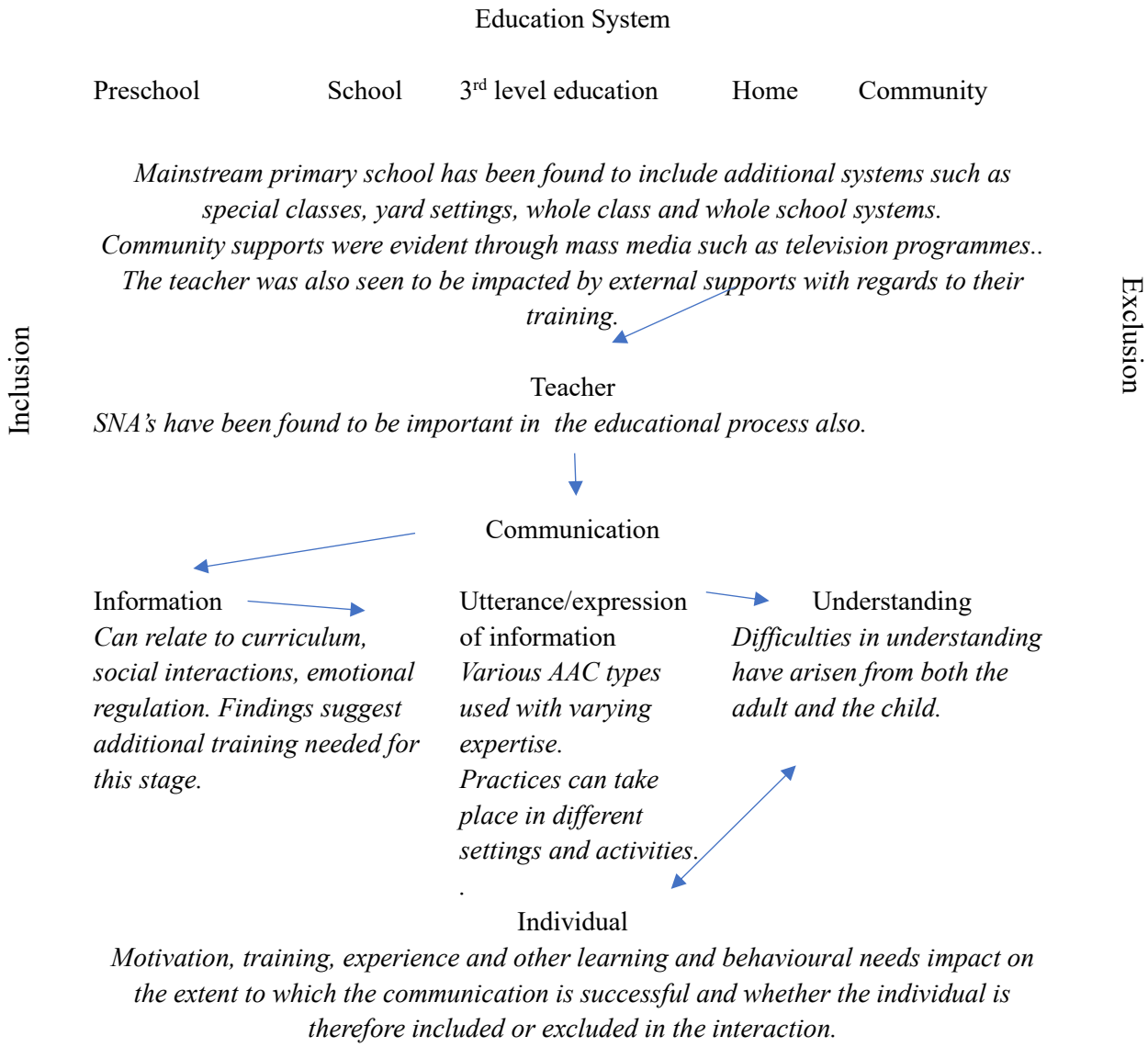
According to Luhmann, society is divided into separate systems (1995). The findings of the survey, which included participants from multiple schools, demonstrate how each school system is separate and operates differently regardless of educational policies. External systems which impact on the individual AAC user's inclusion in school include community supports provided by SLTs, external training for staff, and national television programmes. Within schools, this study found that there are various systems from which children may be excluded or included. Moving between classes, peer groups and settings around the school, along with interacting with different staff demonstrates the relevance of Luhmann's systems theory (1995). This study's findings also emphasise the complex nature of inclusion through these systems. Here, environmental factors such as structured or unstructured settings, activities, changes in educational provision, and changes in opportunities afforded to the child all resulted in varying levels of inclusion. For example, in the case study, it was evident that Susan was more excluded in the classroom due to her learning needs during academic lessons, while her teacher found it easier to integrate her socially into PE, art, and yard time. However, there was a large amount of variance noted in the surveys across different settings also, with AAC more likely to be used in highly structured activities and settings. These differences have been attributed to the type of AAC used, the child's stage of learning with their AAC, as well as their development in certain activities compared to their peers. This again highlights the strong relationship between CCN and other needs.

The findings related to Susan's behavioural changes, and changes in staff perceptions of her after learning KWS further demonstrate the transformative nature of education as outlined by Luhmann also (Mangez & Vanden Broeck, 2021). Within the education system are

a variety of adults who educate the child in relation to their use of AAC as well as other adults who are important in supporting the child's social and communicative development. Luhmann outlined three aspects to communication which are information, utterance and understanding (Vanderstraeten, 2000). As applied to this study, information can be expressed through the AAC from adult to child, generally in structured ways related to academic lessons. Adult practices in this way are further influenced by other systems such as their own access to training and support, awareness, time, and resources. The individual child receives this information, and their understanding of its content was impacted across this study by their other learning, behavioural, and emotional needs as well as the training they had received from external systems in using AAC. Furthermore, the child must communicate their learning, needs or opinions back to their teacher. Therefore, across this process of communication with AAC in mainstream schools, there are various points at which a child may be included or excluded. This process is outlined in Figure 3.8 with the inclusion of the findings of this study.

Figure 3.8

Application of these Findings in light of Luhmann's Theories.



3.7.5. Strengths and Limitations

There were several strengths and limitations in this research study. Below is a brief overview of these points, with a further, more in-depth discussion to be found in the following Critical Review chapter.

Table 3.12

Strength and Limitations Overview

Strengths
• Inclusion of aspects of quality indicators for qualitative studies (Brantlinger et al., 2005). • Relevance to previous research findings. • Use of qualitative mixed-methods design (Morse, 2010). • Filled a research gap. • Implications for practice found. • Application of Luhmann's theories.
Limitations
• There was limited data collected on student's needs and characteristics. • Absence of child voice (Luhmann, & Buitendag, 2022) • Sampling biases, including convenience sampling (Emerson, 2015). • Gatekeepers (Lindsay, 2005; Wanat, 2008). • Limited responses in surveys. • Qualitative survey limited generalisability.

There were limitations related to participant recruitment and data collection. Firstly, the use of convenience sampling limits generalisability (Emerson, 2015). However, the focus of this study was on individuals' experiences rather than on generating generalisable results (Smith, 2011). Nevertheless, it is possible a self-selection bias was present in the sample, with those who elected to take part doing so due to certain pre-existing feelings. Recruitment was also complicated by gatekeepers such as school secretaries and principals (Lindsay, 2005; Wanat, 2008). Furthermore, due to the self-report nature of the surveys, participants may have been susceptible to self-report bias (van de Mortel, 2008). In terms of data collection, while the benefit of open-ended survey questions was that they allowed for flexibility and choice (Shaughnessy et al., 2012), it can also create an imbalance in responses for analysis. Finally, the lack of child participants limits these findings as related to the understanding of their inclusion (Luhmann, & Buitendag, 2022; Taylor & Balandin, 2020;).

Strengths include how the survey was designed to consider many of the key areas discussed in the literature review while also filling a research gap by providing data related to

the Irish context. These included issues around consistency of training (Finke et al., 2009; Kent-Walsh and Light 2003), the importance of adult facilitation of interactions (Anderson et al., 2011; Walker & Chung, 2022), and the impact of different settings on AAC use (Bowles & Frizelle, 2016; Østvik et al., 2017). The use of a sequential, qualitative mixed-methods design allowed for these topics to be discussed in further detail in the interviews which provided additional and clarifying information. Adhering to analytical guidelines of Braun and Clarke (2021), Larkin et al. (2019) and Smith et al. (2021) further strengthened the relevance of the findings of this study in relation to the research question. These findings also provided a wide variety of implications for practice as well as insight into staff experiences.

3.7.6. Implications

The findings of this study indicate a number of implications for students using AAC, school staff, and EPs. This section briefly outlines these implications which are further explored in the following Critical Review chapter.

Implications for AAC users. In line with previous research, survey data clearly indicated that children require different forms of AAC for use in different environments (Pak et al., 2023). This reflects the idea of a total communication approach where individuals are exposed to multiple forms of communication (NCSE, 2020). Participants suggested that the AAC user needs to be familiar with the form of AAC themselves before it can be used with peers. Findings also suggest that interaction in lessons may be impacted by the AAC user's developmental level.

Implications for School Systems. For school staff, findings indicate the necessity of a whole-school approach in terms of AAC training and promotion. Furthermore, school management need to prioritise and ensure that due time and care is given for staff to access such support. Findings related to the importance of staff in encouraging peer interactions

indicate that teachers and SNAs need to take an active role in modelling AAC to peers, generating structured opportunities for engagement and encouraging spontaneous interactions in unstructured settings.

Implications for EPs. There was a notable absence of reference to EPs amongst this sample. This demonstrated that EPs must take a larger role in supporting staff and students using AAC. Findings from this study support the inherent relationship between communication and emotional regulation and behaviour, and so strengthen the validity of EP involvement in communication support as had been recommend by previous researchers (Sedgwick & Stothard, 2019).

Chapter 4. Critical Review and Impact Statement

4.1. Overview

This chapter provides a critical examination of the current study, including reflections on the theoretical and epistemological positions, research design, and methodology. This includes consideration of strengths, limitations, potential alternative designs and implications of the choices made. Implications of this study's findings are then presented, followed by a personal reflection and a reflection on the quality of the research as a whole. Finally, an impact statement is provided for this work.

4.2. Conclusion of Research Findings

The aim of this research was to answer the question "*How are children using AAC included in Irish mainstream primary schools?"* In order to answer this question, a qualitative mixed-methods sequential design was used to examine staff's current practices and experiences when supporting students using AAC. All participants were included in the first survey phase with three participants also providing information through the second phase case study.

Survey findings indicated wide variation in the types of AAC used in schools and in the ways in which they are used across school settings. With regards to practices, structured interactions were favoured and were more likely to occur with adults than with peers. Where peer interactions did take place, there was a sense of novelty and fun to some experiences and acknowledged misuse in others. Participants also reported that the AAC user sometimes required different forms of communication for interacting in different settings. The experiences of survey participants indicated that staff are likely to need to seek their own training, often in their personal time, and therefore experience and knowledge of AAC varied greatly across this sample. While frustration around a lack of resources and proper training was noted, a general hopefulness with regards to the future communication skills of the children was often present also.

Interview findings further emphasised the need for additional supports in terms of training and resources at a whole-school level for both the AAC user and staff. While interview participants at times disagreed about issues of responsibility in communication, all three emphasised that everyone in the school community needs to play a role in the inclusion of AAC users. Experiences of staff indicated the presence of strong emotions related to inclusion and to their own practices. There was also a keen sense of value noted in terms of the AAC itself, which in this case was KWS. With regards to inclusive practices, staff in the interviews noted that interactions were largely of a one-to-one nature and where others were involved it could sometimes be considered overwhelming for the child. Overall, the child's personal characteristics, development, and needs were perceived to impact on their social interactions, and they benefitted from adult support and communication opportunities.

Overall, the findings of this study indicate that in order to include students using AAC in mainstream schools, AAC use must be prioritised in such a way as to provide staff with the time, resources and training needed to adapt their lessons and to encourage and facilitate social interactions also. Previous research has indicated the important role adults play in facilitating and encouraging interactions (Rapp & Corral-Granados, 2021). The findings of this study suggest that AAC user's current inclusion in Irish primary schools is largely determined by adult actions and interpretations of their needs. At present, using AAC in inclusive settings appears to be an emotional and at times frustrating process which can be associated with AAC misuse and communicative misunderstanding, but it is also a process which this sample found undeniably beneficial for the children.

4.3. Reflections on the Epistemological Position

This study adopted the epistemological stance of interpretivism. This approach values each opinion as subjective, unique, and interpreted by each individual in terms of their own

views and experiences (Aliyu et al., 2014; Kumatongo & Muzata, 2021; Abdul Rehman & Alharthi, 2016). This was selected due to its emphasis on understanding a social phenomenon from the perspectives and individual experiences of those involved.

One of the limitations of an individual, subjective, interpretivist approach is the limits placed on the generalisability of results (Williams, 2000). While this approach was appropriate to the research question, it limits the findings to this sample, and further, quantitative research would be required on a wider scale to examine overall trends in inclusive AAC use. A positivist, objective position could have been held if the aim of this study had been focused more on the facts of AAC use (Park et al., 2019). In this case, the methodology would have involved a more quantitative approach where data would be gathered on the number of AAC users and types. This would have been a valuable study and filled a research gap, as the Department of Education have no statistics in this area. However, a study of this type would have required mandated participation in order to gather accurate numbers from all schools which would have been beyond the scope of a doctoral thesis.

The interpretivist perspective was considered appropriate for the qualitative methodologies used in this study (Aliyu et al., 2014). This paradigm denotes that our understanding of society is influenced and inferred from our individual interpretations (Hughes & Sharrock, 1997). When applied to this study, this implies that the phenomenon of using AAC in inclusive education is understood in inherently interpretative ways and so cannot be viewed as objectively factual representations. It also emphasises individual and in-depth interpretation of the experiences of participants in the analysis (Kumatongo & Muzata, 2021). This position is aligned with the forms of analysis chosen for this study as both RTA (Braun & Clarke, 2021) and multiperspectival IPA (Larkin et al., 2019; Smith et al., 2021) also highlight the importance of a reflective interpretation. Finally, adopting this qualitative, interpretivist approach was appropriate for answering this research question of "*How are children using AAC included in*

Irish mainstream primary schools?" as this question examines a process and so is effectively examined through qualitative approaches (Pettigrew & Roberts, 2006).

4.4. Reflections of the Theoretical Position

This study adopted the theoretical perspective of Luhmann's works, particularly his theories of systems, education and communication. In terms of systems, Luhmann perceived society as being comprised of separate, non-hierarchical systems from which an individual can be excluded or included (Luhmann, 1995; Rapp & Corral-Granados, 2021). His work on education emphasised how education can be a transformative process which requires the participation of students to either accept or reject the information provided by the teacher (Mangez & Vanden Broeck, 2021). This information from the teacher is expressed and then understood by the receiver in Luhmann's understanding of communication (Vanderstraeten, 2000). Luhmann also discussed how forms of communication can be exclusionary (Rapp & Corral-Granados, 2021). Therefore, Luhmann's theories were selected for this study as they encompass the key aspects of the research question which are inclusion and communication.

One limitation of the use of Luhmann's systems theory (1995) is that the school environment has limited systems within which to examine inclusion and exclusion compared to the wider society. For example, in the surveys some participants implied that their student's time spent in special classes appeared to outweigh the time they were included into the mainstream classroom. This rendered an examination of the processes of inclusion and exclusion between social systems with peers without CCN more complicated. However, the findings of this study indicated that there are various systems at play within schools which may not be obvious at first glance. For example, across these findings there were students who were included in the academic or social system but not vice versa. Similarly, some peers were included in the broader school environment when using AAC, but less so in the classroom.

Therefore, there were still sufficient systems from which to examine the processes of inclusion and exclusion.

