

Communication **Matters**



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THE JOURNAL OF COMMUNICATION MATTERS / ISAAC (UK)

Small Grants - Membership - Communication Dictionaries - Semantic Compaction
- AAC & Education - AT Mentors & Summer Group - Online Resources -
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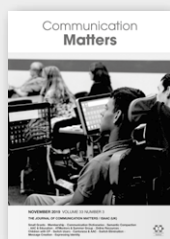




COMMUNICATION MATTERS JOURNAL

VOLUME 33 NUMBER 3

November 2019



*Laith Ritchie (foreground)
and others concentrating
on a presentation at the
Communication Matters
Annual AAC Conference held
at the University of Leeds on
8-10 September 2019.*

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Chairs' Report

Helen Whittle

This is my first Chair's report as the new Chair of the Board of Trustees of Communication Matters. I am delighted to be taking over this role after being on the Board as a co-opted Trustee for the past year. I am a Speech and Language Therapist who has worked in the NHS with adults and children, in an assessment service and for a supplier. My most recent work has been on a research team at Manchester Metropolitan University.

Thank you to Ruth McMorran and Toby Hewson who have been Co-Chairs for the last three years. They have done a fantastic job. As Ruth has been instrumental in the conference for many years, she is going to be involved for a further year to organise the 2020 Conference and with Emily, our Charity Manager, will be writing a handbook about the Conference so that this can be passed on to the next person who takes on this role.

The Board of Trustees now comprises:

- Re-elected Sept 2019: Nicola Hayton (3rd term), Jenny Herd (2nd term)
- Served for 2 years: Rob Gregory, Zoe Clarke (2nd term), Vicky Healy (2nd term)
- Served for 1 year: Saffron Murphy-Mann, Martin Fisher, Amy Hanschell
- New to the Board: Mark Street and Co-opted Trustee Andrea Sharples.

You may have seen all of them at the Conference this year.

The 2019 Conference went really well, with 430 delegates attending from 19 countries. That is the highest number of delegates for over 10 years, which is great. £18,000 was spent on providing subsidised places to allow many AAC users to attend the Conference. We received some positive comments from delegates; thank you to everyone who took the time to complete a feedback form.

We were delighted to welcome Dr. Karen Erikson, Director of the Center for Literacy and Disability Studies at the University of North Carolina at Chapel Hill, to deliver the Keynote Speech about her work with AAC and literacy. This was a thought-provoking start to the Conference.

Dave Young, performance poet and artist, provided us with an inspirational plenary as well as running a poetry workshop for AAC users (please see page 29 for the jointly-written poem).

As I write this, the inaugural AAC Awards will be about to take place at the University of Leeds on Friday 11th October. We have a great night planned. With 9 awards being distributed, we are looking forward to welcoming 140 people, including many AAC users, family members, researchers, practitioners and long-time supporters of the UK AAC field. Thank you to Vicky Healy for her hard

work in getting this initial idea turned into a wonderful evening.

Our new website is up and running now, and I hope you agree that it looks much more up-to-date and professional than the previous version. It has content from both the old website and the AAC Knowledge website. We hope it is easier to navigate and to add to in the future as necessary. Thanks to Tom Griffiths for his input to this project.

Projects

Communication Access UK (CAUK):

This project continues to be run by Catherine Harris. The Royal College of Speech and Language Therapists has taken over the funding of Cathy's position and hosts regular meetings. The CM Board has a representative which attends the meetings, so we can keep abreast of the progress of the Communication Access training that has taken place so far. The latest news is the development of an E-learning platform which will allow the training to be rolled out more widely.

<https://www.rcslt.org/policy/uk-wide#section-3>

Mentoring Project:

The first year of this National Lottery Community Funded project has got off to a great start. 7 AAC users have just completed the Level 1 in Mentoring in Manchester with Verity Elliott. Another (younger) group of AAC users are about to start on the same course. The key partner in this work is ATTherapy, who have helped to identify some AAC users who are best-placed to develop their mentoring, as well as others who have travelled from Cumbria and West Yorkshire. Plans are also in development for more activities in the South East and South West.

