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## **A survey of augmentative and alternative communication used in an inner city special school.**

### **Abstract:**

This study surveyed staff use of augmentative and alternative communication (AAC) within a large inner city special school for children with complex needs and learning disabilities. A questionnaire asked 72 staff members about the range of AAC strategies they typically used during the working day and how often they used it; training they had received about AAC; and which AAC approaches they found easy to use and those they found difficult. A range of AAC approaches were identified by staff. Participant confidence and understanding of the reasons for using identified AAC strategies was reported to be one of the key barriers in implementing AAC effectively. The implications in relation to how children with complex needs receive support for their receptive and expressive communication within an education environment are discussed.

**Key words:** *learning disabilities; augmentative and alternative communication; special school provision*

### Introduction

Augmentative and alternative communication (AAC) is a method of supporting the receptive and expressive communication of people who have complex communication needs, including learning disabilities, to enable participation in daily life activities (Beukelman & Mirenda, 1998; 2005). Examples of AAC include use of facial expression, gestures, objects (such as Objects of Reference ; Park, 1997), Makaton signs (Walker, 1977), symbols, photographs, pictures, including the Picture Exchange Communication System approach (PECS; Bondy & Frost, 2002), touch and electronic devices such as voice output communication aids (Harding et al 2010; Binger et al, 2007). The use of visual representations of concepts / words through use of touch, objects, signs and pictures, symbols and/ or the written word provides the AAC user with concrete examples of what is being said, as opposed to the transient nature of spoken language (Rowland & Schweigert, 2000). The iconic nature of signs and symbols make fewer demands on working memory than spoken language alone (Rowland & Schweigert, 2000). More complicated AAC equipment, such as a voice output device which enables the user to produce complex utterances, are often referred to as “high tech” devices, whilst less complex approaches such as Objects of Reference (Park, 1997) are referred to as “low tech”.

### Using AAC

AAC is used to support a wide variety of skills for people who have complex learning and communication needs (Weiss et al, 2005). Examples include providing AAC to maximise

communication and language development to support speech production, access literacy support and enable communication partners' opportunities to engage with those who present with a complex communication profile (Ronski et al, 2015). People who use AAC may be isolated because of reduced social opportunities and are therefore at risk of reduced quality of life (Emerson et al, 2001; Goldbart & Caton, 2010; Ronski & Sevcik, 2005). In contrast, some studies report that using AAC can reduce the frustration experienced by individuals with communication impairments, thus reducing or preventing behaviours that result from such frustration (Bondy & Frost, 2002).

Parents of children with complex communication needs who require AAC may fear that using a different method of communication may prevent any chance of spoken language developing (Ronski & Sevcik, 2005). In addition, AAC users are dependent on others being aware of and using the recommended method of AAC (Enderby et al, 2013; Harding, 2014; McCarthy and Light, 2005). Children who have profound and multiple learning disabilities (PMLD) tend to be pre-verbal communicators and require considerable help and support from carers in accessing communication opportunities in their environment and in the interpretation of their non - verbal communication (Brooks & Metlzoff, 2005; Downing,2005; Harding, 2014; Harding et al 2010; Ware, 2004). Children who have PMLD are likely to have additional physical, visual and auditory difficulties which may present further challenges with the adaptation of AAC equipment (Millar et al, 2006; Rowland & Schweigert 2000). Children with increased cognitive abilities may use more complex voice output communication aids (VOCAs) enabling them to express their views, respond to others and participate in conversations (Beukelman & Mirenda, 2005). However, despite having a greater range of functions, these children still experience barriers with using their preferred AAC system as communication partners may feel unsure and unskilled as to how they should respond (Baxter et al, 2012; Siu et al, 2010; Tam et al, 2003; Weiss et al, 2005).

#### Engaging with others to use AAC

For AAC to support the language needs of people with complex communication difficulties, communication partners need training (Blackstone & Berg, 2003; Thompson et al, 2004; Trief, 2007). Limited access to training can inhibit successful use of an AAC system and may lead to the augmentative and alternative system selected being abandoned (Martin & Alborz, 2014; Siu et al, 2010; Tam et al, 2003; Weiss et al, 2005). A disadvantage with providing training is that practitioners such as speech and language therapists (SLTs) who are typically the key professionals who might implement communication strategies feel uncertain of their role when developing the use of AAC with people who have complex communication difficulties (Tam et al, 2013; Siu et al, 2010). In one study, 72% of SLTs stated that they were not satisfied with the undergraduate AAC training they had