Dias Minhoto (2017) critiqued the paradox of these separate systems as their individual nature is dependent upon their difference to each other and to their environment. That is to say that in this study, the academic system from which students were excluded only constituted a different system due to student's different roles in social interactions or play situations. This very separate and individual aspect of examining systems does not allow for overlap in Luhmann's work (1995) which could limit a more holistic understanding of a child's position within their mainstream school. Furthermore, Luhmann's theories of education (Mangez & Vanden Broeck, 2021) emphasise adult-child communicative interactions as the child learns from their teacher. While adult-child interactions were of paramount importance to this study's findings, this theory places little emphasis on the impact of peer interactions. A further limitation lies in the fact that much information regarding Luhmann's work had to be derived from secondary sources and translations as his work was written originally in German. While care was taken to consult a variety of sources for this research, it would have been strengthened by the ability to read the original pieces of Luhmann's work.

Luhmann's theory of education denoted a reduced capacity to actually enforce change in an individual (Mangez & Vanden Broeck, 2021). This results in teachers educating students to become free, self-determining systems (Qvortrup, 2024). While this could be seen to limit the impact of the teacher on the child's development, with regards to AAC users, it actually aligns well with the findings of this study and therefore can be seen as a strength of this theoretical perspective. Here, it was clear that the teacher's influence on AAC learning was impacted by the child's motivation and skill to engage with their AAC, however learning to communicate through AAC was seen as a freeing experience for many students.

Examples of additional strengths of this theoretical framework include how the findings related to the impact of the child's needs on the inclusive activities selected by their teacher which exemplifies the complexities of causality emphasised by Luhmann (Qvortrup, 2024). Additionally, Luhmann's theories outlined how forms of communication can be exclusionary also (Rapp & Corral-Granados, 2021) and so allowing students access to AAC and multiple forms of communication can facilitate social inclusion. This theory of communication is also strengthened by the emphasis Luhmann placed on understanding in communication (Vanderstraeten, 2000). Other definitions of communication focus more on the transmission of information, however, Luhmann recognised that the understanding of information is essential to the process of communication (Vanderstraeten, 2000). This is important for students with CCN especially those who require their teachers to provide information through the medium of the AAC.

A further strength of this theoretical perspective lies in what Dias Minhoto (2017, p. 56) refers to as the theory's "unequivocal heuristic value to critically oriented social research." In this way, critically analysing how students placed in mainstream settings are actually included is considered an appropriate application of this theory. The case study methodology also lends itself to this systems theory as it allowed for multiple understandings of the same phenomenon to be examined (Luhmann & Buitendag, 2022), which was achieved with Larkin et al.'s multiperspectival IPA (2019). Finally, interpretations of Luhmann's work which discuss the continual process of inclusion and exclusion (Rapp & Corral-Granados, 2021) apply appropriately to the findings of this research that placement in a mainstream class is not the final product of inclusive education. This aligns with UNESCO's definition of inclusion also (2005).

Nevertheless, there are alternative theoretical perspectives which could have been applied to this study. For example, the emphasis on modelling signs to increase inclusion and

peer interaction is representative of Bandura's social learning theory (1977). Additionally, the importance placed on child development and individual characteristics demonstrates the relevance of theories of cognitive and psychosocial development on academic and play interactions (Erikson, 1963; Piaget, 1971). References to external systems of support such as online trainings, SLTs, policies, and television programmes are also applicable to Bronfenbrenner's ecological systems theory (1979). While these theories may have been applied to certain aspects of this research, Luhmann's various theories of society, inclusive education, and communication apply more cohesively to all aspects of the use of AAC in mainstream education in this study. The application of the work of one theorist as opposed to several was also beneficial in combining the two phases of this study and their accompanying analytical methodologies into cohesive overall findings.

4.5. Critical Review of the Present Study

Following a systematic literature review of the inclusion of AAC using students with their peers, this study examined the use of AAC in mainstream primary schools in Ireland. The AAC forms examined consisted of KWS, PECS and SGDs as outlined in the NCSE's communication recommendations (2020). This study's research design was a qualitative mixed-methods sequential design (Morse, 2010). Mixed-methods studies must demonstrate the clear reasoning behind the methodology (Younas et al., 2023). In this case, a qualitative design was selected due to the aforementioned importance of interpretations of inclusion (Krischler et al., 2019; Kruse & Dedering, 2018; Luhmann, & Buitendag, 2022). Employing two qualitative methodologies allowed for a comprehensive exploration of AAC use in inclusive settings. The purpose of the survey was to gather a general understanding of current practices in schools as well as some experiential information. The addition of the second phase of interviews was designed to further explore the experiential question as well as to supplement the practical information gained during phase one. Furthermore, the sequential design allowed for points

from the first phase to be discussed and expanded upon in the interviews. Reflexive forms of analysis were chosen in order to acknowledge and attempt to minimise subjectivity in research (Dodgson, 2019) while also emphasising the individual interpretative understanding of experiences (Braun & Clarke, 2019; Larkin et al., 2019; Smith et al., 2021).

Recruitment processes included directly contacting schools, social media posts, snowball sampling and convenience sampling. Both teachers and SNAs were selected which reflects recent findings that Irish pupils with SEN felt particularly supported by both teachers and SNAs in primary school (Rose & Shevlin, 2017). 17 participants responded to the survey, which was less than originally expected, and responses included some unanswered questions and incomplete responses. Three of the survey participants were interviewed as part of the case study. The research question was addressed through a number of key findings which led to implications for future practice and research.

4.5.1. Limitations

While this study was designed to fill a gap in the Irish research context, a lack of any data around AAC use in Irish schools made it difficult to know where to start in terms of design and recruitment. The use of an online survey allowed for data to be gathered efficiently, however, sending the surveys to schools meant that they were often subject to gatekeepers such as principals and school secretaries. Accessing populations through gatekeepers can be time consuming and impact on the sample who take part (Lindsay, 2005). Communicating through gatekeepers also prevents the opportunity for relationships to be established with potential participants (Wanat, 2008). Recruitment for the interviews required re-contacting schools through convenience sampling. While this recruitment method restricts generalisability (Jager et al., 2017), this was not the aim of this study due to the interpretivist lens (Abdul Rehman & Alharthi, 2016; Aliyu et al., 2014; Kumatongo & Muzata, 2021) and emphasis on unique

experiences (Smith et al., 2021). Nevertheless, difficulties with recruitment impacted on conducting the interviews, and resulted in participants from a school known to the researcher. This required further reflection throughout the data collection and analysis across both phases of the study. Unstructured reflective notes were written during the initial coding stage of the survey data and were revisited during the review of themes. Given the additional personal connections to the school used in the interviews, formal reflections were completed following each interview, with consideration given to the researcher's own views and feelings. These were reviewed after each stage of the IPA process and again during the multiperspectival analysis. Particular care was given when writing-up the findings to ensure that the data were true to the participant's experiences.

Furthermore, due to limitations with participant recruitment it was not possible to interview a sample of students using AAC. It was intended for young people to take part, however, no school initially elected to do so. It is possible that this was due to a lack of interest, a lack of eligible young people, the time of the academic year, or possibly the school gatekeepers. The issue of eligibility is an important one to consider. As discussed in the Review Paper, CCN are often associated with or influenced by other complex developmental, cognitive, or medical needs (Beukelman & Light, 2020). For inclusion in this study, participants must have been able to communicate independently and understand the information within the child-friendly information sheets as well as within the topics of the interview protocol in order to give their assent. It is possible therefore that some students with CCN in the education system may not have been able to participate given these parameters.

Ultimately the voice of the child was excluded, which is a limitation on the results (Luhmann & Buitendag, 2022; Taylor & Balandin, 2020). Additionally, despite the importance of child characteristics on the use of AAC (Donato et al., 2018; Pak et al., 2023), limited data were collected in this study regarding the AAC users. While this is not unusual in studies of

AAC use in schools (Finke et al., 2009; Sheehy & Budiyanto, 2014; Soto et al., 2001) it is a limitation on these results. There were several reasons for this choice. Firstly, there were confidentiality concerns regarding gathering unnecessary information related to children given that the research question focused on inclusive practices and staff experiences. Additionally, multiple staff who support a single child were permitted to take part and so quantitative data regarding child characteristics would have lacked clarity. Nevertheless, having statistics on AAC users in Irish schools would benefit future planning and support for inclusive education.

4.5.2. Strengths

This study provided insight into an under-researched area in the context of inclusive education in Ireland. Additionally, it allowed for the voices of staff to be heard in completing important work with regards to inclusion and communication of children with SEN. The use of a qualitative design was appropriate for the research question as it explored how a phenomenon takes place (Pettigrew & Roberts, 2006). The online survey allowed for quick and systematic dissemination and supported the anonymisation of data which protected participant and student confidentiality. The survey responses addressed the research question through an examination of both staff experiences and inclusive practices. The questions used in the survey and the responses noted in the thematic analysis had a strong basis in previous research with regards to the choice of learning activity and teaching strategies (Hymel & Katz, 2019), varied experiences of inclusion, and concerns with issues of specialist support, resources, and workload in relation to inclusive education (Warnes et al., 2022).

Interview questions were also selected based on the literature review. The interview schedule was semi-structured which allowed for more of the participant's views to be explored. Careful consideration was given to ensure clarity of questions, and open-ended questions were preferred to reduce leading practices. Brantlinger et al. (2005) outlined a number of aspects of

appraisal for interview studies. These are considered in terms of their application to this study in Table 4.1. Interviews provided a more nuanced and detailed personal account of participants' experiences, and a strength of the interviews was the willingness and openness with which participants discussed their feelings. Furthermore, the use of a fully mainstreamed case study compensated for the part mainstreaming applied to some of the survey participants by providing a detailed case of mainstream use of AAC. The multiperspectival analysis allowed for participants' responses to be viewed both as individuals and as a group working together (Larkin et al., 2019; Smith et al., 2021). Given the primary researcher's knowledge of the area, and previous experiences, reflexive forms of analysis were deemed suitable (Dodgson, 2019).

Table 4.1

Quality appraisal of the interview component of this study

Brantlinger et al. (2005, p.202) Quality Indicators for interview studies	How this point was addressed in this study
"Appropriate participants are selected (purposefully identified, effectively recruited, adequate number, representative of population of interest)."	Participants were part of the sample included in the surveys. There was a careful process of identification to find a suitable case study.
"Interview questions are reasonable (clearly worded, not leading, appropriate and sufficient for exploring domains of interest)."	Interview protocol consisted of open-ended questions around the central topics of inclusion and communication. The use of a semi-structured methodology allowed for further exploration of certain areas specific to the interviewee.
"Adequate mechanisms arc used to record and transcribe interviews."	Interviews were recorded using a digital voice recorder and transcribed manually. Recordings were listened to multiple times during the transcription process to ensure accuracy.
"Participants are represented sensitively and fairly in the report."	Participants were referred to by their role and the child was given a pseudonym. Reflexive notes were kept by the researcher during data analysis to ensure that personal feelings did not impact on the analysis or report.
"Sound measures are used to ensure confidentiality."	All personal and potentially identifiable information regarding participants and their school were removed from the transcripts.

4.5.3. Alternative Approaches

The primary alternative strategy would have been to conduct an entirely quantitative study. Firstly, Iacono et al. (2022) suggested that there is a need for a quantitative systematic review of AAC use in inclusive education focused on experimental studies. Furthermore, a

quantitative survey could have been employed in this study. This was not selected as it would have required a certain number of responses in order to obtain statistical relevance and would likely feature overlapping information as several staff members could respond with regards to the same child. In order to avoid this, more personal information would have needed to be gathered which would have jeopardised the confidentiality and rights of the participants and the children they support. Additionally, a quantitative approach would not have aligned with the personal and individual interpretations of inclusion and the cultural and systemic differences associated with inclusive education demonstrated through the epistemological and theoretical perspectives (Aliyu et al., 2014; Hughes & Sharrock, 1997; Luhmann, 1995; Luhmann, & Buitendag, 2022). Nevertheless, quantitative information on the application of AAC use to inclusion education would be a valuable asset for the Irish education system.

This study could have also broadened its scope in terms of the AAC types and populations included. For example, the study could have included other forms of AAC such as objects of reference or eye gaze technology. Additionally, parents, principals, or SLTs may have been included to examine a more systemic view of AAC use for children and young people. However, given the focus on addressing current educational practices to facilitate interactions with AAC, and research related to the importance of the school setting for AAC use (Anderson et al., 2011), it was decided to only address the views, experiences, and opinions of teachers and SNAs in schools. While the case study interviews focused on those working closest with the AAC user, their special education teacher or previous classroom teachers could have also provided a more thorough examination of the child's inclusion as they progressed through education.

Finally, this study excluded special schools in order to focus on the use of AAC in inclusive settings. Many children using AAC do so in specialised settings and there are likely peer interactions taking place there also. However, this study was designed to reflect the

national and international policies of inclusive education (EPSEN Act, 2004; UNESCO, 2016). Special classes were included due to the prevalence of their provision in Irish mainstream schools and their position as part of mainstream environments (Shevlin & Banks, 2021).

4.5.4 Ethical Considerations

This study was conducted within the ethical frameworks of MIREC and the PSI Code of Ethics (2019). As such, the study employed detailed information sheets and consent forms, and maintained an open and honest approach to data collection and analysis. All data were stored and managed anonymously and securely, and participants were reminded of their rights to withdraw across both phases of the study.

The primary ethical concerns were centred around the interviews. It had been intended for children to take part in these interviews and measures were developed to support their inclusion. Including young people in research is generally considered an important consideration (Taylor & Balandin, 2020) however, it proved an ethical issue due to the potential other needs beyond those of communication (Beukelman & Light, 2020). Strict eligibility criteria needed to be set to work around issues of cognitive awareness, assent, and proficiency with their AAC. Unfortunately, no children were volunteered for participation. Nevertheless, the case study would have been strengthened with the inclusion of the voice of the child as individuals perceive of their communication goals and competencies differently (Light & McNaughton, 2014). While the lack of the child's perspective was an ethical limitation, one of the ethical strengths of the interviews, lay in the way child confidentiality was managed. To ensure that the conversation was not concerned solely with the child and their characteristics, careful consideration was made in selecting questions. While this information may have helped understand findings in light of individual characteristics and needs (Donato et al., 2018; Beukelman & Light, 2020), not discussing the child in detail was important in order to protect

their confidentiality and anonymity as well as to focus the discussion on the use of AAC. Smith et al. (2021) also outlined the importance of maintaining confidentiality during case studies where participants are known to each other, and this was carefully considered to maintain confidentiality of data. Additionally, while the data in this study is anonymised and unidentifiable, there is the possibility that participants from the case study may read these findings and be able to identify their colleagues who also participated. For this reason, care was given to review the quotations used and only include those which referred to their fellow participants when they were strictly necessary.

4.6. Implications and Recommendations

This study's research question asked, *"How are students using AAC included in Irish mainstream primary schools?"* The findings indicate a wide variety of implications and recommendations for students, staff and wider systems of influence. Primary recommendations for various groups involved in using AAC in inclusive education are outlined in Table 4.2.

Table 4.2

Overview of Implications and Recommendations

Group	Primary Implications and Recommendations
AAC Users	Flexible use of AAC needed for different settings. Opportunities to interact with peers.
School Systems	Mixture of direct teaching and modelling for peers. Fun activities. Training on lesson planning with AAC for teachers. Protected time for upskilling for teachers and SNAs. Further training for SNAs. Sharing of responsibility amongst staff. Support for staff from school management. Whole-school approach to AAC. Prioritisation of AAC training from Department of Education.
Psychology	Further involvement of EPs. Application of Luhmann's theories.