In addition to achieving a Level 1 qualification, AAC users are also invited to attend a range of workshops that compliment the role of a mentor. Earlier this year, we had the first session, "Introduction to Counselling Skills" attended by 6 AAC users and, later this month, Verity will be running a workshop on "Mental Health Awareness". An entry-level qualification in Personal and Social Development is also available for those AAC users not yet ready for mentoring.

This all sounds exciting! If you know someone who may benefit from these opportunities, then please contact: mentoringproject@communicationmatters.org.uk.

Last, but by no means least, please be reminded that we are holding a Study Day, 'Where Next for People with Cognitive Disabilities & Electronic Assistive Technology?', in collaboration with The Children's Trust, on 29th November in London. You can book online here: <https://communicationmatters.org.uk/what-we-do/study-days/>

Have you ever thought about applying for a Communication Matters Small Grant?

From time to time, Communication Matters offers small grants of up to £200. Grants are not always for the full amount asked and will be considered on a case by case basis. Anyone who is a member (or about to become a member) of CM is able to make an application. You can apply at any time of year while funding lasts.

One group that received a grant this year was Malvern Special Families.

They provide clubs and play schemes for children and young people with disabilities aged between 5 and 18 in Malvern and in Worcester.

Malvern Special Families secured a grant of £200 which they used to purchase symbol software. Caroline Conein, the group's Service Manager, contacted us just at the start of the school holidays:



"With the help of the grant from Communication Matters our summer clubs are about to begin with symbolised summer activity timetables!























































The children over our 3 summer schemes each receive their personal timetable to help them in advance of their attendance.

For many, this is a friendly picture leaflet and activity timetable that is just for them.

For some children, it is also a means of managing their anxiety and providing them with a much-needed schedule so they know what they are doing when."

It looks as though they had lots of exciting activities planned for over the summer.

To find out more information about applying for a Small Grant from Communication Matters, please visit <https://communicationmatters.org.uk/what-we-do/cm-grants/>

 2  Week 2 Oceans Week	
 Monday	 -  +   Swimming, Mermaids and Aquaman, Sensory Room
 Tuesday	 -     Ocean Discovery, Sensory Bottles, Sensory Room
 Wednesday	 -   Ocean Animals, Water Play, Sensory Room
 Thursday	 +    Jellyfish and Octopus Craft, Sensory Room
 Friday	 -       Sensory Ice, Ocean Discovery, Sand Play, Sensory Room
 Week 4- Animals At Fort Royal Holiday Club	
 Monday 19th August	 day-   +  Dinosaur day- arts and crafts, sensory room and soft play
 Tuesday 20th August	   Trip out- Newbridge Farm park
 Wednesday 21st August	 +   +  Swimming and music, soft play and sensory room
 Thursday 22nd August	  +  Trip out- Walk to Asda and the pet shop
 Friday 23rd August	   +  Bouncy castle, outside play, music and toys.

Understanding Your Communication Matters (CM) Membership

As you are reading this journal, you or your organisation may be an Associate Member of Communication Matters. What you may not know is what this means, and how the fee you pay is used.

There are a range of memberships available. The current memberships available in the UK are:

Type of Membership	2019 Rate
Individual	£69
Organisational Type A	£189
Organisational Type B	£344
Organisational Type C	£528
AAC User or Family Member	£22
First year AAC User or Family Member	£0
Full-time Student	£23
Retired	£51

For more details on rates and how to join, please see: <https://communicationmatters.org.uk/about-us/join-us/>

These rates are calculated and agreed by the Board of Trustees on an annual basis, and we strive to provide value for money in these challenging times. The amount is based on the costs of the benefits we offer and the capitation fee rates we pay to ISAAC (The International Society for AAC).

CM was formed in 1986 as ISAAC UK. We continue to operate as this, and as a result all CM members are also members of ISAAC. We therefore pay a capitation fee for all our memberships. The amount varies depending on the type of membership. For example, for an individual membership, 34% is the capitation fee. The highest capitation fees are on the subsidised rates for AAC users, which are 100% for a free first year membership. This means that CM funds all the benefits and pays ISAAC for the membership costs.