experienced. This reduced knowledge possibly led to fewer clients being offered specific programmes of intervention involving AAC (Siu et al, 2010). This lack of confidence is likely to lead to communication partners remaining unconvinced by a particular method of AAC recommended. Understanding the rationale for using AAC, and being supported to consider the benefits through functional use can influence how often an AAC system is used (Ronski & Sevcik, 2005). Staff who support AAC users acknowledge the importance of AAC and the person's environment, but some find it difficult to adapt their spoken language to provide additional support, thereby reducing the effectiveness of the system selected (Healy & Noonan Walsh, 2007). This could be problematic, as this means that the AAC system in use is at risk of being abandoned (Blackstone and Berg, 2003). In addition, lack of time dedicated to assessing a child's communication needs adequately can impact on effective longer term use of AAC (Ayres et al, 1994; Hetzroni, 2003). Sustained and positive AAC use facilitated by experienced AAC users tends to lead to more positive outcomes (Enderby et al 2013).

### Purpose of the study

This study aimed to evaluate AAC use in a large primary and secondary school provision for children with complex needs. The age range of children supported ranged from 2 years 9 months to 19 years of age. A questionnaire was used to gather information about which forms of AAC were most frequently used, and which were more challenging to use. It was anticipated that using the information gained about the range of AAC in use may help guide discussion about training needs for staff as well as developing more effective use of AAC that supports both communication and curriculum access for pupils in the school.

## **METHODOLOGY**

### *DESIGN*

A questionnaire was used to collect information about the range of AAC used by school staff during the school day. The study protocol was approved by the City University London ethics committee. Written staff consent was obtained prior to data collection.

### *PARTICIPANTS*

The participants were teaching and support staff from an inner city school for children aged from 2 years, 9 months to 19 years with complex learning disabilities, emotional, behavioural and/or communication difficulties. Approximately 261 members of staff work at the school (including those

employed by the school, NHS employees, volunteers, business and administration personnel and site team). Out of this, approximately 180 people had direct contact with children, all of whom were invited to participate in the study.

### *PROCEDURE*

The research project was introduced to school staff at staff meetings at the beginning of a school term. The investigator developed slides to be included on the school intranet and electronic display boards within the school. Sessions were made available for all staff to have the opportunity to discuss the project further before undertaking completion of the questionnaire. They were informed, both verbally, and in the Information Sheet that they could voluntarily withdraw at any time, both before starting the questionnaire, or if they had already completed the questionnaire. They were advised that their data would be excluded from the final analysis if they withdrew after completion. If staff expressed an interest, they were given a period of 48 hours to consent to participating in the project. To reduce the risk of coercion, potential participants were invited to freely approach the researcher at set times during the school day to request participation in the project. Participants were excluded if they were taking part in other research about AAC.

### *DEVELOPING THE QUESTIONNAIRE*

A questionnaire was devised for the purpose of this study. The questions had been formulated following discussion and informal evaluation in a Special Interest Group for Speech and Language Therapists who work with children who use AAC.

A total of thirteen questions were developed and included four sections: current use of AAC; training received on AAC; experience and attitude of ease of use of AAC, i.e. the type of AAC used with students; understanding of the purpose of AAC, i.e. why it is being recommended.

## **RESULTS**

### *WORKPLACE DETAILS*

A total of 180 staff were sent the questionnaire and 72 responded. Some staff (40% ;  $n = 29$ ) had worked with children with learning disabilities for seven years or more, with 25% ( $n = 18$ ) having worked in such a setting for 3 to 5 years, and 28% ( $n = 20$ ) having worked for 1 to 3 years. Only 7% ( $n = 5$ ) of participants had worked with children for a year or less (Table 1). Staff worked with a wide range of children and young people, with 56% ( $n = 41$ ) working with children with PMLD, 51% ( $n = 37$ ) with children who had a Severe Learning Disability (SLD), 43% ( $n = 31$ ) with children with a

Moderate Learning Disability (MLD) and 56% ( $n = 40$ ) worked with children who had difficulties within the autistic spectrum (Figure 1)

***Put Table 1 about here***

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A number of participants, (41% ;  $n = 30$ ) worked in the middle school, where students typically were aged between 8 - 14 years. A smaller number, 26% ( $n = 19$ ) supported students in the lower part of the school, where the age range of students typically fell between 2 years , 9 months and 8 years. Only 5 responses were received from the upper part of the school, (7%). All other participants, 25% ( $n = 18$ ) worked across the whole school.