Implications for AAC users: Firstly, findings demonstrate the need for students to access different forms of AAC or communicative support in different environments. Other studies have supported that idea that AAC users require multiple forms of AAC (Anderson et al., 2011; Biggs & Snodgrass, 2020; Walker & Chung, 2022) which forms part of a total communication approach (NCSE, 2020). In the surveys, it was clear that some forms of AAC, particularly aided forms such as SGDs were not easily suited to unstructured environments. From the interviews it became clear that for KWS, peers require adult facilitation however, it was implemented more successfully in less academic and more playful interactions. If students had flexible options for AAC in unstructured environments, it could support more spontaneous social interactions with peers, which is important as young people have rights associated with both academics and play (UN, 2006). Success has been seen recently with the implementation of communication boards in playgrounds (Finding Charlie's Voice, 2023), and with the Lámh

Project (2023), which encouraged the general population to learn signs. These procedures do not require the input of an SLT or a clinical team, and so schools may be encouraged and supported to develop strategies to increase whole-school awareness of communication boards or KWS so that the child is not limited by technological or environmental factors. Findings related to child proficiency with AAC also indicate that AAC users require further training in order to communicate effectively with others in their environment.

Furthermore, it is important to recognise that the implications made for schools and professionals will also impact on student's communication development and inclusion. Light and McNaughton (2014) discussed four environmental factors required to support the communicative competence of those who use AAC. These include policy, practice, attitude and knowledge. The findings of this study have been applied to these areas in Table 4.3.

Table 4.3

Application of Findings to Environment Supports (Light & McNaughton, 2014)

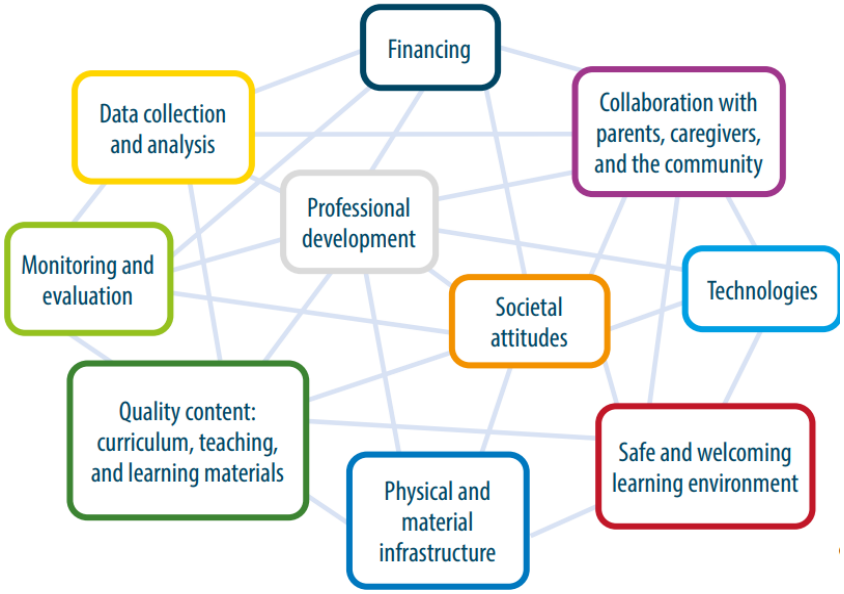
Supports outlined by Light and McNaughton, 2014	Application to the Irish context	Elements requiring further support
Policy - For inclusion - Against discrimination - For AAC funding - For UDL	EPSEN Act (2004) Education 2030 Framework for Action (UNESCO 2016) UN Declaration of the Rights of Persons with Disabilities (2006)	Funding for AAC training Policy of UDL
Practice - MDT delivery of AAC - Funding support - Accessible technologies	Role of SLTs Variety of AAC types available	Further support from SLTs and EPs Access to training Availability of AAC
Attitude - Advocacy and awareness - Communication opportunities - Appropriate expectations	Organisations such as the Lámh project and Finding Charlie's Voice Mainstream inclusion NCCA	Whole-school acceptance and awareness. More mainstream opportunities. Educational expectations and lesson adaptations.
Knowledge - Of funding and resources - Of AAC system	Training Television programmes Online resources Support from SLTs	Further training for staff and students.

Implications for school systems: It is noteworthy that the following implications for school systems relate to a number of UNESCO's key elements of inclusive education (2021) (see Figure 4.1). Firstly, regarding professional development, support systems must be implemented to enable staff to feel more confident in using and understanding AAC. Introducing basic AAC training during Initial Teacher Training would likely increase confidence and benefit staff as they emerge into an increasingly inclusive workforce. From the interviews, it was also clear that training should be supplemented by repeated exposure and practice. Across the surveys and interviews, findings indicated that teachers require additional

time and support for upskilling. The Department of Education and in-school management teams must therefore prioritise training and time to share knowledge amongst staff.

Figure 4.1

Indicators of inclusive education UNESCO, 2021, pg.4



However, the topic of training poses a noteworthy challenge for SNAs, as they require no formal training for their role. Standardised SNA training has been attempted in recent years with the Diploma in Inclusive School Support. Zhao et al. (2021) has outlined the history of confusion regarding the role of the SNA, which has contributed to the newly designated Inclusion Support Assistant role. The findings of this present study suggest that an AAC component would be beneficial in future SNA training for this role, which intends to focus more on inclusion. SNA interview participants also promoted the importance of repeated training, practice and exposure, and generally reported that these aspects were considered even more valuable to AAC implementation than basic training alone.

Not only should staff be exposed to information regarding AAC and receive some basic familiarity with AAC use, but teachers should also be taught how to adapt lessons and activities

to facilitate peer interactions, as participants of this case study suggested it was easier to integrate AAC into less academic lessons. Findings related to increasing peer interactions demonstrated that they generally respond well to fun or novel activities. For example, it was clear across both phases that peers enjoyed learning signs through watching television programmes and through songs. While these activities were not discussed in as great detail for those using PECS or SGDs, this finding aligned with staff's beliefs that students responded best to modelling and demonstration of AAC compared to direct teaching. Nevertheless, there was some benefit seen in direct training for peers, which aligned with results of the literature review (Bowles & Frizelle, 2016; Young et al., 2022). It is important when considering activities of this nature that care is given to include developmentally appropriate activities in order to encourage peer interest.

Participants of this study also indicated that a whole-school approach to learning AAC would be beneficial for the children and their inclusion in the school community. This may include whole-school training, posters, assemblies, and recognition of the benefits of AAC, which would potentially create a more welcoming environment overall for students with CCN. Regarding community supports, several participants of this study noted limited input from SLTs. There is a need for the Department of Education and SLTs to work together to ensure that children and staff are adequately supported in their use of AAC.

Implications for EPs: While the findings of this study were absent of any mention of EP intervention in this area, results provide support for the idea that EPs can play a larger role in supporting schools with students who have CCN (Sedgwick & Stothard, 2019; Vivash et al., 2018). This study's interview findings have demonstrated how CCN were inextricably linked to behavioural, emotional, and social needs. These are all clear domains of the EP's work. Advocating for training and guidance for staff will also be an essential role for EPs, as these studies have demonstrated that not only will training support staff, but that children also look

to their teachers and SNAs for help when interacting with AAC users. EPs can also play a role in developing opportunities for engagement when working in consultation with teachers. For example, EPs could advise strategies around adapting lessons and generating opportunities for interactions in their recommendations, report writing, and consultations. Further research which includes the voice of the child would be beneficial in this regard also.

Finally, regarding implications for the field of psychology, this research has further contributed to the application of Luhmann's systems theory (1995) to inclusive education and AAC by combining his theories of social systems and communication. Luhmann's theory of communication in education requires that information be understood, and so for many students with CCN an AAC intervention is necessary. This study also deepened the understanding of what educational inclusion for those with CCN actually means in Ireland today by giving a voice to staff conducting this work. For example, the case study highlighted the complexities of inclusion, and the differences that environmental and contextual factors can have on the inclusion of students with communicative differences. Findings also demonstrated that communication needs can rarely be seen in a vacuum and that decisions regarding including AAC users into mainstream classes often depend on other factors related to the child's development and environment, promoting a systemic way of viewing AAC use in inclusive settings.

4.7 Reflection

Reflecting on personal views, opinions, and life experiences is an important aspect of conducting research, especially in qualitative work (Brantlinger et al., 2005). Throughout the research process, reflexivity and personal notetaking have been emphasised and engaged with as part of both forms of data analysis (Braun & Clarke, 2019; Smith et al., 2021). This section begins with a reflection on the attempts made to conduct a rigorous study. Additionally, Olmos-

Vega et al. (2023) outline how reflections should include an examination of personal views, relationships, power dynamics, questioning of methodological choices, and their implications and contextual influence. These points are addressed in the following personal reflection.

4.7.1 Rigour

A number of authors have outlined essential elements of rigorous research. For example, Lincoln and Guba refer to the four key elements of credibility, confirmability, dependability, and transferability (1985). Credibility refers to the internal validity of the findings which was addressed with method triangulation whereby the two phases of data collection were compared, piloting of both phases, engagement in supervision, and member checking of general understanding by asking interview participants to review summaries. However, member checking was limited with regards to the surveys due to the anonymous data collection and by not having participants review themes derived from the analysis. The use of reflexive forms of analysis and explicit reference to all analytical steps undertaken support the confirmability of these findings. This detailed description of the data collection and analysis also reflects the dependability as defined by Lincoln and Guba (1985). However, this would have been further supported by having a second coder for the surveys and interview transcripts While the interpretative and qualitative nature of this study limits generalisability of findings, these same authors refer to transferability as the extent to which the findings can be applied to other contexts. The case study features a thick description of data surrounding the participants and setting however, further data could have been collected in this regard to provide additional contextual information of survey participants. This type of data collection was limited due to GDPR and confidentiality concerns. ,

In terms of the design and analysis Brantlinger et al. (2005) recommend a number of indicators which are outlined in Table 4.4 along with discussion of the use of these strategies

across this study. Overall, the study addressed these guidelines related to providing reflexive information, maintaining confidentiality, establishing connections with existing research, and transparently following the analytical guidelines of Braun & Clarke (2021), Larkin et al. (2019) and Smith et al. (2021).

Table 4.4

Quality Appraisal of the Design and Analysis of this Study

Brantlinger et al. (2005, p.202) Quality Indicators for Data Analysis	How this point was addressed in this study
"Results are sorted and coded in a systematic and meaningful way."	Following the analytical guidelines facilitated the coding and organisation of results.
"Sufficient rationale is provided for what was (or was not) included in the report."	All demographic findings from the surveys are discussed in the report. The analysis process for survey and interview themes is described in detail and examples of the process are outlined in the appendices also.
"Documentation of methods used to establish trustworthiness and credibility are clear."	The following are all techniques which Brantlinger et al. (2005) suggest with regards credibility. • Due to the within-subjects nature of the design, data could be triangulated between interviews and surveys to give an overall indication of responses to the research question. • Themes were examined to view those which were not in line with the overall findings. • Results were discussed collaboratively between the primary research and supervisor. • Careful notes of the analysis were kept. • Full quotations were provided throughout the results section.
"Reflection about researchers' personal position/perspectives are provided."	There is a brief reflection in the Empirical chapter and a more detailed reflection in this Critical Review paper. This was emphasised through two reflexive forms of analysis.
"Sound measures are used to ensure confidentiality."	All data were de-identified; personal data collected was kept to an absolute minimum based on the requirements of the study and pseudonyms were used.
"Connections are made with related research."	The discussion sections related the findings to existing literature.

Furthermore, with particular regards to IPA studies, Nizza et al. (2021) discussed four quality indicators. The first refers to a compelling narrative as told through participant quotations. Throughout the analysis section of this study, detailed quotations and extracts were selected in order to demonstrate the story of Susan's current inclusion according to the experiences of key staff. While not every quotation was possible to include, a selection were chosen to best illustrate the findings. The second point refers to the experiential account of staff. Due to the nature of the research question, an emphasis was placed on this area throughout the results. Nizza et al. (2021) also recommended that the analysis of the participants words be very careful. The analytical process was transparent and demonstrated close consideration of participants' words through the quotations and coding process which can be found in the appendices. The final point outlined in these guidelines refers to the idea of convergence and divergence which were examined and discussed in detail as the process of multiperspectival analysis was followed through issues of consensus, reciprocity, conflict, paths of meaning, and lines of argument (Larkin et al., 2019).

Overall, there were several attempts made across the design, data collection and analysis of this study to include quality indicators of qualitative studies. The study would have been strengthened by further member checks of the themes which were decided upon during the analysis and by having a second researcher code the initial data blindly before discussing codes together.

4.7.2 Personal Reflection

The following structured, personal reflection uses Bassot's Integrated Reflexive Cycle (2013) (see Figure 4.2).

Figure 4.2

Bassot's Integrated Reflective Cycle (2013).

Experience

Description, factors, reaction

Preparation

Changes for the future

Reflection on Action

Achievements, assumptions, feelings

Theory

Knowledge, learning

The experience: I think the factor that influenced the greatest positive effect on this thesis was my interest in the topic. Prior to the DECPsy, I had worked with children with CCN, and when I was introduced to AAC, I became instantly fascinated by it as I had seen how frustrating it was for the students I supported when they had no way to express themselves. I also worked with students with a variety of needs in mainstream schools and sometimes questioned the extent to which they were really included. Inclusion has always been a topic of keen interest to me. One of the primary reasons for the adoption of UNESCO's definition of inclusion (2005) in this piece of research was the holistic way it approached academic, social, and cultural inclusion in education. This is similar to how I personally view the complex and multi-faceted nature of inclusive education. These experiences and a personal passion for both AAC and inclusive education led me to this study. The research process was at times an emotional experience as the study elicited many strong emotions from participants. The three interview participants particularly expressed a wide range of emotions which demonstrated

how evocative a topic inclusion can be. I feel this is especially true of those supporting vulnerable students such as those with CCN (Beukelman & Light, 2020).

Reflection on Action: Conducting a study on a topic which had such a personal resonance for me had its strengths and challenges. On one hand, this encouraged me to continue to read new literature and update my knowledge of communication and inclusion. At times however, particularly when recruitment was slow, I experienced doubt about others' interest in the topic. I think the main turning point lay in reading participant responses as it was clear how important the topic was for them also. For this reason, choosing a qualitative methodology was beneficial in allowing me to see the real impact of AAC and inclusion in schools as I completed the project. The reflective forms of analysis I selected were beneficial also in allowing me to consider these responses alongside my own experiences and opinions (Braun & Clarke, 2021; Smith et al., 2021). Given my strong feelings around inclusion and my personal experiences with AAC, I also ensured that decisions made in the design of this study were evidence-based. For example, the systematic review findings demonstrated the important and complex role that special education classes attached to mainstream schools can have within inclusive education (Biggs & Snodgrass, 2020; Østvik et al., 2017;2018; Walker & Chung, 2022) and so after completing this review I considered it important to open my study up to staff working with students who have this dual enrolment. Furthermore, as previously discussed, my personal positionality was considered throughout the analytical process through the use of both unstructured and formal reflections.

Theory: This thesis has greatly broadened my understanding of several psychological concepts. Firstly, were Luhmann's systems theory (1995), Luhmann's theories related to communication (Rapp & Corral-Granados, 2021), and Luhmann's theories of education (Mangez & Vanden Broeck, 2021). This has added to my psychological knowledge and work as a trainee EP. The research process also furthered my understanding of CCN (Beukelman &

Light, 2020) and inclusion (Vetoniemi & Kärnä, 2021). The process of completing this research provided an insight not only into these conceptual topics but also into their practical applications and implications in education. With regards to AAC, I now further understand the importance not only of matching the AAC to the child (Pak et al., 20203) but also to their environment and to the people around them. Additionally, I found that considering Brantlinger et al.'s (2005) quality indicators was very helpful during critical reviews of research and when applying them to my own work. I was consciously aware of these throughout the design, analysis, and writing process which I feel benefited this piece of work.