ISAAC membership offers the benefits of:

- Electronic copies of ISAAC news bulletins
- Reduced rate subscription to ISAAC journals and newsletters
- Reduced rate for attendance at ISAAC Biennial Conference

The funds left to CM from your membership are used to provide the following benefits:

- Communication Matters Journal published 3 times a year, delivered to your door
- Reduced rate to attend Communication Matters Study Days
- Reduced rate to attend the Communication Matters International Conference
- Access to password-protected Membership area of the CM website, a rich source of information and support
- Weekly E-News
- Access to the latest information on a wide range of AAC issues
- Free attendance at AAC Information Days
- Consultation and workshops influencing the future of AAC provision and services

The Board strives to make the best use of all the funds that we receive to work towards our key aims and objectives. This is why we prioritise free memberships for AAC users in their first year and subsidised rates at the Conference and other events. Over the year, the Board has looked closely at the rates and benefits we offer to ensure value for money.

The Board are keen for all Associate Members to understand what their membership offers them and how the charity uses the funds, and we always welcome your feedback.

Nicola Hayton

Communication Matters Treasurer

Introducing Communication Dictionaries

ALISON MATTHEWS

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totalcommunication.org

Email: alison@totalcommunication.org

Abstract

Total Communication Services CIC is a not-for-profit organisation which aims to promote Person Centred Communication, choice and personalisation. Total Communication Services CIC is launching a new version of a tool known as the 'Communication Dictionary'. The tool was initially developed by the author in her work within the Oldham Learning Disability Service.

Communication Dictionaries started life in 1997, inspired by elements of an early version of Essential Lifestyle Planning (Smull, Sanderson and Allen 2001) and the 'Bringing people back home' training pack (Szivos and Clarke- Kehoe, 1990).

Communication Dictionaries are created for individuals with a communication impairment, and represent carers' interpretations of how individuals express themselves and how they best understand. Everyone who knows a service user well is invited to contribute. For the process to be effective, we ask that a minimum of four people participate.

This paper outlines the background, process and outcome of designing a Communication Dictionary. It briefly describes the introduction of the Dictionary into differing backgrounds and explores how creating a Communication Dictionary produces both challenges and opportunities.

Introduction

Each Communication Dictionary is created for an individual disabled person,

and represents carers' interpretations of how individuals express themselves and how they best understand their environment.

The Communication Dictionary can best be described as a process for supporting change and facilitating communication, and a document which captures and preserves the detailed knowledge of communication partners.

Koski and Launonen (2012:2) describe skilled communication as being sensitive in nature, and they describe sensitive communication as an ability to 'perceive and interpret the communication partners' signals accurately' and an ability to respond quickly and appropriately. Skilful communication can also encompass the use of a facilitative style, requiring the communication partner to accept the disabled person's communication as worth listening and responding to (Koski and Launonen 2012).

Creating a Communication Dictionary

A Communication Dictionary is created through collaboration between people closest to the individual with communication difficulties and a facilitator who listens, probes and records the ideas expressed. The process is divided into three parts:

- expressive communication;
- understanding;
- and
- an action plan.

Part one: expressive communication.

We have found that, on the whole, contributors to a Communication Dictionary find it easiest to describe expressive communication, so this is where the process starts. The aim is to capture a detailed description of how the person with a learning disability expresses him or herself and what this expression means. In line with the total communication ethos, all forms of verbal and non-verbal communication are recognised. Each contributor describes their perceptions of how the supported person expresses him/herself. For example, what facial expressions, movements, gestures, signs, vocalisations and/or words have they noticed the person using and what do they interpret these to mean?

Part one of the Dictionary has two columns.

The first column identifies what a person does to express a range of meanings (intentions, emotions etc.). The second column, headed 'and we should' identifies advice which will be useful to someone who does not know the person, stating the ways the person's expression can be acknowledged and responded to. See Figure 1.

The Communication Dictionary process provides the opportunity to create guidance for communication partners on how to interact effectively. At the end of part 1 there is an 'and we should' section, where participants are encouraged to provide a description of optimal family/staff members' interactive style in support of the

Figure 1

Figure 2

individual concerned. Many support staff struggle to complete the 'and we should' section, feeling their information is obvious. We have found it helpful to point out that it is only obvious what to do when someone really knows the person well. The facilitator summarises in a way which captures all contributions, so that the Communication Dictionary is written as if for someone new to the person.

Part two: understanding.