***Put Figure 2 about here***

Many participants, 51% ( $n = 37$ ) were Teaching Assistants (TAs), followed by Class Teachers, 21% ( $n = 15$ ). Higher Level Teaching Assistants (HLTAs), non-class based teachers and the Senior Leadership Team made up 5.5% ( $n = 4$ ) each. The Multi-Agency Support Team (MAST), which includes Occupational Therapists, Physiotherapists, SLTs and Therapy Assistants were 11% of the participant total (see Figure 2).

## **TRAINING**

In relation to training for AAC, 44% ( $n = 32$ ) of participants reported that they had received training in the use of Makaton (Walker, 1977) in some form, and 33% ( $n = 24$ ) stated that they had received training to use Picture Exchange Communication System symbols (PECS; Frost & Bondy, 2002). Five participants (7%) reported access to training in the use of a voice output communication aid (VOCA). Other relevant training listed by 14% of participants included general training on AAC in school, such as through the SLTs in class or during their induction to the school. All staff had received some basic form of training about AAC, usually associated with managing a specific child's communication needs.

Participants were asked how they preferred to receive training relating to AAC. The majority of participants, 60% ( $n = 43$ ) reported that they would like training to happen in class, or in workshops within the school (Table 2).

**Put Table 2 about here**

## USE OF AAC

Table 3 illustrates the range of AAC used by staff. Makaton signing (Walker, 1977) was reported to be the most frequently used mode of AAC across the whole school, with 99% ( $n = 71$ ) of participants using Makaton (Walker, 1977) at some point in their daily routine. Only one participant reported not using any form of AAC in their daily routine. Natural gesture was used by 60% of participants ( $n = 43$ ). High and low tech VOCAs were used the least, with 89% ( $n = 64$ ) reporting that they did not use any electronic devices at all. Those that did use VOCAs did not give examples as to how they implemented them into daily communication.

**Put Table 3 about here**

**Put Table 4 about here**

The most frequent specific activities that participants used AAC for were *Direct Teaching*, and *Supporting Transitions* (Table 4). For example, within *Supporting Transitions*, responses included using the PECS (Frost & Bondy, 2002) approach to aid transition, for example in a 'Now and Next board', or to show routine.

## REASONS FOR NOT USING AAC

The majority of participants reported using some form of AAC periodically during their daily routine. On occasion, AAC was reportedly not used due to the perceived difficulty of implementation. Figure 3 illustrates the AAC forms that participants reported as the most difficult to use consistently. Overall, participants found Natural Gesture the least difficult (5.5%,  $n = 4$ ), and PECS (Frost & Bondy, 2004) (31%,  $n = 22$ ) and High Tech VOCAs (29%,  $n = 21$ ) the most difficult.

**Put Figure 3 about here**

Participants were asked to list why they found some forms of AAC difficult to use consistently. The themes are identified in Table 5:

- **Put Table 5 about here** -

## UNDERSTANDING OF AAC

The majority of staff (78%,  $n = 56$ ) made some acknowledgement that AAC can help people with a learning disability. A total of 36% ( $n = 26$ ) commented that AAC could help users to 'understand' everyday instructions and routines. A higher number, 56% ( $n = 40$ ) commented that AAC was important to help individuals 'express' themselves in some way, and therefore help to

reduce stress and anxiety (11%;  $n = 8$ ). Overall, participant lack of confidence and understanding the reason for using the identified AAC strategy was reported to be one of the key barriers in implementing AAC effectively.

It was recognised that AAC could help children participate more. This was noted both through the child having access to activities that they could enjoy, and through their communication partners gaining a greater insight into their thought processes. Individuality was commented upon, in that AAC was beneficial in utilising the individual's strengths. Independence was another key theme, whereby participants acknowledged that AAC enabled people with LD to access opportunities with less support and to engage in community work. Academic achievement was also listed as a benefit of AAC. A number of participants discussed how AAC was used in therapy sessions (Speech and Language Therapy (SLT) and Occupational Therapy (OT)). There was no mention of AAC use and parents. Peer interaction was cited as a reason for using AAC by three participants.