Preparation: Through the process of completing this project I have learned to use established analytical tools such as RTA (Braun & Clarke, 2021) and multiperspectival IPA (Larkin et al., 2019; Smith et al., 2021). I have also learned that managing gatekeepers is essential in research (Lindsay, 2005; Wanat, 2008). Furthermore, I have developed further interview skills that will benefit any future research as well as my ability to listen to others and engage in questioning dialogue, which are essential competencies for an EP (British Psychological Society (BPS) 2019). Additionally, and importantly, this research has broadened my understanding of inclusion and inclusive education. This study has demonstrated to me that inclusion is a constant process that requires daily effort on the part of all members of a school community. This will be instrumental in my work as an EP as I support and implement national inclusion policies (EPSEN Act, 2004; NCSE 2019).

4.8. Future Research

This research has begun to fill a research gap, however further examinations of the use of AAC in Ireland are required. This may involve a nationally mandated survey from the Department of Education asking that all schools provide statistical information on the number of AAC users, the forms of AAC being used, as well as the setting (for example, if the child is

in a mainstream school and uses the AAC only in the special education classroom). Having this information would better prepare the education system for future planning, training, and resource allocation. Additionally, this study explored the use of AAC in primary schools. Future research should also examine AAC in post-primary inclusive education settings. Post-primary schools face a number of unique challenges, particularly with regards to social interaction and setting as students must move between classes with different groups of peers and different teachers throughout the day. As they are faced with a wider variety of school staff with naturally varying levels of experience and training, it would be important to investigate the role of adult mediators in these settings. There are also unique social and linguistic challenges associated with students who have CCN and are in adolescence (Smith, 2005). The findings of Kent-Walsh and Light (2003) further emphasised this issue of social communicative difficulties increasing with age.

It is highly recommended that future research also examines the opinions of the children who are supported by AAC themselves. This may require the need for different modes of participant recruitment or for different eligibility criteria. Finding ways to manage gatekeepers would be essential in this regard (Lindsay, 2005; Wanat, 2008). It would also require that researchers have sufficient training, knowledge and experience with AAC to conduct interviews through these modalities, and that the children themselves are proficient in their communication. For example, in the surveys of this research, many participants alluded to the student's initial learning stage of AAC and general lack of familiarity with the systems, which would have impeded their ability to take part in the interviews of this study.

4.9. Impact Statement

The aim of this study was to examine the ways in which students using AAC are included in Irish mainstream primary schools. Based on the findings of the literature review, it

was clear that the process of including AAC into schools is largely dependent upon adult mediation (Finke et al., 2009; Therrien et al., 2016; Walker & Chung, 2022). Therefore, this study examined the experiences and practices used by teachers and SNAs when working with students using AAC in mainstream schools. This study utilised two methods of data collection and analysis to address these questions. This included a survey and three semi-structured interviews forming a case study. The findings demonstrated that amongst this sample, staff experiences in attempting to include AAC users are often fraught with complex emotions, feelings of a lack of support, and intense time pressure. Adult mediation and modelling were found to be effective strategies in increasing peer interactions. A combination of structured conversations and novel, fun and seasonal activities were also found to be beneficial for peers. AAC users also require various modes of communication depending on the setting and activity.

This topic is of importance and relevance to the Irish education system as it aligns with the Department of Education's inclusive education polices (EPSEN Act, 2004; NCSE, 2019; NCSE, 2024) and international literature (UNESCO, 2016). This was the first study of its kind in the Republic of Ireland and adds to a small but growing number of studies examining AAC in this region. The findings demonstrate that there are many ways in which staff working to include those using AAC at primary level require further support. Results indicate the need for wider school support, peer support, dedicated training, time for developing skills and proficiency in AAC, and increased resources. Implications for students highlighted the importance of matching AAC and opportunities for peer interactions to their needs, developmental level, play skills, and interests. This study also lends evidence to the complication of defining inclusion by educational placement alone by demonstrating that inclusion for students with CCN must involve further intervention from adults in terms of supporting and facilitating social interactions. Through the application of Luhmann's systems theory (1995) this study demonstrated how schools are comprised of different systems

depending on activity, structure and type of educational provision and that students with CCN that use AAC can be included and excluded from these systems at the same time.

This work has therefore filled a gap in the Irish research context while also contributing to the greater body of work surrounding inclusive AAC use. These findings have been presented in April 2024 at the Educational Studies Association of Ireland Conference (ESAI). It is envisaged that further presentation and publication of these findings will take place in the future.

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Younas, A., Durante, A., & Fàbregues, S. (2023). Understanding the nature of and identifying and formulating “Research problems” in mixed methods research. *Journal of Mixed Methods Research*, https://doi.org/10.1177/15586898231191441

Young, A., Clendon, S., & Doell, E. (2023). Exploring augmentative and alternative communication use through collaborative planning and peer modelling: a descriptive case-study. *International Journal of Inclusive Education*, *27*(6), 755-770. https://doi.org/10.1080/13603116.2020.1867383

Zhao, Y., Rose, R., & Shevlin, M. (2021). Paraprofessional support in Irish schools: From special needs assistants to inclusion support assistants. *European Journal of Special Needs Education, 36*(2), 183-197. https://doi.org/10.1080/08856257.2021.1901371

Appendix A

Articles Excluded at Full Text Level.

Table A.1

Full Text articles examined and excluded with reasons

No.	Reference	Reason
1	Beck, A., Bock, S., Thompson, J., & Kosuwan, K. (2002). Influence of communicative competence and Augmentative and Alternative Communication technique on children's attitudes toward a peer who uses AAC. *Augmentative and Alternative Communication*, *18*(4), 217-227. https://doi.org/10.1080/07434610212331281301	Design
2	Beck, A., Fritz, H., Keller, A., & Dennis, M. (2000). Attitudes of school-aged children toward their peers who use augmentative and alternative communication. *Augmentative and Alternative Communication*, *16*(1), 13-26. https://doi.org/10.1080/07434610012331278874	Design
3	Biggs, E. E., Carter, E. W., & Gustafson, J. (2017). Efficacy of peer support arrangements to increase peer interaction and AAC use. *American Journal on Intellectual and Developmental Disabilities*, *122*(1), 25-48. https://doi.org/10.1352/1944-7558-122.1.25	Design
4	Blasko, S. L. (2016). *Evaluation of communication changes for high school students with severe developmental disabilities resulting from peer-mediated interventions.* University of Wisconsin.	Design
5	Chung, Y.-C. (2012). *Promoting peer interactions of students with severe disabilities who use speech-generating devices in general education classrooms. Research and Practice for Persons with Severe Disabilities, 38*(2), 94-109. https://doi.org/10.2511/027494813807714492	Design
6	Chung, Y.-C., & Douglas, K. H. (2015). A peer interaction package for students with autism spectrum disorders who use speech-generating devices. *Journal of Developmental and Physical Disabilities*, *27*(6), 831-849. https://doi.org/10.1007/s10882-015-9461-1	Design
7	Donato, C., Spencer, E., & Arthur-Kelly, M. (2018). A critical synthesis of barriers and facilitators to the use of AAC by children with autism spectrum disorder and their communication partners. *Augmentative and Alternative Communication*, *34*(3), 242-253. https://doi.org/10.1080/07434618.2018.1493141	Design
8	Ganz, J. B., Morin, K. L., Foster, M. J., Vannest, K. J., Genç Tosun, D., Gregori, E. V., & Gerow, S. L. (2017). High-technology augmentative and alternative communication for individuals with intellectual and developmental disabilities and complex communication needs: a meta-analysis. *Augmentative and Alternative Communication*, *33*(4), 224-238. https://doi.org/10.1080/07434618.2017.1373855	Design
9	Holyfield, C., Light, J., Drager, K., McNaughton, D., & Gormley, J. (2018). Effect of AAC partner training using video on peers' interpretation of the behaviors of presymbolic middle-schoolers with multiple disabilities*. *Augmentative and Alternative Communication*, *34*(4), 301-310. https://doi.org/10.1080/07434618.2018.1508306	Design
10	Hunt, P., Alwell, M., & Goetz, L. (1991). Interacting with peers through conversation turntaking with a communication book adaptation. *Augmentative and Alternative Communication*, *7*(2), 117-126. https://doi.org/10.1080/07434619112331275783	Design
11	Hyppa-Martin, J., Collins, D., Chen, M., Amundson, C., Timinski, K., & Mizuko, M. (2016). Comparing First Graders' Attitudes and Preferences Toward a Peer Using an iPad®-Based Speech-Generating Device and a Non-Electronic AAC System. *Augmentative and Alternative Communication*, *32*(2), 94-104. https://doi.org/10.3109/07434618.2016.1146332	Design

12	Kent-Walsh, J., Murza, K. A., Malani, M. D., & Binger, C. (2015). Effects of Communication Partner Instruction on the Communication of Individuals using AAC: A Meta-Analysis. *Augmentative and Alternative Communication*, *31*(4), 271-284. https://doi.org/10.3109/07434618.2015.1052153	Design
13	Lilienfeld, M., & Alant, E. (2002). Attitudes of children toward an unfamiliar peer using an AAC device with and without voice output. *Augmentative and Alternative Communication*, *18*(2), 91-101. https://doi.org/10.1080/07434610212331281191	Design
14	McCarthy, J., & Light, J. (2005). Attitudes toward Individuals Who Use Augmentative and Alternative Communication: Research Review. *Augmentative and Alternative Communication*, *21*(1), 41-55. https://doi.org/10.1080/07434610410001699753	Design
15	Ohna, S. E. (2005). Researching classroom processes of inclusion and exclusion. *European Journal of Special Needs Education*, *20*(2), 167-178. https://doi.org/10.1080/08856250500055651	Design
16	Radici, E., Heboyan, V., Mantovani, F., & De Leo, G. (2022). Attitudes and Perceived Communicative Competence: The Impact of Different AAC Means of Communication among Italian Teenagers. *International Journal of Disability, Development and Education*, *69*(3), 976-986. https://doi.org/10.1080/1034912X.2020.1740185	Design
17	Raghavendra, P., Olsson, C., Sampson, J., McInerney, R., & Connell, T. (2012). School participation and social networks of children with complex communication needs, physical disabilities, and typically developing peers. *AAC: Augmentative and Alternative Communication*, *28*(1), 33-43. https://doi.org/10.3109/07434618.2011.653604	Design
18	Strasberger, S. K., & Ferreri, S. J. (2014). The effects of peer assisted communication application training on the communicative and social behaviors of children with autism. *Journal of Developmental and Physical Disabilities*, *26*(5), 513-526. https://doi.org/10.1007/s10882-013-9358-9	Design
19	Trottier, N., Kamp, L., & Mirenda, P. (2011). Effects of Peer-Mediated Instruction to Teach Use of Speech-Generating Devices to Students with Autism in Social Game Routines. *Augmentative and Alternative Communication*, *27*(1), 26-39. https://doi.org/10.3109/07434618.2010.546810	Design
20	Beck, A., & Dennis, M. (1996). Attitudes of children toward a similar-aged child who uses augmentative communication. *Augmentative and Alternative Communication*, *12*(2), 78-87. https://doi.org/10.1080/07434619612331277528	No Access
21	Blockberger, S., Armstrong, R., O'Connor, A., & Freeman, R. (1993). Children's attitudes toward a nonspeaking child using various augmentative and alternative communication techniques. *Augmentative and Alternative Communication*, *9*(4), 243-250. https://doi.org/10.1080/07434619312331276661	No Access
22	Buzolich, M. J., & Lunger, J. (1995). Empowering system users in peer training. *Augmentative and Alternative Communication*, *11*(1), 37-48. https://doi.org/10.1080/07434619512331277129	No Access
23	de Fátima Cunha, M., & Nunes, L. (2000). AAC: A Path to the Inclusive Education. *Conference Proceedings: International Society for Augmentative & Alternative Communication*, 1-2.	No Access
24	Kramlich, C. (2012). Perspectives From General Education Teachers, Students and Their Parents: Including Students with Robust Communication Devices in General Education Classrooms. *Perspectives on Augmentative & Alternative Communication*, *21*(3), 105-114.	No Access
25	Locke, P. A., & Mirenda, P. (1992). Roles and responsibilities of special education teachers serving on teams delivering AAC services. *Augmentative and Alternative Communication*, *8*(3), 200-214. https://doi.org/10.1080/07434619212331276193	No Access

26	Salehomoum, M. (2020). Inclusion of Signing Deaf or Hard-of-Hearing Students: Factors That Facilitate Versus Challenge Access and Participation. *Perspectives of the ASHA Special Interest Groups*, *5*(4), 971-983. https://doi.org/10.1044/2020_PERSP-19-00124	No Access
27	Torigoe, T. (2012). Review of research on inclusive practices for children who are deaf or hard of hearing. *Japanese Journal of Special Education*, *50*(1), 87-96. https://doi.org/10.6033/tokkyou.50.87	No Access
28	Andzik, N. R., Chung, Y.-C., & Kranak, M. P. (2016). Communication Opportunities for Elementary School Students who use Augmentative and Alternative Communication. *Augmentative and Alternative Communication*, *32*(4), 272-281. https://doi.org/10.1080/07434618.2016.1241299	Outcomes
29	Barbosa, R. T. d. A., de Oliveira, A. S. B., de Lima Antão, J. Y. F., Crocetta, T. B., Guarnieri, R., Antunes, T. P. C., Arab, C., Massetti, T., Bezerra, I. M. P., de Mello Monteiro, C. B., & de Abreu, L. C. (2018). Augmentative and alternative communication in children with Down's syndrome: a systematic review. *BMC Pediatrics*, *18*(1). https://doi.org/10.1186/s12887-018-1144-5	Outcomes
30	Beck, A. R., Bock, S., Thompson, J. R., Bowman, L., & Robbins, S. (2006). Is awesome really awesome? How the inclusion of informal terms on an AAC device influences children's attitudes toward peers who use AAC. *Research in Developmental Disabilities*, *27*(1), 56-69. https://doi.org/10.1016/j.ridd.2004.11.013	Outcomes
31	Chung, Y.-C., & Stoner, J. B. (2016). A meta-synthesis of team members' voices: what we need and what we do to support students who use AAC. *Augmentative and Alternative Communication*, *32*(3), 175-186. https://doi.org/10.1080/07434618.2016.1213766	Outcomes
32	Clarke, M., Bloch, S., & Wilkinson, R. . (2013). Speaker transfer in children's peer conversation: Completing communication-aid-mediated contributions. *Augmentative and Alternative Communication,*, *29*(1). https://doi.org/https://doi.org/10.3109/07434618.2013.767490	Outcomes
33	Joginder Singh, S., Diong, Z. Z., & Mustaffa Kamal, R. (2020). Malaysian teachers' experience using augmentative and alternative communication with students. *Augmentative and Alternative Communication*, *36*(2), 107-117. https://doi.org/10.1080/07434618.2020.1785547	Outcomes
34	Lilienfeld, M., & Alant, E. (2005). The social interaction of an adolescent who uses AAC: The evaluation of a peer-training program. *Augmentative and Alternative Communication*, *21*(4), 278-294. https://doi.org/10.1080/07434610500103467	Outcomes
35	Logan, K., Iacono, T., & Trembath, D. (2017). A systematic review of research into aided AAC to increase social-communication functions in children with autism spectrum disorder. *Augmentative and Alternative Communication*, *33*(1), 51-64. https://doi.org/10.1080/07434618.2016.1267795	Outcomes
36	Shaw, J., & Jamieson, J. R. (1997). Patterns of classroom discourse in an integrated, interpreted elementary school setting. *American Annals of the Deaf*, *142*, 40-47. https://doi.org/10.1353/aad.2012.0241	Outcomes
37	Stoner, J. B., Angell, M. E., & Bailey, R. L. (2010). Implementing Augmentative and Alternative Communication in Inclusive Educational Settings: A Case Study. *AAC: Augmentative & Alternative Communication*, *26*(2), 122-135. https://doi.org/10.3109/07434618.2010.481092	Outcomes
38	von Tetzchner, S., Launonen, K., Batorowicz, B., Nunes, L. R. d. O. d. P., Walter, C. C. d. F., Oxley, J., Massaro, M., Stadskleiv, K., Yang, C.-K., & Deliberato, D. (2018). Communication aid provision and use among children and adolescents developing aided communication: an international survey. *Augmentative and Alternative Communication*, *34*(1), 79-91. https://doi.org/10.1080/07434618.2017.1422019	Outcomes
39	Yun-Ching, C., Carter, E. W., & Sisco, L. G. (2012). Social Interactions of Students with Disabilities Who Use Augmentative and Alternative Communication in Inclusive Classrooms. *Interactions sociales des élèves présentant une déficience intellectuelle ou un trouble*	Outcomes