The second part of the Communication Dictionary also has two columns. This section contains information about how the person understands information. A heading provides examples of what someone may wish to say to the service user. Column one then records how family members or staff report they currently help the service user to understand. See Figure 2.

The facilitator invites each member of the group to describe, for example, how they let the person know what is happening. Here, it is important to remember that many support staff over-estimate the service user's ability to understand spoken language, and to draw attention to their skills in simplifying their language, slowing the pace, and using gesture or sign to support their speech. Discussion about the detail of what they actually do has been an area where staff and family members can be surprised to recognise what they are doing intuitively.

The second column in this section presents the approach the group agrees is ideal, after they have exchanged their ideas. Again, the facilitator's skill enables the group to negotiate and arrive at a point which they can all accept. This may include identifying, for example, specific objects of reference, signs and visual

timetables in addition to verbal input.

Part three: the action plan

Throughout parts one and two, the facilitator works with the family and support staff to identify potential areas for further communication development. The Communication Dictionary process usually elicits a wealth of ideas, which need to be prioritised and agreed. In this third part, any additional training needs for support staff are identified and responsibility for completing any actions agreed.

It is a living document and there is no point at which it should sit on a shelf, or be filed with records but never consulted.

The process for updating the Communication Dictionary also needs to be agreed. In our experience, especially where there are frequent staff changes, it has been found ideal to have a brief update every 6 months, to ensure that it still meets the needs of the service user and support team.

Current developments

The Communication Dictionary, which has existed in paper form since 1997, has been redesigned by Total Communication Services CIC. In revising the Communication Dictionary tool, new sections have been included in response to feedback on its use in practice. There is a 'Symbolic Development' section, based in developmental psychology, to signpost staff to the most appropriate means of supplementing their spoken language. A 'Choices' section provides a short summary to list the types of choices the person may be asked to make. This section can be helpful in informing Mental Capacity assessments in that teams are able to record the types of choices people usually make. 'Sensory Needs' is a

further new section. This has provided useful evidence in practice to support a request for an assessment from a sensory integration practitioner. The new design also incorporates the ability to record sound and visual clips to embed into the Communication Dictionary. This is a helpful feature for hard-to-describe actions and sounds, and enables bilingual dictionaries to be provided. Some languages such as Mirpuri do not have a written form; the option of audio recording provides a means of translating sections for families.

Enhancing service delivery

Research literature suggests Communication Dictionaries ensure effective support in a variety of contexts (Byers, Dee, Hayhoe and Maudsley 2002). Baker's (2001) study of the Communication Dictionary process found that 77.8% of support staff reported a change in their communication techniques as a result of this process, while Goldbart and Caton (2010) suggest Communication Dictionaries are an effective means of communicating with people with complex learning disabilities.

On a practical level, there are benefits not only for the service user, but also families and support staff, Speech and Language Therapy planning and wider service development approaches. Over the past two decades, we have found that Communication Dictionaries have helped to preserve knowledge about service users' communication strengths and needs and the most effective ways to respond to these. This has been reported by families and staff to have been effective in improving the individuals' quality of life. From a Speech and Language Therapy perspective, Communication Dictionaries

are a useful starting point for further communication work and an ongoing record of its effectiveness. They provide a detailed assessment of the communication environment and can be complemented by formal and informal individual Speech and Language Therapy assessment, serving as a means of grounding any recommended therapeutic interventions in current day to day life.

Case studies: Communication Dictionary in action.

The revised Communication Dictionary tool has recently been introduced into three novel areas: a North West charity; a locked rehabilitation unit; and a private dementia care service. The project to introduce the Communication dictionary to the NW charity was funded by a National Lottery 'Awards for All' grant.

Conclusion

Families and staff often report that they have never previously had a facilitated discussion on how they and the person they support communicate with each other. It has become increasingly clear that the time spent in this process is, in itself, therapeutic. There can be surprises, heated discussions and not a little humour as people recount examples of the person's expression. In order to maintain regard for everyone's views, a vital component of the facilitator's role is to help all contributors to remember they have committed to listen, value and respect each others' contributions.