## **DISCUSSION**

The purpose of this study was to evaluate AAC use across a wide age range in a special school provision for children and young people with learning disabilities. The range of children and young people the staff support in this school is wide, from those with PMLD (57 %;  $n = 41$ ), to those who have moderate learning disabilities (43%;  $n = 31$ ). This indicates that there is a considerable range of needs, and staff have to use a range of AAC techniques with students. This is discussed in the literature, which suggests that people who use AAC are highly dependent on those who work with them when accessing social or learning situations (Brooks & Metzloff, 20005; Dalton & Sweeny, 2011; Ware, 2004). Participants in this study commented that they used AAC during the school day for a range of reasons, including enabling pupils to express their needs and wants (e.g. using PECS; Frost & Bondy, 2002), supporting a child's understanding of spoken language (e.g. using natural gesture and Makaton signs; Walker, 1977), and in social contexts (using a "low-tech" VOCA switch to greet peers in the morning). However, a number of issues related to using AAC within a school setting were identified in this study.

### *USE OF AAC IN SCHOOL*

A total of sixty nine participants reported that they used some form of AAC on a regular basis. This is positive to note, as all the pupils at the school had varying levels of learning disability and would benefit from expressive and receptive language support (Mirenda & Mathy-Laikko, 1989). However, the results from the questionnaires suggested that there was inconsistency in the use of AAC across the school. Staff found using PECS (Frost & Bondy, 2002), basic voice output



communication devices and more “high tech” communication devices the most difficult forms of AAC to use, and that natural gestures and photographs were the easiest (Figure 3). The issues with less frequent use of certain AAC systems could be due to lack of access to resources, on the part of the supporting adults, as well as insufficient priority being given to the implementation of such a system. One participant, for example, stated that Objects of Reference (Park, 1997) was not a strategy consistently used;

*“.....because they have not been set up properly across the school”* - Teaching Assistant

This reflects the findings of Ayres et al (1994) and Hetzroni (2003), where teachers reported inconsistent introduction of AAC strategies within a school. Some AAC systems are time-consuming to set up and maintain, and sufficient opportunities to prepare and plan for their implementation are crucial (Ronski & Sevcik, 2005). An important element in this is regular access to experts on AAC, and opportunities to plan together with such an expert, such as a specialist SLT (Dalton & Sweeney, 2011). Other studies have highlighted that ongoing training to support AAC use and maintain a system is an area of need (Enderby et al 2013; Siu et al, 2010; Tam et al, 2003; Weiss et al, 2005).

The most common response regarding the purpose of AAC for children in the school was to ensure they had communication opportunities, e.g. *“By giving appropriate support according to the needs of each individual learner... they can have a functional communication system to express themselves; make their needs known; and share enjoyment and emotions with others”*, (Teacher).

However, responses relating to the consistency of use of AAC strategies indicate that such supports are not used as commonly as might be necessary, as 39% of participants reported that they use at least one form of AAC either ‘not much’ , ‘a little’ or ‘some of the time’ . Some participants stated that they rarely or occasionally used PECS (Frost & Bondy, 2002) with their students, and this may suggest that it is only used with particular types of communication difficulties, rather than embedded in the curriculum for all children.

Considering that 57% of participants supported students with PMLD and 56% supported students with autism, two of the populations most likely to need an AAC (Mirenda and Mathy-Laikko, 1989), one would expect there to be a higher incidence of children using AAC to express themselves. This frequency of use has significant implications on the children who are dependent on those around them to interpret their communication attempts (Ware, 2004). Participants cited reasons they found certain AAC strategies difficult, which included a lack of access to adequate resources, training and insufficient staffing available. Hetzroni (2003) studied the impact of a school-

wide training programme, where the entire school staff learned how to use AAC. The study resulted in increased communication attempts by the children with a corresponding reduction in challenging behaviours. However, Hetzroni et al (2003) also found that there were inconsistencies in use and understanding of AAC across the school, and suggested that a whole school approach to AAC may be beneficial. Seven participants discussed the adult not having easy access to the resources, for example, having the Object of Reference (Park, 1997) to hand, or having access to the most appropriate photo. For AAC to be effective it needs to be part of the everyday communication environment (Lindsay et al, 2012; Thompson et al, 2004; Trief, 2007). Ronski & Sevcik (2005) argued that AAC should be integrated into a curriculum, thus reducing the risk of communicatively impaired children being social isolated.

Other responses showed that participants had personal opinions on the necessity and appropriateness of the strategy being used. For example, one participant stated about using Objects of Reference (Park, 1997); *“I think it is about having them ‘on you’ at all times so you don’t waste time locating them”*. (Teaching Assistant).

This emphasizes that although staff often were aware of the relevant strategies, insufficient importance had been placed on the need to have them available all the time. Another participant commented that “high-tech” devices were not used frequently because the approach felt impersonal; *“I also tend to use approaches that facilitate a more human connection and come ‘from me’”*. (Senior Leadership Team).