	du spectre autistique qui utilisent la communication améliorée et alternative dans les classes d'intégration., *117*(5), 349-367. https://doi.org/10.1352/1944-7558-117.5.349	
40	Holyfield, C., Drager, K. D. R., Kremkow, J. M. D., & Light, J. (2017). Systematic review of AAC intervention research for adolescents and adults with autism spectrum disorder. *Augmentative and Alternative Communication*, *33*(4), 201-212. https://doi.org/10.1080/07434618.2017.1370495	Population
41	McCall, F., & Moodie, E. (1998). Training staff to support AAC users in Scotland: current status and needs. *Augmentative and Alternative Communication*, *14*(4), 228-238. https://doi.org/10.1080/07434619812331278406	Population
42	Iacono, T., Goldbart, J., Douglas, S. N., & Garcia-Melgar, A. (2022). A scoping review and appraisal of aac research in inclusive school settings. *Journal of Developmental and Physical Disabilities*. https://doi.org/10.1007/s10882-022-09835-y	Review
43	Therrien, M. C. S., Barton-Hulsey, A., & Wong, S. (2022). A scoping review of the playground experiences of children with AAC needs. *AAC: Augmentative and Alternative Communication*, *38*(4), 245-255. https://doi.org/10.1080/07434618.2022.2155874	Review
44	Therrien, M. C. S., Light, J., & Pope, L. (2016). Systematic Review of the Effects of Interventions to Promote Peer Interactions for Children who use Aided AAC. *Augmentative and Alternative Communication*, *32*(2), 81-93. https://doi.org/10.3109/07434618.2016.1146331	Review
45	Batorowicz, B., Stadskleiv, K., von Tetzchner, S., & Missiuna, C. (2016). Children Who Use Communication Aids Instructing Peer and Adult Partners During Play-Based Activity. *Augmentative and Alternative Communication*, *32*(2), 105-119. https://doi.org/10.3109/07434618.2016.1160150	Setting
46	Bowen, S. K. (2008). Coenrollment for Students Who Are Deaf or Hard of Hearing: Friendship Patterns and Social Interactions. *American Annals of the Deaf*, *153*(3), 285-293. https://doi.org/10.1353/aad.0.0052	Setting
47	Thirumanickam, A., Raghavendra, P., & Olsson, C. (2011). Participation and Social Networks of School-Age Children with Complex Communication Needs: A Descriptive Study. *Augmentative and Alternative Communication*, *27*(3), 195-204. https://doi.org/10.3109/07434618.2011.610818	Setting
48	Ormel, E., Kerkhoff, A., Baker, M., & van der Aa, B. (2023). Introduzindo a educação regular bilíngue bimodal inclusiva na Holanda usando as melhores práticas da Austrália. *Introducing inclusive bimodal bilingual mainstream education in the Netherlands using best practices from Australia.*, *48*(93), 9-24. https://doi.org/10.17058/signo.v48i92.18809	Design
49	Kleinert, H. L., Kearns, J., Land, L.-A., Page, J. L., & Kleinert, J. O. R. (2023). Peer-Assisted Aided AAC Modeling for Students with Complex Communication Needs. *Teaching Exceptional Children*, *55*(4), 268-277. https://doi.org/10.1177/00400599221122871	Design
50	Ibrahim, S., Clarke, M., Vasalou, A. & Bezemer, J. (2023) Common ground in AAC: how children who use AAC and teaching staff shape interaction in the multimodal classroom, *Augmentative and Alternative Communication, 40*(2), 74–85. https://doi.org/10.1080/07434618.2023.2283853	Outcomes

Appendix B

Overview of Included Studies.

Table B.1.
Overview of Included Studies

No.	Author	Population	Design	AAC Type	Setting	Inclusion Strategies	Outcomes
1	Young et al., 2023	1 male with ASD Teacher Class teacher aide 24 peers (aged 8-9)	Case study including teacher interviews, observations, peer training for intervention sessions, and data from the AAC systems.	SGD – iPads using the same app ('Speak for Yourself') used by peers during the study.	Primary school (New Zealand)	In a peer-trained news-sharing activity in the classroom.	Increased engagement by child with communicative needs, and spontaneous responses to peers' comments. Increased teacher confidence with the SGD device.
2	Mukuna & Maizere (2022)	5 participants (all deaf or hard of hearing), aged 13-14 (2 male and 3 female)	Qualitative interviews – open-ended questions.	Sign language	Mainstream primary school (Zimbabwe), students attended a class for those who were deaf/hard of hearing.	Some incidences of friendships but no activities described.	Friendships appeared to be segregated by communication mode and students reported feeling left out of mainstream students' games and sports.
3	Walker & Chung (2022)	5 participants (4 male with autism, 1 female with intellectual disability), age 5-9 2 teachers (female) Speech and language therapists	Case study consisting of observations and interviews (both informal and semi-structured).	SGDs Sign language, Picture Communication Books	Special education class in mainstream primary school with some mainstream integration. (USA)	Focus on adult understanding of and responding to requests.	Observations highlighted that social interactions were generally with adults rather than peers.
4	Biggs & Snodgrass (2020)	19 peers (18 female, 1 male, aged 8-11of children with autism,	Qualitative consisting of semi-structured	All using aided forms of AAC. Gestures,	Students attended special and mainstream	Activities such as proximity and	Examples of how friendships can be defined include by

		down syndrome or intellectual disability using AAC	interviews with peer participants.	SGDs, Communication books.	education to various degrees across two different primary schools. (USA)	repeated engagement.	proximity, affinity, repeated engagement, and communication.
5	Østvik et al. (2018)	7 children (aged 6-10) (3 male, 4 female) and 10 peers (4 male, 6 female), 6 parents, and 18 school staff (class teachers, special teachers, assistants, and activity therapists).	Qualitative Interview groups with AAC users, peer students, parents, and staff. Semi-structured interviews.	Communication books/boards, SGDs, Signs	Of the peers, 7 were from the same class, and 3 were from special education classrooms across 6 mainstream schools. (Norway)	Mentioned interactions include greetings, games, class parties, and play at break times.	Children with AAC noted clear interest in other students. Peers noted positive qualities about students who use AAC.
6	Østvik et al. (2017)	7 children (aged 6-10) (3 male, 4 female) and 10 peers (4 male, 6 female), 6 parents, and 18 school staff (class teachers, special teachers, assistants, and activity therapists).	Qualitative semi-structured interviews with all participants (AAC users, peer students, parents, and staff).	Communication books/boards, SGDs, Signs	Of the peers, 7 were from the same class, and 3 were from special education classrooms across 6 mainstream schools. (Norway)	Visiting mainstream classes, play, practical activities, lunch, and yard.	Staff observed that the child using AAC was a 'guest' in mainstream. Interactions between those with and without AAC were brief, and students using AAC were often observed to be alone.
7	Bowles & Frizelle (2016)	8 peers (age 6.3-8.5 years, of 2 children with Down Syndrome (ages 6 and 7, both with moderate learning disabilities).	Qualitative semi-structured interviews.	Key word signing	Two mainstream primary schools. (Ireland)	Learning signs in lessons, playground interactions.	Peers valued key word signing although there were some reports that forming and remembering the signs was challenging.

8	Sheehy & Budiyanto (2014)	69 teachers were surveyed. Interview participants were 20 teachers (16 female, 4 male)	Mixed methods: Qualitative interviews and a quantitative questionnaire	Signing	Mainstream schools (71% of survey participants, 100% interview participants) (Indonesia)	Signs used during teaching	Interview results noted issues around stigmatisation.
9	Anderson et al. (2011)	6 peers (3 male and three female, aged 7-14) of 3 children with CCN.	Qualitative – interviews (conducted 6 months apart)	SGDs. Reference to sign language also	3 mainstream schools. Of the three children with disabilities, 2 were mainstreamed fully and one integrated for part of the school day. (Australia)	Proximity, Natural classroom interactions, Buddy Programme, conversations around shared interests, engagement in shared pastimes.	Improvements in communication skills. Awareness of differences. Friendships were overall considered to be fun and rewarding.
10	Finke et al. (2009)	5 female teachers aged 26-35	Qualitative – online focus group over a period of 15 weeks	PECS Sign language SGDs	Primary school, general education classrooms. Some students were fully included while other integrated for certain subjects only. (USA)	Group work, modified lesson plans.	Benefits for students using AAC and their peers included, increased social opportunities, peer engagement with AAC, changes in teacher perception of inclusion.
11	Kent-Walsh & Light (2003)	11 general education teachers Age range 33-58 of 11 students age range 6-17	Qualitative semi-structured interviews.	Signs, SGDs	Mainstream classes. (USA)	Adapting lessons and goals.	Inclusive education was seen to increase some peer interactions while also leading to a certain level of social exclusion.

12	Soto et al. (2001)	7 (female) integration support teachers, 6 (5 female, 1 male) classroom teachers, 6 (female) instructional assistants, (parents and SLTs).	Qualitative -5 focus groups meetings (participants attended one group each).	Low and high tech AAC.	Full time inclusion programmes in schools. (USA)	Peer awareness Interactions outside of school. Interaction without adult intervention. Peer recommendations of vocabulary.	Training and support contributed to successful interactions. Inclusion viewed positively with barriers related to technological limitations.

Appendix C

WOE A Summary and Appraisal

Table C.1.
Summary of WoE A ratings

Study	WOE A Rating
Soto et al. (2001)	High
Kent-Walsh & Light (2003)	High
Finke et al. (2009)	High
Anderson et al. (2011)	High
Bowles & Frizelle (2016)	High
Sheehy & Budiyanto (2014)	Medium
Østvik et al. (2017)	Medium
Østvik et al. (2018)	Medium
Biggs & Snodgrass (2020)	Medium
Walker & Chung (2022)	Medium
Young et al. (2022)	Medium
Mukuna and Maizere (2022)	Low

Table C.2.

WoE A: Appraisal for Qualitative Designs

Quality Indicators outlined by Brantlinger et al. (2005) pg. 202	Soto et al. (2001)	Kent-Walsh & Light (2003)	Finke et al. (2009)	Anders-on et al. (2011)	Sheehy & Budiyanto (2014)	Bowles & Frizelle (2016)	Østvik et al. (2017)	Østvik et al. (2018)	Biggs & Snodgrass (2020)	Walker & Chung (2022)	Mukuna & Maizere (2022)	Young et al. (2023)
Interview Studies (or Interview Components of Comprehensive Studies												
"Appropriate participants are selected (purposefully identified, effectively recruited, adequate number, representative of population of interest)."	Y	Y	Y Online focus group	Y	Y	Unclear	Y	Y	Unclear	Y	Y	Unclear
"Interview questions are reasonable (clearly worded, not leading, appropriate and sufficient for exploring domains of interest)."	Y	Y	Y	Y	Y	Y	Unknown	Unknown	Y	Y	Unknown	Unclear
"Adequate mechanisms are used to record and transcribe interviews."	Y	Y	N/A	Y	Y	Y	Y	Unclear	Y	Unclear	N	Unknown
"Participants are represented sensitively	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

and fairly in the report."												
"Sound measures are used to ensure confidentiality."	Unknown	Unknown	Y	Y	Unknown	Y	Unclear	Y	Y	Unclear	Y	Y
Observation Studies or Observation Components of Comprehensive Studies												
"Appropriate setting(s) and/or people are selected for observation."	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Y	Mention only	Y	Y Mention but no detail	Y
"Sufficient time is sent in the field (number and duration of observations, study time span)."	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	Unknown	Y	Unknown	Y
"Researcher fits into the site (accepted, respected, unobtrusive)."	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Y
"Research has minimal impact on setting (except for action research, which is purposely designed to have an impact)."	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unclear	Unknown	N/A

"Field notes systematically collected (videotaped, audiotaped, written during or soon after observation)."	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	Unknown	Y	Unknown	Y
"Sound measures are used to ensure confidentiality of participants and settings"	N/A	N/A	N/A	N/A	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Document Analysis												
"Meaningful documents (texts, artifacts, objects, pictures) are found and their relevance is established."	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unclear
"Documents are obtained and stored in a careful manner."	N/A	N/A	N/A?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown
"Documents are sufficiently described and cited."	N/A	N/A	N/A?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown

"Sound measures are used to ensure confidentiality of private documents."	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unknown
Data Analysis												
"Results are sorted and coded in a systematic and meaningful way."	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
"Sufficient rationale is provided for what was (or was not) included in the report."	Unclear	Unclear	Unclear	Unclear	N	Unclear	Unclear	Unclear	Unknown	Y	Y	Unknown
"Documentation of methods used to establish trustworthiness and credibility are clear."	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Unclear	Y
"Reflection about researcher's personal position/perspectives are provided."	N	N	N	N	N	Y	N	N	Y	Y	N	Y
"Conclusions are substantiated by sufficient quotations from participants, field	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

notes of observations, and evidence of documentation inspection”												
“Connections are made with relevant research.”	Y (not many)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	High	High	High	High	Medium	High	Medium	Medium	Medium	Medium	Low	Medium

Appendix D

WOE B

Table D.1

Weight of Evidence B: Appropriateness of Design Ratings and Criteria (From Pettigrew and Roberts (2006).

High = 3	Medium = 2	Low = 1
Qualitative Research	Surveys	Experimental research

Table D.2

Weight of Evidence B Ratings for Included Studies	
Soto et al. (2001)	3
Kent-Walsh & Light (2003)	3
Finke et al. (2009)	3
Anderson et al. (2011)	3
Sheehy & Budiyanto (2014)	3 and 2
Bowles & Frizelle (2016)	3
Østvik et al. (2017)	3
Østvik et al. (2018)	3
Biggs & Snodgrass (2020)	3
Walker & Chung (2022)	3
Mukuna & Maizere (2022)	3
Young et al. (2023)	3 and 1

Note: 3 = High, 2 = Medium, 1 = Low

Appendix E

WOE C

Table E.1

WoE C: Criteria and Rationale

Criteria	WOE C Description and Rating	Rationale
1. Context	3 = Studies that took place in Ireland 2 = Studies from the UK 1 = Studies from elsewhere	This research is most concerned with the landscape of peer mediated AAC use in the Irish context. The United Kingdom has a similar political and educative context with which to compare studies.
2. Age of study	3 = Since 2016 2 = Since 2006 1 = Pre-2006	Given the changes in legislation related to inclusive education, more recent studies are considered more relevant to this review.
3. Inclusive Activities	3 = Inclusive strategies described in detail 2 = Some discussion on strategies used 1 = little to no discussion on how inclusion is attained	This review is focused on how children and young people are included and so more detail on inclusive procedures is beneficial in answering the research question.