The charity involved in the project is a

learning disability service with a track record of being involved in Person Centred Planning. The staffing is relatively stable, with many members of staff having been employed for more than 10 years. Person Centred Planning is a cornerstone of their approach, and as such they are used to the detailed style of the approach used in the Communication Dictionary. The mental health service is a private business with long-serving members of staff. During the project timescale, the business was regularly facing service upheavals, and as people in their service were living with significant mental health conditions, there were competing pressures as different individual crises were managed. The complexity of the presentation of people on the wards had recently altered without a corresponding increase in staffing ratios, an issue which has since been addressed. This had an impact on the organisation of staff being released to attend the Dictionary sessions and resulted in sessions being repeatedly cancelled. It was difficult to implement any action plan and proposed training (indirect therapy). On reflection, a learning point has been to develop clearer expectations of attendance in the sessions. Sessions currently run with a minimum of 4 members of staff.

Service culture, service pressures and individual circumstances can always have an influence on the process. Staff training for the charity before the sessions probably influenced the process, along with the health of the supported people in other services.

The Communication Dictionary is, however, a powerful tool. It can be accessed direct from Alison Matthews at totalcommunication.org; Alison also offers training in the use of the tool. The source of the document must be acknowledged in any work.

Acknowledgements

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Members of CM are joining an active community and can:

- get a reduced rate to attend the CM International AAC Conference, Study Days & AAC Information Days
 - receive three copies of this Journal
 - become an international member – receive copies of ISAAC e-news bulletins and reduced rate subscription to their journals, newsletters and Biennial Conference
- ...and much more!

Join us! <https://www.communicationmatters.org.uk/page/membership>

When is a sheep not a sheep?

Debunking the myths behind Semantic Compaction and Minspeak®

EMILY GABRIELLE

AAC Education & Resources Consultant, Liberator Ltd

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Mention Minspeak® to some and it may result in a groan, an eye-roll and a snort of derision as the following thoughts are articulated:

- The icons don't mean anything
- The vocabulary makes no sense
- It's hard to personalise
- It's too hard to teach
- It's too much to expect users to sequence icons to get a word

It's easy to see why, if in fact this were true, you'd avoid Minspeak® like the plague. Hopefully if you'll indulge me with some of your time, I can bust some of these myths and get you interested in this amazing approach to language representation.

Let's start with a simple question – What do we know about spoken language?

Speech is an automatic process, in that we learn to articulate sounds in different combinations to create words. We have a bank of sounds at our disposal and we combine these sounds in different ways to make different words. It takes time to refine these skills, as we develop our language at a young age, but with practice, we reach a stage where we combine sounds almost without thinking to produce words. As adults we don't usually have to apply conscious thought to this unless it's a new word in our vocabulary.

Words are flexible - we can use them to mean different things (figure 1).

Words can sound the same but be spelled differently (figure 2).

Different word order can mean different things!!

"Can you do it?"

"You can do it!"

Most importantly, I think, language is SPONTANEOUS!

What have you said today that you didn't expect to when you woke up? I have a cheeky 3-year-old daughter, and one thing I've learned is that when you have a 3-year-old you say unexpected things EVERY DAY; moreover, she creates the most weird and wonderful sentences everyday as she learns and plays.

"Be a robot mummy", "Let's go in the forest", "There's a sticker in my shoe", "I've got blue on my nose."

Finally, spoken language comes with rules, and these rules of word endings and morphology allow us to modify language to indicate time concepts, give comparisons, and indicate quantity or possession.

Wouldn't it be brilliant if we could replicate all of the above as closely as possible in an AAC Vocabulary?

Developed in the 80's by Bruce Baker, who at the time was working on a doctoral program in modern linguistics and language teaching, Minspeak® is an approach to language organisation. Various vocabularies currently available are built on this approach, including Unity 2.0, LAMP Words For Life and

Figure 1



Figure 2



CoreScanner.

So let's look at some of the principles behind Minspeak®.

Principle 1 - Multi-Meaning Icons

This principle is based on our tendency to assign more than one meaning to an item. For example, if I showed you this picture



what words might it make you think of?

You may initially say 'apple', but what else? How about food categories? Action words such as 'eat', 'bite', 'chew' and 'grow'? Descriptive words such as 'hungry', 'fresh' and 'delicious'?

By assigning more than one word to a picture, Minspeak® allows us to use a limited number of icons to represent a very extensive vocabulary.