This suggests that regular training about the rationale behind certain AAC systems is needed to enable consistent use. It would be beneficial for a whole-school communication policy, which would give sufficient priority to protecting the communication rights of the individuals within the school.

#### *TRAINING AND UNDERSTANDING THE USE OF AAC*

The majority of participants acknowledged that AAC was useful in some form to their students. However, there was a disparity between some people’s awareness of the purpose of AAC, and the usefulness with a range of students. For example, it was stated by some participants that; *“I do not use AAC- my students have ASD (autistic spectrum disorder)”*. This assumption that AAC was only for students with PMLD, and not for students with autism could be construed as a lack of clarity by those delivering training.

Some responses suggested a lack of awareness of the ambiguous, transient nature of spoken language, instead stating that symbols and pictures were not as clear as words, despite previously discussing the communication limitations of their students. Participants frequently commented on a lack of confidence in their understanding of AAC, and reflected this in the amount of training they had received. For example, 99% of participants reported using Makaton signs (Walker, 1977) at some point in their daily practice, whereas only 44.4% said they had received training on it. Subsequent comments on the difficulties in consistently using Makaton (Walker, 1977) included:

*“I have to remember the sign” - Teacher*

*“I’ve not had proper training for it and finding new words to sign [is] difficult” – Teaching Assistant*

AAC users are dependent on those around them being sufficiently skilled to interpret their communication (Brooks & Meltzoff, 2005; Enderby et al, 2013; McCarthy & Light, 2005). Therefore adequate, regular training is important, not just for communication partners, but also for professionals who are working with children who have complex needs (Light & Drager, 2007).

#### *ASSESSMENT AND GOAL SETTING*

Two of the cited reasons for not using AAC in one form or another were the perceived level of need; either the students were perceived to be too able or not able enough to access the identified form of communication. Assessment of the child’s language and communication, along with an awareness of the person’s functional communication in everyday contexts, is important when identifying the most appropriate form of AAC (Harding et al 2010; Layton & Savino, 1990). In a report by Dalton and Sweeney (2011), only 20% of support staff reported being directly involved in the assessment procedure. If support staff are not included in the assessment process, there is a risk that some subtle communication attempts may go unnoticed, and communication could become predominantly directive. Once meaningful goals are set, the involvement of families and significant others is crucial as this approach is about providing appropriate support to enable a person to achieve their goals (McCarthy & Light, 2005; Enderby et al, 2013).

#### *BRIDGING THE GAP*

A repetitive theme was the discrepancy between using AAC strategies while not fully understanding the purpose of how AAC supported communication. Participants stated that AAC ‘gave a voice’ to those with communication impairments but, at the same time, barriers tended to be due to low confidence and knowledge; limited resources available; insufficient training; and personal preferences / opinions of the usefulness of the strategy.

This study raises further questions about AAC that would benefit from further research. Training is frequently mentioned, but it is not clear from the examples given what form it should take. One question that merits further discussion is how whole school approaches benefit those students who have individualised AAC programmes. Introducing AAC, particularly with people with more complex learning needs does not seem to have specific methodologies or criteria for implementation or ongoing use. Very few studies focus on the steps needed to implement, then support, the use of an AAC system. More consideration perhaps needs to be given to thinking about appropriate communication styles when using AAC such as simplification of spoken language. Staff used AAC in a range of settings (Table 4), but it may be useful in further studies to consider how the AAC strategies are used, and to ask staff in more detail about the difficulties experienced in using the targeted AAC (Table 5). Some AAC strategies appear to be easier to use than others (Table 5), and whilst they may support an individual's communication needs, there are issues with the user being able to access materials independently (Harding et al, 2010). It appeared that seven different types of AAC were used in the education setting the participants worked in (Table 5). It may be useful for future research to consider the efficacy and the impact of multi-modal AAC environments on the communicative competence of the users and those who facilitate usage of the target AAC method, as well as the barriers that prevent use.