Table E.2

Weight of Evidence C Ratings

Study	Criteria 1	Criteria 2	Criteria 3	Mean WoE C Score
Soto et al. (2001)	1	1	2	1.33 (low)
Kent-Walsh & Light (2003)	1	1	1	1 (low)
Finke et al. (2009)	1	2	2	1.66 (medium)
Anderson et al. (2011)	1	2	3	2 (medium)
Sheehy & Budiyanto (2014)	1	2	1	1.33 (low)
Bowles & Frizelle (2016)	3	3	2	2.66 (high)
Østvik et al. (2017)	1	3	3	2.33 (medium)
Østvik et al. (2018)	1	3	3	2.33 (medium)
Biggs & Snodgrass (2020)	1	3	2	2 (medium)
Walker & Chung (2022)	1	3	1	1.66 (medium)
Mukuna & Maizere (2022	1	3	1	1.66 (medium)
Young et al. (2023)	1	3	3	2.33(medium)

Note: scores above 2.5 are considered 'high' and between 1.5 and 2.4 are denoted as 'medium', lower than 1.5 would be 'low' quality.

Appendix F

Survey Information Sheet

Title: Augmentative and Alternative Communication (AAC) in Irish Mainstream Primary Schools: Staff Experiences and Inclusive Practices.

Survey Information Sheet

What is the project about?

Augmentative and alternative communication (AAC) refers to different means by which some people communicate. This may include sign language, Lámh, Picture Exchange Communication Systems (PECS) and Speech Generating Devices (SGDs) amongst others. Children with communication differences are becoming integrated more into mainstream schools and this study aims to examine the experiences of those staff and students.

Who is undertaking it?

My name is_____. I am a postgraduate student on the Professional Doctorate in Educational and Child Psychology programme. This course operates through the Department of Educational Psychology, Inclusive and Special Education in Mary Immaculate College, Limerick. My supervisor is _____. This project is part of my thesis.

Why is it being undertaken?

This study is being undertaken to gain a greater understanding of how children using AAC are included in the classroom. This survey will focus on how staff (teachers and special needs assistants) view the use of AAC in mainstream classes and the role of AAC in inclusive classrooms.

What are the benefits of this research?

Taking part in this research would help to gather information on an area which is currently under researched in Ireland. It is hoped that your contribution would help educational psychologists to better understand the supports and training needed to ensure that all children are included with their class.

What are the risks of this research?

There are minimal risks involved in taking part in the survey. Responses are completely anonymous, and participation is voluntary. If you find any of the topics or questions upsetting can withdraw and resources of supports available to you will be provided.

What is involved for you as a participant?

You are asked to complete a short survey. Before this, you will be asked to agree to participate on the consent form. The first questions of the survey, require you to tick boxes for your responses and then additional questions have space for longer responses. You are free to answer with as much detail as you choose. The survey will take approximately 15 minutes to complete on average.

Right to withdraw

Participation in this study is voluntary. You have the right to withdraw at any time before you click 'submit' at the end of the survey.

How will your data be used?

Your responses will be collected on Qualtrics and then downloaded to be analysed using reflexive thematic analysis. Your answers will be compared to those of other staff members across the country. Direct quotations will be used in the final thesis and subsequent publication/ presentations at conferences. These will all be anonymised and de-identified. Your data may be stored securely for an indefinite period according to the MIC Record Retention Schedule.

Confidentiality

Your survey will be treated anonymously. Your IP address will not be collected on Qualtrics. You are asked not to write your name or any identifying details about your school or students on the survey.

Student Interviews

The second part of this study will involve interviews If you are interested in learning more about the interviews then please send an email to _____ for further information.

If you have any further questions you can contact:

This research study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC) (REFERENCE NUMBER). If you have any concerns about this study and wish to contact an independent authority, you may contact:

MIREC Administrator, Mary Immaculate College, Limerick.

The following services are available to you if you found any part of this study to be distressing.

Samaritans http://www.samaritans.ie

GROW tel:1890474474 https://grow.ie/getting-help

Appendix G

Survey Consent Form

Title: Augmentative and Alternative Communication (AAC) in Irish Mainstream Primary Schools: Staff Experiences and Inclusive Practices.

Consent Form for Survey Participants

	Yes	No
I confirm that I have read and understood the information provided in the Information Sheet	☐	☐
I understand that my participation is voluntary and that I have the right to withdraw at any time	☐	☐
I understand that my answers will be kept anonymous	☐	☐
I consent to the use of my data for the purpose of this research thesis and publication/presentation	☐	☐
I confirm that I am over 18 years of age	☐	☐
I agree to take part in this study	☐	☐

Appendix H

Survey Questions

1. What is your current role in your school?
    - Teacher
    - Special Needs Assistant
2. Do you currently work directly with a child using Augmentative and Alternative Communication (AAC)?
    - Yes
    - No

    If yes, please specify which type(s)

3. Does the student also use spoken language to communicate?
4. In what settings is the AAC used most during the day?
5. In what settings is the AAC used least during the day?
6. How is the AAC used in lessons?
7. Training in AAC can be done formally or informally (informal training refers to information gathered casually from fellow staff, pupils, parents, etc.)

    Have you received formal training in using the AAC?

    - Yes (please give details)
    - No

    Have you received informal training in using the AAC?

    - Yes (please give details)
    - No

    Do you think training is important for using AAC?

    - Yes
    - No

    Comment:

8. Children using AAC may do so to communicate functionally, or socially. Social interactions might be initiated by the child, their peers, or prompted by other adults. Please describe the nature of the interactions with the AAC.

9. Please describe any training, formal or informal that your students have received.
10. What supports peer interaction with AAC? (For example, child training, staff training, school policy etc.)
11. Have you noticed any positive outcomes to peer engagement with AAC?
12. Have you noticed any negative outcomes to peer engagement with AAC?
13. What are the barriers to peer interaction with AAC?

Appendix I

Interview Information Sheet

Title: Augmentative and Alternative Communication (AAC) in Irish Mainstream Primary Schools: Staff Experiences and Inclusive Practices.

Interview Information Sheet for Staff

What is the project about?

Augmentative and alternative communication (AAC) refers to different means by which some people communicate. This may include sign language, Lámh, Picture Exchange Communication Systems (PECS) and Speech Generating Devices (SGDs) amongst others. Children with communication differences are becoming integrated more into mainstream schools and this study aims to examine the experiences of those staff and students.

Who is undertaking it?

My name is _____. I am a postgraduate student on the Professional Doctorate in Educational and Child Psychology programme. This course operates through the Department of Educational Psychology, Inclusive and Special Education in Mary Immaculate College, Limerick. My supervisor is _____. This project is part of my thesis.

Why is it being undertaken?

This study is being undertaken to gain a greater understanding of how children using AAC are included in the classroom. The first part of this study involved an online survey of staff. This second part involves a case study of a class. Interviews will be conducted with the teacher/special needs assistant, the child who uses AAC and their peers. These interviews will focus on how staff and students view the use of AAC in mainstream classes. **In the event that no child is eligible to take part, staff alone will be interviewed.**

Who can take part?

Any mainstream class (from 4th class upwards) where a child is using AAC can take part. If you are interested in nominating your class, we ask that you please share the parent/guardian information sheet with your students. The child who uses AAC must be able to read and understand the consent form and they must be able to understand verbal questions. If they use an SGD, they must type their answers independently. If they communicate solely through signing, then a member of staff will need to be comfortable translating their signs. They will also be free to respond verbally if they wish. Please consider these criteria carefully before submitting your interest.

As part of the case study, we will need to interview:

- The child who uses AAC
- At least one of their peers
- At least one adult in the class

Alternatively, staff who are interested in taking part may do so if their students do not meet these eligibility criteria. In this case, no children (AAC users or their peers) will be interviewed. Interview participants may include teachers or special needs assistants only.

What are the benefits of this research?

Taking part in this research would help to gather information on an area which is currently under researched in Ireland. It is hoped that your contribution would help educational psychologists to better understand the supports and training needed to ensure that all children are included with their class.

What are the risks of this research?

There are minimal risks involved in taking part in the interview. Your data will be deidentified and stored anonymously. If you find any of the topics or questions upsetting to you can withdraw and resources of supports available to you will be provided.

What is involved for you as a participant?

You are asked to take part in a semi-structured interview. Before this, you will be asked to agree to participate on the consent form. The interview will cover topics related to the use of AAC, inclusion, training, and your own experiences.

Right to withdraw

Participation in this study is voluntary. You have the right to withdraw at any time during the interview.

How will your data be used?

Your interview will be audio-recorded. Recordings will be transcribed, and audio files will be destroyed upon completion of the study. All identifying information will be removed from your transcripts. Your data will be examined alongside the interviews of some students in your class. Direct quotations will be used in the final thesis and subsequent publication/ presentations at conferences. These will all be anonymised and de-identified. Your data may be stored securely for an indefinite period according to the MIC Record Retention Schedule.

Confidentiality

Your interview will be treated anonymously. You are asked not to state your name or any identifying details about your school or students on the survey. Pseudonyms will be assigned to all participants for the analysis of their interview.

If you have any further questions you can contact:

This research study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC) (REFERENCE NUMBER). If you have any concerns about this study and wish to contact an independent authority, you may contact:

MIREC Administrator, Mary Immaculate College, Limerick.

The following services are available to you if you found any part of this study to be distressing.

Samaritans tel:116123 http://www.samaritans.ie

GROW tel:1890474474 https://grow.ie/getting-help

Appendix J

Interview Consent Form

Title: Augmentative and Alternative Communication (AAC) in Irish Mainstream Primary Schools: Staff Experiences and Inclusive Practices.

BRIATHAR DÉ MO LÓCHRANN
MIC
COLÁISTE MHUIRE GAN SMÁL
MARY IMMACULATE COLLEGE

Consent form for Interview Participants

	Yes	No
I confirm that I have read and understood the information provided in the Information Sheet	☐	☐
I understand that my participation is voluntary and that I have the right to withdraw at any time	☐	☐
I understand that my interview will be audio recorded and then transcribed	☐	☐
I consent to the use of my data for the purpose of this research thesis and publication/presentation	☐	☐
I confirm that I am over 18 years of age	☐	☐
I agree to take part in this interview	☐	☐

Name printed: _____

Name signed: _____

Date: _____

Appendix K

Interview Protocol

The following topics will be discussed in the interviews. As the interviews are semi-structured, these topics will be used as a guide and language will be tailored to the individual participant.

- What does inclusion/friendship/participation in the class mean to you?
- Tell me about how you use the [AAC type].
- What can help to use AAC with other children?
- What makes it more difficult to use AAC in the classroom/with other children?
- Who do you use AAC with?
- Has your experience with AAC changed over time?
- Tell me about your training with the AAC.

Appendix L

Survey Coding Example

Table L.1.
Participant 7 Coding

Question	Response	Codes
Do you work in a primary or post-primary mainstream school?	*Primary*	
What is your current role in your school?	*Teacher*	
Do you currently work directly with a child using Augmentative and Alternative Communication (AAC)? -	*Lámh, PECS*	Multiple forms
Does the student also use spoken language to communicate?	*No*	
In what settings is the AAC used most during the day? (e.g. yard, classroom, special class/autism class, withdrawn learning support, bus etc.)	*Mainstream Class, Learning Support Class*	Mainstream learning support
In what settings is the AAC used least during the day?	*Yard*	
How is the AAC used in lessons?	*To teach the child to sign in order to communicate his needs and thoughts*	Functional communication
Training in AAC can be done formally or informally (informal training refers to information gathered casually from fellow staff, pupils, parents, etc.)	*Yes* *Lámh course with Daughters of Charity*	External support
Have you received formal training in using the AAC? – Please give details		
Have you received informal training in using the AAC? Please give details	*Yes* *Asking a staff member who teaches Lámh outside of school for signs that I do not have access to on the Lámh website*	External support

Do you think training is important for using AAC?	*Yes*	
Children using AAC may do so to communicate functionally, or socially. Social interactions might be initiated by the child, their peers, or prompted by other adults.	*Getting needs/wants met; recounting experiences*	Functional Communication
Please describe the nature of the interactions with the AAC.		
Please describe any training, formal or informal that your students (the peers of the child who uses AAC) have received.	*Not much, Lámh used to be taught at assemblies a few years ago*	Past whole school approach
What supports peer interaction with AAC? (For example, child training, staff training, school policy etc.)	*staff training and child training & creating opportunities for peers to interact*	Training opportunity
Have you noticed any positive outcomes to peer engagement with AAC?	*No*	
Have you noticed any negative outcomes to peer engagement with AAC?	*No*	
What are the barriers to peer interaction with AAC?	*The child using AAC does not seek out peer interaction; the child using AAC has very limited understanding, and the types of play that engage him are not the types of play that his peers enjoy*	Child characteristics

Table L.2.

Participant 2 Coding

Question	Response	Codes
Do you work in a primary or post-primary mainstream school?	*Primary*	
What is your current role in your school?	*Special Needs Assistant*	
Do you currently work directly with a child using Augmentative and Alternative Communication (AAC)? -	*Lámh*	
Does the student also use spoken language to communicate?	*No*	
In what settings is the AAC used most during the day? (E.g. yard, classroom, special class/autism class, withdrawn learning support, bus etc.)	*School bus and classroom*	Unstructured and class
In what settings is the AAC used least during the day?	*On yard*	Unstructured
How is the AAC used in lessons?	*Not known I only work with the child on the bus*	
Training in AAC can be done formally or informally (informal training refers to information gathered casually from fellow staff, pupils, parents, etc.)	*Yes* *A short introduction course in Lámh I completed a short introductory course in my free time*	External
Have you received formal training in using the AAC? – Please give details		
Have you received informal training in using the AAC? Please give details	*Yes* *From my co-workers. From another SNA in the school*	
Do you think training is important for using AAC?	*I often see the wrong signs being used both by the child and other staff training for everyone would ensure correct use. I have witnessed people using signs wrong and the children becoming very*	Misuse

	upset and frustrated	
Children using AAC may do so to communicate functionally, or socially. Social interactions might be initiated by the child, their peers, or prompted by other adults.	*Socially while on the bus journey to and from school Usually it is socially and initiated by the child to communicate socially with others.*	Socially
Please describe the nature of the interactions with the AAC.		
Please describe any training, formal or informal that your students (the peers of the child who uses AAC) have received.	*A few odd words. Her current SNA is a teacher of Lámh and has taught her some Lámh.*	Staff training
What supports peer interaction with AAC? (For example, child training, staff training, school policy etc.)	*If all children in the class had a basic knowledge of Lámh. Whole staff training. Staff training mainly as it is mainly used between staff and the child.*	Adult focus
Have you noticed any positive outcomes to peer engagement with AAC?	*The child is more engaged and seems more relaxed when staff can communicate through Lámh. Not in my setting as the other children don't use Lámh*	Engaged
Have you noticed any negative outcomes to peer engagement with AAC?	*Without formal training some peers are using incorrect signs. No*	Incorrect use
What are the barriers to peer interaction with AAC?	*Formal training. Training for staff and pupils, regular use of AAC*	Familiarity Training for all

Appendix M

Coding to Themes Sample

Initial Codes	*Codes Grouped*	*Subthemes*	*Themes and Subthemes*
Academic use/ classroom mainstream and withdrawn/special class	1. Staff Training External Support	Need to be taught 1, 8,	Need to be taught properly 1, 6, 8
Functional communication	2. Use in class (with peers) Functional use	Role of adults 4, 12	Who used with and their roles 3, 10, 4, 12
Social/inclusion	3. Social/inclusion	Structured v unstructured 2, 5	How used: structured v unstructured 2, 5, 11
Staff training	4. Used with adults	Need to learn 7, 9	Need to learn 7, 9
Unstructured settings	5. unstructured settings	Role of peers 3, 10	
misuse	6. Misuse inconsistency	Misuse, inconsistency 6	
Positive outcomes	7. familiarity	Emotional support 11	
Used with adults	8. Teach Peers		
Familiarity/understanding /Interest	9. Time		
time	10. Positive Outcomes		
Teach peers	11. Emotional Support		
External training and support	12. Attitudes /Subjectivity		
inconsistency			
Emotional support			
Attitudes/subjectivity			