## **CONCLUSION**

This paper set out to explore the successes and challenges of implementing a range of AAC methods within one school. The findings of this study correspond with those of other studies (Dalton & Sweeney, 2011; DeSimone & Cascella, 2005; Hetzroni, 2003) in that the use of AAC is widely understood by supportive adults to facilitate communication, but is hindered in its consistent use by the lack of staff confidence and priority placed on it within schools. The reported lack of training and inadequacy of understanding of AAC supports is supported in the literature by other studies that have surveyed AAC (Baxter et al, 2012; Light & Drager, 2007; Martin & Alborz, 2014; Siu et al, 2010; Tam et al, 2003; Weiss et al, 2005). A child centred approach should be implemented with AAC, where all communication partners (including school-staff, family members and peers) are considered, thus maintaining the communication rights of the communicatively impaired individual. The link between a collaborative assessment and goal setting process between all communication partners and the potential benefits on the communicatively impaired individual is an area for further exploration (Light & Drager, 2007). Additionally, balancing opportunities for spontaneous AAC use, along with ensuring sufficient access for the children, would be another important area for research

(Millar et al, 2006). An area highlighted within this study was the access to training for communication partners. Research into the link between pre - and post - training confidence levels and frequency of AAC use, further analysis of how AAC is facilitated, and barriers to implementing training would be beneficial in contributing to the evidence base. It would also be helpful to explore further the differences within and between the different staff groups working in special schools and the effectiveness of whole school policies for AAC implementation.

## REFERENCES:

- Baxter S., Enderby P., Evans P., Judge S. (2012). Barriers and facilitation for high tech AAC devices: a systematic review and qualitative synthesis. *International Journal of Language and Communication Disorders*, 47(2), pp 115 - 129
- Beukelman, D., & Mirenda, P. (1998). *Augmentative and alternative communication: management of severe communication disorders in children and adults*. Baltimore, MD: Paul H. Brookes Publishing Co
- Beukelman, D. & Mirenda, P. (2005) *Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs*. (3<sup>rd</sup> edn). Baltimore, MD: Paul H. Brookes
- Binger, C., Light, J. & Drager, K. D. (2007) 'Demographics of preschoolers who require augmentative and alternative communication.' *Language, Speech, and Hearing Services in Schools*, 37, pp. 200–8
- Blackstone and Berg (2003) Blackstone, S. W. & Berg, M. H. (2003). *Social networks: A communication inventory for individuals with complex communication needs and their communication partners*. Monterey, CA: Augmentative Communication Inc.
- Bondy, A. & Frost, L. (1994) 'The picture exchange communication system.' *Focus on Autistic Behaviour*, 9, pp. 1–19
- Brooks, R. & Metzloff, A. N. (2005) 'The development of gaze following and its relation to language.' *Developmental Science*, 8 (6), p. 535
- Dalton, C. and Sweeney, J. (2011), Communication supports in residential services for people with an intellectual disability. *British Journal of Learning Disabilities*, 41: 22–30
- DeSimone, E. A., & Cascella, P. W. (2005). Communication quality indicators: A survey of Connecticut group home managers. *Journal of Developmental and Physical Disabilities*, 17(1), 1-17.
- Downing, J. (2005). Inclusive education for high school students with severe intellectual disabilities: Supporting communication. *Augmentative and Alternative Communication*, 21, 132–148
- Enderby, P., Judge, S., Creer, S., John, A., (2013). *Examining the need for, and provision of, AAC in the United Kingdom*. In *Beyond the Anecdote Examining the need for, and provision of, AAC in the United Kingdom*; White Rose University Consortium (May 2013), pp. 1-168
- Frost, L., & Bondy, A. (2002). *The Picture Exchange Communication System training manual*, 2nd ed. Pyramid Educational Consultants, Inc
- Goldbart J., Caton S. (2010) *Communication and people with the most complex needs: what works and why this is essential*. Mencap.
- Healy D. & Noonan Walsh P. (2007) Communication among nurses and adults with severe and profound intellectual disabilities. *Journal of Intellectual Disabilities*, 11: 127–41

- Harding C. (2014) Commentary on Experiential Learning: Changing student attitudes towards learning disabilities: How can we reduce exclusion further? *Tizard Learning Disability Review*, Vol. 19: 3, 118 – 121
- Harding, C., Lindsay, G., O'Brien, A., Dipper, L., & Wright, J. (2011). Implementing AAC with children with profound and multiple learning disabilities: a study in rationale underpinning intervention. *Journal of Research in Special Educational Needs*, 11(2), 120-129
- Hetzroni, O. E. (2003) 'A positive behaviour support: a preliminary evaluation of a school-wide plan for implementing AAC in a school for students with intellectual disabilities.' *Journal of Intellectual and Developmental Disability*, 28 (3), pp. 283–96
- Lindsay, G., Dockrell, J., Law, J., & Roulstone, S. (2012). Better communication research programme: Improving provision for children and young people with speech, language and communication needs. London: DfE.
- Light, J. (1999). "Do augmentative and alternative communication interventions really make a difference?: The challenges of efficacy research." *Augmentative and Alternative Communication*, 15, 13-24
- Light, J. & Drager, K. (2007) 'AAC technologies for young children with complex communication needs: state of science and future research directions.' *Augmentative and Alternative Communication*, 23 (3), pp. 204–16
- Martin T., Alborz A. (2014). Supporting the education of pupils with profound intellectual and multiple disabilities: the views of teaching assistants regarding their own learning and development needs. *British Journal of Special Education*, 41(3), pp 309 -327
- McCarthy, J., & Light, J. (2005). Attitudes toward Individuals Who Use Augmentative and Alternative Communication: Research Review *Augmentative and Alternative Communication*, 21(1), pp 41-55
- McNaughton D., Rachensberger T., Benedek-Wood E., Krezman C., Williams MB., Light J. (2008). "A child needs to be given a chance to succeed": Parents of individuals who use AAC describe the benefits and challenges of learning AAC technologies. *Augmentative and Alternative Communication*, 24(1), pp 43 -55
- Mirenda, P., & Mathy-Laikko, P. (1989). Augmentative and alternative communication applications for persons with severe congenital communication disorders: An introduction. *Augmentative and Alternative Communication*, 5, 3-13
- Millar, D. C., Light, J. C. & Schlosser, R. W. (2006) 'The impact of augmentative and alternative communication intervention on the speech production of individuals with developmental disabilities: a research review.' *Journal of Speech, Language, and Hearing Research*, 49, pp. 248–64
- Park, K. (1997) 'How do objects become objects of reference? A review of the literature on objects of reference and a proposed model for the use of objects in communication.' *British Journal of Special Education*, 24, p. 3
- Romski, M., Sevcik, R. A., Barton-Hulsey, A., & Whitmore, A. S. (2015). Early Intervention and AAC: What a Difference 30 Years Makes. *Augmentative and Alternative Communication* 1-22
- Romski, M. & Sevcik, R. A. (2005) 'Augmentative communication and early intervention: myths and realities.' *Infants and Young Children*, 18 (3), pp. 147–58
- Rowland, C. & Schweigert, P. (2000) 'Tangible symbols, tangible outcomes.' *Augmentative and Alternative Communication*, 16 (2), pp. 61–78
- Siu, E., Tam, E., Sin, D., Ng, C., Lam, E., Chui, M., & Lam, C. (2010). A survey of augmentative and alternative communication service provision in Hong Kong. *Augmentative and Alternative Communication*, 26(4), 289-298
- Tam, E., Mak, A. F., Chow, D., Wong, C., Kam, A., Luk, L., & Yuen, P. (2003). A survey on the need and funding for assistive technology devices and services in Hong Kong. *Journal of Disability Policy Studies*, 14(3), 136-141
- Trief, E. (2007) 'Research report: the use of tangible cues for children with multiple disabilities and visual impairments.' *Journal of Visual Impairment and Blindness*, 10 (10), pp. 613–9
- Walker M. (1977). Teaching sign to deaf mentally handicapped adults. *Language and the mentally handicapped*. 3, 3 – 25

Ware J. (2004) Ascertaining the views of people with profound and multiple learning disabilities. *British Journal of Learning Disabilities*, 32: 175–9

Weiss, P. L., Seligman-Wine, J., Lebel, T., Arzi, N., & Yalon-Chamovitz, S. (2005). A demographic survey of children and adolescents with complex communication needs in Israel. *Augmentative and Alternative Communication*, 21(1), 56-66

**Tables, figures and appendix**

**Tables**

**Table 1: Experience and Work Base of Participants**

		Number of years' experience with children with SEN				
		0 to 1 yr	1 to 3 yrs	3 to 7 yrs	7 yrs plus	Total
School	Lower	2	5	7	5	<b>19</b>
	Middle	2	10	5	13	<b>30</b>
	Upper	1	0	3	1	<b>5</b>
	Whole	0	5	3	10	<b>18</b>
	Total	<b>5</b>	<b>20</b>	<b>18</b>	<b>29</b>	<b>72</b>

**Table 2. Participants Preferred Mode of Training:**

Training Mode	TOTAL
Training in Class	43 (60%)
As a Whole School	15 (21%)
Reading provided by the SLT	8 (11%)
E-learning	9 (12.5%)
Observation of others	33 (46%)

Independent Research	5 (7%)
Workshops	43 (60%)
Programmes provided by SLT	28 (39%)
Training specific to department	1 (1%)