Appendix N

Sample from Interview Transcript with Codes and Experiential Statements

Experiential Statements	**Speaker**	**Transcript (Classroom Teacher)**	**Exploratory Notes/Codes**
	Int	And, in your class, you have a student who is using some form of alternative communication	
Familiarity is essential to understanding the signs and words used by the child. Communication goals centre around learning rehearsed pre-determined sentences.	P2	*Yes, em, she uses Lámh to communicate, em and up to kind of this year, last year she wasn't really using any language with the Lámh at all em, it was only just the hand symbols really but now she's starting using one-word symbols. Now, it's not completely clear, the more you know the child the easier it is to understand what the child is saying so if you're not familiar with Lámh, em, and the - and the hand movements that she's doing with she's trying to say it would be pretty difficult to understand but she's really working forward now to actually to making full sentences so if she asks for somethings she has to say, em… we'd ask 'are you ready' she'd say 'I am ready' and she'd have to reply in that way or she'd have to em say 'goodbye I'm going now' or some-something, or 'can I please have this' or to ask for help and things like that so she is starting to that's her goal now this year, but up until 3rd class it was fairly em nonverbal just using the hands to communicate*	Lámh Was using signs alone – change attributed later to Lámh Language development Need familiarity with the child to understand Unclear communication – words and signs? Are child's signs accurate? Working hard Sense there's still work to do Grammar – full sentences wanted Modelling sentences – basic, rehearsed tone of voice Language goal Recent changes in verbal language
	Int	Just hands, okay, and have you taught her before?	
Teaching a Lámh user in a mainstream class is new to them.	P2	*I-I [broken up]. Haven't no when I was…* *Other than a few days here or there to help out with learning support*	Brief experience with her before in different role Has learning support experience

	Int	Ok, em, and is this the first time you've had a full mainstream class with eh a Lámh user in it?	
	P2	*Yeah, it is yeah it is*	
	Int	So, what was that like, if you think back to last May or June when you found out – did you have any thoughts?	
Worried about integrating learning needs more than communication. Child's learning and access to training seen as outside of their control. Limited preparation for the role. Reliance on support from more trained SNA.	P2	*Yeah, it was, I was – it was more, I wasn't sure how because, unfortunately she-she has, she's not as the curriculum develops and as she's gotten older she's not really fully able to access the curriculum [uh-um] as much as the other students so I was more so em, I suppose unsure or worried about how I would integrate her into the mainstream classroom but unfortunately… it is kind of one to one with an SNA like she can kind of join us for PE and music lessons and the likes but English, Irish [broken up].* *Yeah, so I think that was more so was I was worried about so integrating into the curriculum em… and then my own Lámh skills because unfortunately I didn't get a chance between, we only found out in June really, so I didn't get a chance to upskill with regard to doing Lámh. I had, very basic Lámh like over the years we've done it as part of our winter performance with jingle bells and things like that or Santa Claus is coming to town, em…but I was also abroad* teaching for a *few years so last year was my first-year teaching back in Ireland. Em, and Lámh is quite unique I think to Ireland although I'm sure there are other systems but Lámh is… an Irish system. So, yeah, I was kind of wondering how much the kids knew - the other kids in the class*	'unfortunately' with regards learning needs Learning needs and accessing the curriculum – more difficult in older class Worries of learning more than communication Uses integrate more than include One-to-one with SNA More integrated in certain lessons – less academic ones? Feelings of worry in past – not now? Why? 'Unfortunately' again – Needs to upskill – implies some knowledge Sense that June to September not enough time Novelty Christmas songs Worked abroad, not long back Unique Irish key word signing – lack of opportunity abroad Curiosity about other children's knowledge and about level of integration

Burden of communication on child – they have to understand and be understood. Whole-staff approach required.		*used it with her to like to integrate and everything like that. Em, I'm very fortunate that my SNA … she instructs in Lámh courses as well so she's fantastic communicating, em with her and there-therefore I've been able to upskill as we've gone. em, and we've been watching things like dizzy deliveries during class and stuff just to - and the kids kind of enjoy it and it just gives them I-I suppose more of a knowledge of it. But em, partic- I think what I've found is - not so much me speaking to her as she can understand what I'm saying, it's more when she's trying to communicate back to me, at the start of the year you could tell she was getting frustrated that I couldn't understand her and em… yeah she kind of it-it we've come along now it's four months in but yeah I think that was the big thing and that is something I think that not just I should have, I suppose but learning support teachers and everyone should have a bit of a - basic course in it but it's when-when to find the time when to (laugh) Facilitators and everything like that as well so yeah like my knowledge - I now have Lámh I think that she would use on a daily basis that I wouldn't have had in September like I know 'friends' and I know 'assembly' and 'bus driver' you know like all the things that she will use with me on a daily basis em, but its more for her to communicate back with me than for me to communicate with her I suppose would be where I where I-I would find it difficult at the moment.*	Experienced SNA – informal upskilling from her "kind of enjoy" dizzy deliveries – why? Age range? Children learn through the show Difficulties understanding the child – child frustration earlier in year Sense that improvement is due to time? Emphasis was on learning and understanding "was the big thing" – past again "I should have" - Responsibility for teacher and learning support, everyone (not just for her) Need for basics Time issue (laughs because no time or because it won't get time?) Unsure of own current level Everyday terms Emphasises that the signs are more for the child to use and for her to understand – what/who is Lámh for? Still finding it difficult?
	Int	Okay, so you haven't had any formal training going into this role?	Informal training only

	P2	*No, no. it's all been informal, yeah*	
	Int	Sure, em and you've said that since September you've picked up some signs and that's… improved.. the-the sort of communication between you and the child? Em -	
	P2	*Yes, yes, absolutely*	Teacher picking up signs improves communication – picking up suggests not deliberately learning them
	Int	And has that lessoned her frustration?	
Feelings of inadequacy when reliant on others to communicate. Frustration and worries alleviate on both sides with simple exposure to signs.	P2	*I think so cause I think because she feels more… understood em, and like I can now pick up what she's trying to say whereas I remember in September she'd be saying something to me and I'd be kind of glancing at my SNA to say did you understand that or not, and like it-it yeah it was like I had certain words but I just felt that I wasn't doing my best for her I suppose in the fact that I couldn't-couldn't be an easy two way communication if it was just one to one. Em, whereas now I feel I wouldn't be worried about going into an interaction with her with - in that regard.*	Child feels more understood – less frustration Looked to SNA in past for guidance "felt that I wasn't doing my best for her" Communication was not easy Depersonalisation of communication issues Now teacher feels less worried "in that regard" –worried about something else?
	Int	So, that's probably had an impact on you then as well if you felt that you weren't… maybe up to scratch at the beginning with her?	
Difficulties when transitioning a child to a new teacher are inevitable. Training seen as a positive but not	P2	*Yeah, yeah, that was like eh if I didn't have it's a learning curve with any children with em, additional needs I think it is always a learning curve and you find out what works for them, and they get to know you and everything like that em… But yeah, I think yeah I was fortunate that I had basic Lámh signs going into it that I had just*	"learning curve" with new children with additional needs Reciprocal getting to know each other Fortunate Had some basic knowledge "Picked up" again – informal

essential compared to experience. Treatment as a language. Guilt and frustration on both sides associated with reliance on others for indirect communication.		*picked up over the years. Em, when Lámh first came out and we knew that we had stu-students in the school that would be using it I tried to do a bit of it with my senior infants class a few years ago but because I think I've been abroad so I hadn't had much exposure to it em, I think that was like, but no I it I would have liked I suppose… if we had had time to do the training but then I suppose with any language if I'm not using it on a daily basis, I eh I-I don't think I would be able to remember anything either you know that kind of way [yeah]. So, I think it-it is helpful to learn as you go but I don't know if maybe someone coming in in September to do a refresher course with basics or whatever but, em… yeah it was mainly-it was mainly for the child I just felt bad that I could tell she was getting frustrated that she couldn't communicate directly with me whereas now we don't really have that issue anymore*	Tried in past with their senior infants class. Not much exposure since Time for training and practice "we" for training Treat like a language – need to practice daily Refresher in September idea "felt bad" Indirect communication Child wanted direct communication Issue subsided
	Int	Okay, so it sounds like its more relaxed for everyone *[Yes absolutely]* And you mentioned that the-the whole class watches dizzy deliveries and kind of gets involved - do you ever see the other children signing?	
Communication opportunities and peer engagement linked to level of academic integration.	P2	*Yes, and I think they could have done it more when they were younger from what I've heard. Em, it's mainly a hello em goodbye, friend… because of her not being able to integrate as well as we'd like it would normally be in a small group setting [uh-um]. Em, what I thought was lovely earlier in the year though was we were doing em, a cultural assembly and we were welcoming all the parents to*	Believes there was more peer signing in younger years Very basic terms "friend" sign – who is using that/ in what context? Small group work in class – Lámh used in this context

		the school in a variety of different languages that are spoken in the school and one of the other students in the class came up to me and said but we're not doing Lámh so she, with the student that uses it, em, welcomed everyone to assembly using Lámh and she says 'hello welcome to our assembly' and she worked on that so she did that for the whole school with the with the other Lámh user in my class so, yeah that was really lovely.	Wants more integration from the child Other child questioned why no Lámh in cultural assembly Children prepared a welcome for the assembly together. "worked on that" – implies effort from other child "really lovely"
	Int	Yeah, what did that feel like when she came up to you and said -	
Seeing active inclusion generates mixed feelings of pride and self-doubt.	P2	*I kind of was like you know what you're dead right (laugh) like it was such a good observation on her part and I think that's what's so great about having children who I suppose I think that's what's great about having a more inclusive and integrated approach to children with additional needs in the classroom that other children pick up on it and they just know that it's another form of communication and yeah it was really sweet. It made me rethink it a bit as well oh god who else am I not including in this? But yeah, she em, she was great, and she was so delighted to do it as well which was really sweet.*	Acknowledged child was right Seems proud of child's suggestion. Inclusion leads to these benefits in perception of Lámh "children pick up on it" – so inclusion not directly taught or Lámh – what's the "it"? Made teacher reconsider her own inclusive practices. Child enjoyed it

Appendix O

Examples of PET Generation

Table O.1.
Grouping of experiential statements to generate PETs (SNA).

Statements combined to form PET A: There are barriers within the class and whole school.		
Behaviour changes have impacted the interests in Lamh more than the communication development.	Sense of rejection by adults due to adults' own limitations.	The child must speak to the SNA instead of to other adults.
Burden of communication placed on the child and SNA.	Practicing teachers often report not having time to learn signs.	Maintaining the promotion and advocacy of signing is challenging.

Table O.2.
Grouping of experiential statements to generate PETs (SNA).

Statements combined to form PET B: Staff need to change how they view signing.		
Experience can change how you feel about signing.	Others require further awareness of both how to sign and why they should sign.	Responsibility for interactions should be with all members of the school community.
Experience can change how you feel about signing.	Training requires a sense of understanding not just learning signs.	A common language evokes a sense of unity.

Table O.3.
Grouping of experiential statements to generate PETs (SNA).

Statements combined to form PET: C: Communication has wide-reaching benefits.		
Adults judge children on behaviours deriving from the environment they create.	Changes brought from communication development have promoted acceptance of the child.	Lack of verbal communication can lead to treatment that is very different from that of their verbal peers.
The effects of key word signing evoke a sense of wonder and awe. Learning simple signs can reduce children's withdrawal from uncertain interactions.	When adults put in effort, their relationship and perception of the child changes.	Staff avoidance appear to come from a place of insecurity.

Table O.4.
Grouping of experiential statements to generate PETs (SNA).

Statements combined to form PET: D: Peer relationships are valued.		
Adults have responsibility to demonstrate positive communication to children.	Staff could make more effort with the child.	Small actions can have a big impact.
Small efforts from children can aid in feelings of inclusion. A combination of direct teaching, modelling, and fun exposure is best for peers.	Whole school culture needs to change to create a sense of priority. Both the child and SNA experience isolation and frustration due to communication differences.	Differentiated work separates the child from their classmates.

Appendix P

PETS for all Participants

Personal Experiential Themes for Participant 1 (Special Needs Assistant/ Bus escort).

A: Changes are required beyond the child.

The environment needs to be adapted for communication.

- *Environmental barriers require additional effort from adult and child in means available to them (either language or body).*
  "I have to keep turning around to her so, it-it's hard to like I'm not facing her when I'm trying to sign but I do try to turn my body, so she sees as much as… but it's not the best angle for signing"
- *Reflects the social model of disability with environmental adaptations.*
  "If these children are going to be included in the classroom then they have to be fully included and by that I mean they have to be given all the tools to be able to take part in the classroom environment in the classroom work and not just, as I have seen so many times set aside in a corner."

There are issues with school training.

- *Optional trainings have been unsuccessful.*
  "She did try em for a little while to have a Lámh group where a couple of teachers who were interested would stay back and do this, but I think it just sort of fizzled out after a few weeks."
- *Despite best efforts there is a lot of inconsistency.*
  "They might make a sign and I'm going um that's not the sign I recognise for bread and then I'll go and check and they're wrong."

There are inconsistencies in staff practices.

- *Incorrect signs are common and often led by the Lámh user.*
  "But the child herself will often (pause) I would say adapt the signs"
- *Lack of consistency and adequate training creates frustration for the Lámh user.*
  "she'll get… a little bit frustrated if she's trying to sign something that I'm not familiar with… she gets annoyed when she knows I don't know the sign she'll just like … a big heavy sigh"

B: Staff facilitate inclusion through their actions.

Whole school approaches are important.

- *Whole school approaches to Lámh have been sporadic and limited.*
  "For a time, we were doing em a sign language at our assemblies… So, the children in mainstream were learning that, they also would have learned up through the years em things like em Santa Claus is coming to town through Lámh."
- *Novel, whole-school efforts are wholesome but short-lived.*

> "So, everybody learned it and it was a dance and a song and we done it out in the yard and the whole school was a bit, so there is a willingness in the school to-to give it a go but it's just like once-once something like that is finished it just falls away"

Exposure and experience

- *Practice and exposure are essential for everyone.*
  "You know like the children themselves if they're not using it every day either signs can get mixed up."

The standard of training is important.

- *Their training is seen as inadequate overall.*
  "I found it was good it was very interesting but there was no follow up so you so it- it's like a lang- any language you do forget it if you're not using it constantly"

Interest and attitudes

- *People are interested in learning..*
  *"*If the school introduced some sort of… classes I would definitely take them up and I-I know there would be a lot of people especially the SNAs that would be very keen to"
- *Limited reciprocal interactions may be reflective of interest or of partner's communicative competence.*
  "If she's put mud on another child or something like that em (pause) the SNA will often ask her to go up and say sorry so that would be what - as much as she would sign back that she was sorry and then they might say that's ok and that would be the extent of it she won't en-engage in conversation with the children."

C: Effective Lámh benefits society, understanding and emotion regulation.

Strong beliefs around the treatment of Lámh.

- *Signing should be taught and treated as a verbal language would be.*
  "It-it's like a lang- any language you do forget it if you're not using it constantly."
- *Signing should be seen as equally important to other aspects of the curriculum.*
  "So why isn't it taught in school… you know as part of the curriculum? Even just like you know, maybe… you know the way you get an allocated P.E. hour a week or something you know."

There is a need to think beyond the immediate situation.

- *Thinking just of this child is short-sighted.*
  "We need to be able to communicate with her we need to be able to communicate with, if a possible future child coming in… to the - to the school."

Communication, needs and emotions are closely related.

- *Emotional regulation is tied to use of communication.*

"She wants to communicate, she wants to em, but she also repeats things quite a lot so sometimes em her SNA will ask us to stop, just to let her calm down because she gets quite worked up, because she'll be repeating the same thing."