**Table 3. Reported Frequency of Use of AAC**

		Mode of AAC									
		Makaton	Gesture	Photos	OOB	Symbols	PECS	VOCA	High Tech Electronic Device	Total	
Frequency	Not at all	1	6	7	23	20	25	47	64	<b>193</b>	
	Not much	0	0	3	3	1	5	4	0	<b>16</b>	
	A little bit	11	4	7	9	2	6	1	0	<b>40</b>	
	Some of the time	29	19	34	24	22	24	13	6	<b>171</b>	
	All the time	31	43	21	13	27	12	7	2	<b>156</b>	
	Total	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>576</b>

**Definitions:** OOB = Objects of Reference (Park, 1997); PECS = Picture Exchange Communication (Frost & Bondy, 2002); VOCA = voice output communication device

**Table 4. Most Common Specific Activities for AAC Use**

Activity	TOTAL
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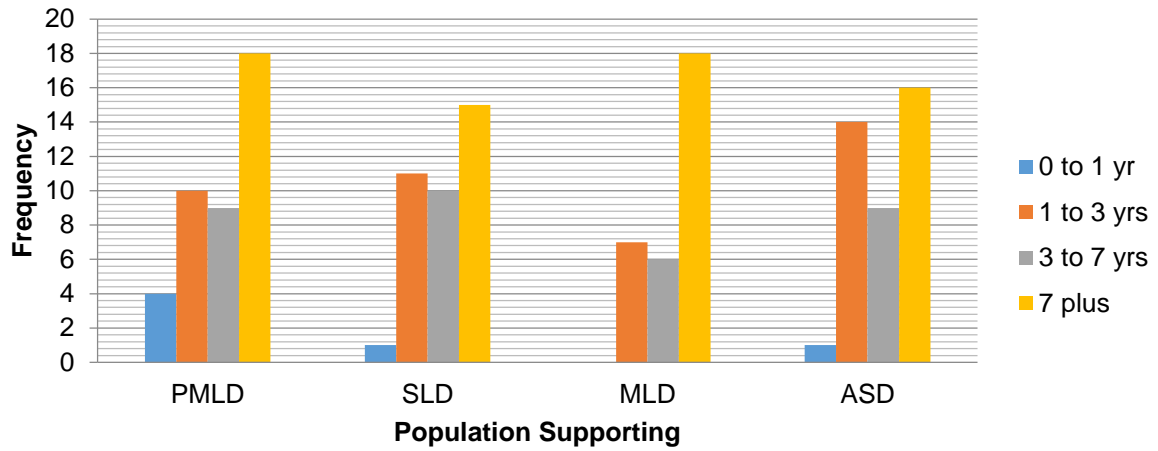
Structured social activities (such as saying 'hello' during Circle Time)	7 (8%)
Making choices	9 (12.5%)
Supporting transitions	10 (14%)
Direct teaching of the curriculum and developing vocabulary	13 (19%)
Reinforcing functional concepts such as 'finished'	1 (1%)

**Table 5: Reasons Why AAC Presents Difficulty**

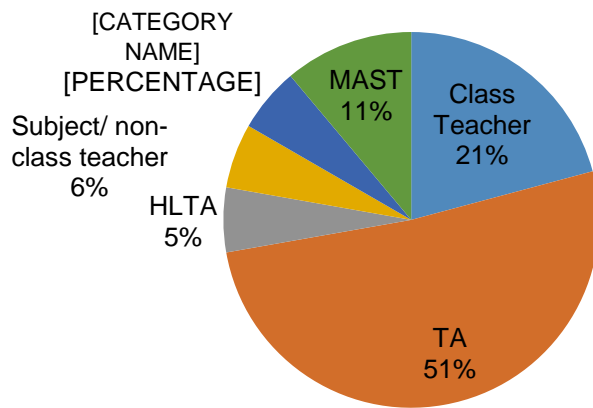
<b>Reported Reason</b>	<b>TOTAL</b>
Adult access to AAC resources	5 (7%)
Staffing required	4 (5.5%)
Time taken to implement	4 (5.5%)
Lack of training/ knowledge/ experience	32 (44%)
Students – using higher level communication	4 (5.5%)
Students – using lower level communication	11 (15%)
Staff perception of usefulness/ efficacy	12 (17%)

## **Figures**

**Fig 1: Chart to show Staff Experience and Population Supporting**



**Fig 2: Role within School of Participants**



**Figure 3 Reported Difficulty in Use of AAC**