- *Child must contend with multiple sources of difference (academic, sensory, communicative) in all environments and that can be isolating.*
  "You know she's already if you want to use the word different from the class… with her work and now her speech and you know her communication…"

Focus on understanding.

- *Adults have developed strategies to show the child that they are understood.*
  "She knows that I'm understanding what she's saying to me and that once I say back, she likes you sort of to repeat what she has said to her to-to give her validation that you know what she's talking about. So, once I get that right (laugh) she's happy."
- *Not understanding lets the child down and creates complex emotions.*
  "I it really hurts me when I know that I'm not understanding what the signs she might be saying and that could be that I don't know the sign or that she made up a sign. It really hurts me that I can't talk to her em, equally when I see other people out signing"

D: There are multiple conditions needed for peer inclusion.

Standard of peer knowledge.

- *Student efforts have been well-meaning but misinformed.*
  "I did see like a sub teacher signing to her once and I asked what was he saying and… he told me… what he thought he was saying having been taught from a pupil who actually - it wasn't the right sign at all."
- *Training and practice are essential, and adults need that first before peers.*
  "In order to help the children like… you have to help the adults first."

There is a sense of wider responsibility for communication.

- *Different social circles have different levels of responsibility with regards interaction.*
  "They would have come through with her the whole way, so, that would be my understanding even if the next class next door didn't know as much Lámh her peers sh-in-in her classroom peers should."
- *There is a sense of responsibility when mainstreaming.*
  "If she spoke Spanish or something somebody would try to… learn Spanish, try to teach her English, we can't do that, so we have to adapt to her way, which is Lámh."

Child isolated in classroom.

- *Academic differentiation, while necessary can limit social participation.*
  "She doesn't em partake in the classwork as such, she has her own em… you know work and so that can be hard because she's (pause) em, em, (pause) you know she's already if you want to use the word different from the class…"

E: Peer learning of signs is generally unstructured.

Peer exposure to key word-signing

- *Student lessons are rare as staff are still seeking peer support and external training for themselves.*
  "I have never been in a class that's been formally taught."
- *Use of signs during Christmas songs reflects a sense of novelty.*
  "So, the children in mainstream were learning that, they also would have learned up through the years em things like em Santa Claus is coming to town through Lámh little Songs like that so they would pick up signs and… use them."

Use in unstructured environments.

- *Mainstream peers have been taught simple greetings and are encouraged to use them on yard.*
  "her peers would, would have known some signs you know 'hello' 'how are you' those sort of signs."
- *Key word signing is used in unstructured environments.*
  "In my job as an SNA I don't use it too much except em at yard time and excuse me and em on the, I also work as a bus escort, and I would use it daily on-on the bus."

Personal Experiential Themes for Participant 2 (Classroom Teacher)

A: Staff's knowledge of signs is a barrier.

Aspects of the work are beyond their control.

- *Difficulties when transitioning a child to a new teacher are inevitable.*
  "It's a learning curve with any children with em, additional needs I think it is always a learning curve and you find out what works for them, and they get to know you."
- *Whole school approach required.*
  "That is something I think that not just I should have, I suppose but learning support teachers and everyone should have a bit of a - basic course in it."

There are barriers to the teacher's progress with learning key word signing.

- *Schools have many priorities and there is not enough time to focus on them all.*
  "I think the main barrier is just the time [yeah] and the finding the time for the day, cause there's always, em, one training."
- *Limited opportunities for teacher training and for expertise to be shared amongst staff.*
  "Because the school day is so hectic teachers who are all teaching with Lámh often don't get a chance to communicate with each other, so em, it could be nice even to get time to even meet each other and conference on how are you using it in your classroom and what's gone well for you."

Indirect communication is a prevalent issue when everyone is not trained.

- *Child communicates indirectly with both teachers and peers.*
  "She'll instigate almost a conversation with me to look then look back at the children if that makes sense so if she wants me to ask them something or talk to them she'll look at me to almost translate."
- *Feelings of inadequacy when reliant on others to communicate.*
  "I just felt that I wasn't doing my best for her I suppose in the fact that I couldn't-couldn't be an easy two-way communication if it was just one to one."

B: Direct training is not the most beneficial way to learn Lámh.

Support from others is helpful but can be overly relied upon.

- *The SNA is an important source of support for the child and teacher.*
  "Like she's wonderful with her and they have - her comm - like her level of Lámh that's how I pick up on it, it's mainly by, watching her and - and ask-asking her."
- *Sense of guilt and frustration on both sides when reliant on others for indirect communication.*
  "Mainly for the child I just felt bad that I could tell she was getting frustrated that she couldn't communicate directly with me."
- *Relies on children's prior sign knowledge.*
  "A lot of the children would know the colours in their Lámh signs which they would have learned when they were younger which is great."

Experience is essential for adults and children.

- *Training seen as a positive but not essential compared to experience.*
  "If we had had time to do the training but then I suppose with any language if I'm not using it on a daily basis, I eh I-I don't think I would be able to remember anything either you know that kind of way."
- *Frustration and worries alleviate on both sides with simple exposure to signs.*
  "Whereas now I feel I wouldn't be worried about going into an interaction with her with - in that regard."

Consistency is key.

- *Familiarity is essential to understanding the signs and words used by the child.*
  "Now, it's not completely clear, the more you know the child the easier it is to understand what the child is saying so if you're not familiar with Lámh, em, and the - and the hand movements that she's doing with she's trying to say it would be pretty difficult to understand."
- *Without consistent time and effort, learning will fade over time.*
  "I think you really need to give the time and dedication to it or else it would just filter out over time like it possibly has done over the years… as a whole school approach."

C: The link between communication and inclusion is complex.

Lámh should be treated as a language.

- *Signs should be continuously practiced like any language.*
  "I think it is something that like-like with any language like, with Irish like, em, trying to bring it in."

Child's role in communication

- *Burden of communication on the child to understand and to be understood.*
  "I think what I've found is - not so much me speaking to her as she can understand what I'm saying, it's more when she's trying to communicate back to me"
- *Communication goals centre around learning rehearsed, pre-determined phrases.*
  "We'd ask, 'are you ready' she'd say, 'I am ready' and she'd have to reply in that way, or she'd have to em say, 'goodbye I'm going now' or some-something, or 'can I please have this' or to ask for help and things like that, so she is starting to that's her goal now this year."

Communication is not the only area of concern for the teacher.

- *Worried about integrating learning needs more than communication.*
  "Unfortunately, she-she has, she's not as the curriculum develops and as she's gotten older she's not really fully able to access the curriculum [uh-um] as much as the other students so I was more so em, I suppose unsure or worried about how I would integrate her into the mainstream classroom"
- *Child's other needs are seen as a bigger barrier to inclusion than their use of AAC.*

"There's all the other elements of the additional needs it's not just the language."

D: Peer's engagement is dependent upon others.

Personal characteristics can impact on inclusion .

- *Peer's personal interests and feelings impact on communication.*
  "Some children have an interest in it and want to make the effort whereas others are more nervous around it as well."
- *Child's social interests determine interaction opportunities.*
  "But the child that uses Lámh unfortunately finds social situations really difficult so, em.. she almost needs to comm- she communicates best on a one-to-one basis."
- *Communication opportunities and peer engagement are linked to the level of academic integration.*
  "Because of her not being able to integrate as well as we'd like it would normally be in a small group setting."
- *With age, learning and play differences become more pronounced.*
  "Maintaining even play or anything like that like she progressively would be so behind in that level [yeah] that they gap is widening a bit whereas I think possibly it would have been more successful at a younger age."
- *Peer excitement with interactions can be overwhelming for the child.*
  "If say they see a positive interaction between her and another child then then if they're beside her they'll try again. But then that can get almost get too overwhelming again if there's 5 interactions in a row."

Their role in interactions is complex to navigate.

- *Conflicted between supporting interactions and encouraging independence.*
  "You try and like leave her off to communicate just with them but then you - it's that fine line of do I step in now to actually enable communication."
- *Adults are needed to support Lámh user and peers in interactions.*
  "They kind of will often, if we're nearby they'll give us a glance and we might go in."

E: Teaching Lámh signs to peers is a limited approach.

Direct teaching is seen as a less effective way to promote keyword signing.

- *Emphasis on learning through exposure rather than direct teaching for adults and children.*
  "I think if it was more of a whole school approach like that if they were seeing the signs on the wall or if we were doing it like, it could even be an idea to like I think we did start doing like a word of the week at assembly."
- *Real-world examples of Lámh through the television are seen as more useful than direct teaching for peers.*
  "We all take the time and then when the when the woman signing on the screen comes up we'll all try and like learn it so, like I think that is a really nice way to integrate it."

- *Novel, seasonal uses of Lámh are helpful for other students.*
  "I think when they were in first or second class like that they were taught how to do Santa Claus is coming to town and jingle bells through Lámh, so I think that's another nice way to incorporate it."

Teaching strategies in inclusive classrooms are restricted.

- *Recognition that modelling to the whole class is limited but needed.*
  "I think also if I was modelling it more with everybody em, yeah like they-they would see - but again when I'm interacting with the child its more one to one, so they'll see me speaking to her… but they'll often not be involved in the conversation."
- *Less academic lessons, small group work and one-to-one teaching result in more communication opportunities.*
  "But I have noticed music or em, sports lessons is probably the best way to go with regard to this individual child em, for inclusion and to give the children the chance to use Lámh in that way."
- *Time is stretched thinly and working with one child may mean taking time from another.*
  "You're always kind of chasing your tail or you're not… doing your best for that individual student, you're - if-if that makes sense, like if I'm interacting with this student I'm not interacting with…"

Personal Experiential Themes for Participant 3 (Special Needs Assistant)

A: There are barriers within the class and whole school.

Barriers must be addressed to support communication.

- *Practicing teacher's often report not having time to learn signs.*
  "Because I think there's lots of people at the moment that are saying I don't have time for that, I don't have time to be learning that I do-I do enough as it is after school."
- *Maintaining the promotion and advocacy of signing is challenging.*
  "I think every class was doing a song and using the Lámh signs, and that was because it was really promoted that year so then after that it was just (sigh) you know if-if it just fades out like a lot of things do."

Unless KWS is known by all parties, communication cannot flow comfortably.

- *Burden of communication placed on the child and SNA.*
  "It was very isolating, and I felt very separated and there were times when I - this was awful but there were times when I thought why should I be doing this when other people just aren't?"
- *The child must speak to the SNA instead of to other adults.*
  "I've actually seen people turn their back and you wouldn't do that to any child… she won't stop because she's trying to tell them and has something to say to you and it's frustrating and then she'll come to me, and she'll be signing and telling me."

Teaching a child KWS is not enough.

- *Behaviour changes have impacted the interest in Lámh more than the communication development.*
  "People have seen the positive impact it's had on this particular child's behaviour. This child was labelled as being bold, being you know people just didn't want to work with this child because of her behaviour and actually the behaviour was communication it was our fault it was the - it was her environment."

B: Staff need to change how they view signing.

Everyone needs to communicate with one another.

- *Responsibility for interactions should lie with all members of the school community.*
  "I do think it would be nice if maybe every class teacher just spent maybe 10 minutes - just 10 minutes a week will do, teaching the class 5 signs."

An emphasis should be placed on understanding key word signing as well as on learning signs.

- *Others require further awareness of both how to sign and why they should sign.*
  "We have kind of promoted it in school and we have em (pause) especially learning resource teachers would have posters in their room and there are certain, you know a few posters around the school, and I think when people see adults using it they want to use it as well."
- *Training requires a sense of understanding not just learning signs.*

"Explain what it is explain how effective it is and explain… how… inclusive it is."

Individual perceptions impact on KWS

- *Attitudes and acceptance are essential to the implementation of Lámh.*
  "And something so simple as using a few - a few signs has changed that child and actually now people are warming to that child."
- *Experience can change how you feel about signing.*
  "It was all kind of textbook and one to one tutoring until you're actually working with a child that… can benefit from that type of communication you just don't realise how-how amazing it is."

C: Communication has wide-reaching benefits.

Key word signing has a broad range of influence for the child.

- *Behaviour difficulties are inextricably linked to communication.*
  "It's a huge impact on their confidence, on their behaviour not just communication on everything."
- *Changes brought from communication development have promoted acceptance of the child.*
  "You know a couple of years ago she was labelled as a-an uncontrollable child em, that shouldn't be in a mainstream setting em, but all of those negatives was to do with her communication."

Without communication, perceptions of the child can be quite different.

- *Lack of verbal communication can lead to treatment that is very different from that of their verbal peers.*
  "Because she didn't have a voice before it didn't mean to say she didn't understand everything that was said in front of her."
- *Adults judge children based on behaviours deriving from the environment they created.*
  "Her environment was responsible for her reactions towards other people. And something so simple as using a few - a few signs has changed that child and actually now people are warming to that child."
- *Interest in interactions can be driven by perceptions of behaviour.*
  "When they see maybe em, a child that they're used to seeing as being quite aggressive and they're quite calm with the person that's using Lámh with them I think they-they'd like to do that as well."

Engagement with signing can alter interactions and feelings.

- *Learning simple signs can reduce children's withdrawal from uncertain interactions.*
  "Just hello that's all but it's something whereas before I found kids would maybe avoid her because they didn't know how to communicate…"
- *Staff avoidance appears to come from a place of insecurity.*
  "It's just *sort of sad* and as I said kids will actually come up to say look she did this what does that mean or how do I sign this or how do I sign and that's brilliant, but adults tend not to."

There is a sense of shared experience between the child and those who can communicate with them.

- *The burden of responsibility was isolating from staff but bonded them with the child.*
  "there were times when I thought why should I be doing this when other people just aren't we all have to be - we're all in this together … that just wants to be included and the more people that come up and the more that they can say to her in Lámh, the happier she is and she's… very misunderstood and it's all because of communication."

There are key differences in the SNA and teacher role with regards communication.

- *The role of the SNA in relation to the teacher can complicate the process of advocacy.*
  "Yeah I mean it's, it is a little bit frustrating sometimes because… I know the child inside out at this stage because I've been working with her… all day every day for a couple of years and I understand a class teacher can't know a child as well as an SNA can."

D: Peer relationships are valued.

There is an importance placed on direct actions.

- *Small efforts from children can aid in feelings of inclusion.*
  "Even if it's just to say hello the child-the child- the-the Lámh user herself… feels included because those people are using her language."

Positive attitude towards peer interactions.

- *Seeing peer interactions is emotional.*
  "it's just beautiful, it's just so lovely to see even the children you wouldn't necessarily expect to actually come up to that child and just say *hello* and bring her into or bring them into her little world."

Isolation from peers associated with shared relationship with SNA.

- *Both the child and SNA experience isolation and frustration due to communication differences.*
  "Very isolating for her it's very isolating for her and it's… it-it how frustrating must it be to be trying to tell somebody something, but they just turn their…"
- *Differentiated classwork led by the SNA, separates the child from their classmates.*
  "She has very complex needs em… so there is a certain amount of inclusion - I mean you do have to draw the line somewhere… as far as sitting at a desk with other children at this at this - at this time - no we're not there yet she's very much has her own work-station in the mainstream classroom."

E: Staff's role in inclusion.

Sense of responsibility

- *Whole school culture needs to change to create a sense of priority.*
  "We need to have a whole school Lámh course."
- *To best support children, responsibility must be taken for your own learning.*
  "I was working with a little boy who used Lámh, and I just knew he needed more than the module one."

Examples of practices

- *Adults have a responsibility to demonstrate positive interactions to children.*
  "I kids just like to get involved don't they and kids just like to… they mimic the role model; they mimic the adult and I think yeah it just had such a p-positive impact on the whole school."
- *A combination of direct teaching, modelling, and fun exposure is best for peers.*
  "In one of the classes I was with there was em, three signs a week and the kids absolutely loved it because winter assembly we'd sign a song we'd do the Lámh signs to go with it."