Let's say a typically-developing three-year-old has a vocabulary of more than 1,000 words. If you wanted to simulate that vocabulary on an AAC device using single-meaning pictures, you would need 1,000 pictures. To organise all those words in an AAC device, you're going to have to divide those words across multiple pages. If you had 50 pictures on each page, you would need at least 20 pages to fit in all the words. How many pictures and pages would you need to match the vocabulary of an 8-year-old or an 18-year-old? 1

The alternative is to use multi-meaning icons as are used in Minspeak® systems. If the child or adult has 50 Minspeak® icons and each icon represents 5 core words, that person can say 250 words! If each of the 50 icons represents 10 core words, then you can say 500 core words with only 50 icons. Imagine if each of the 50 pictures also represented a category of nouns. With 10 or more nouns in each category, the vocabulary grows to well over 1,000 words.¹

Principle 2 – Icon Sequences

The Minspeak® approach advocates unique motor patterns for each word – in essence, each word has its own unique combination of icons (much like each word in spoken language has its own unique combination of sounds). With

repeated practice, the motor pattern for each word can be learned and so over time, automaticity is developed, and speed of communication is increased.

Because the Minspeak® approach also focuses on single words being learned individually and accessed independently from each other, as opposed to focusing on phrases, users can create their own sentences in any word order they wish, and language can be adapted to fit the context (much like in spoken language).

Principle 3 – Rules

Rules within Minspeak® assist in learning

the vocabulary and developing motor patterns for automaticity. At a glance, as a general rule of thumb, word types will fall into the following areas (see figure 3):

Any icon sequence typically ends in one of the coloured areas, depending on the word type.

So, if we hit our 'apple' button (see figure 4) we can see below how the categories change (see figure 5).

The 'My Categories' sections also allow for easily personalisable pages for personal vocabulary. They are consistently located with ample space to populate and include categories such as:

Figure 3

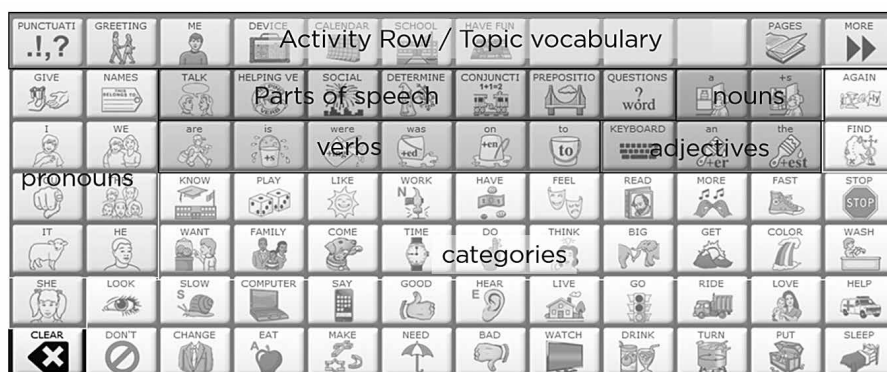


Figure 4

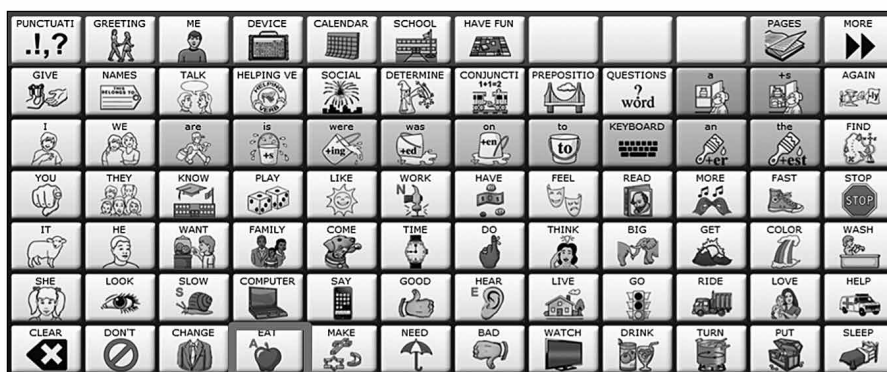
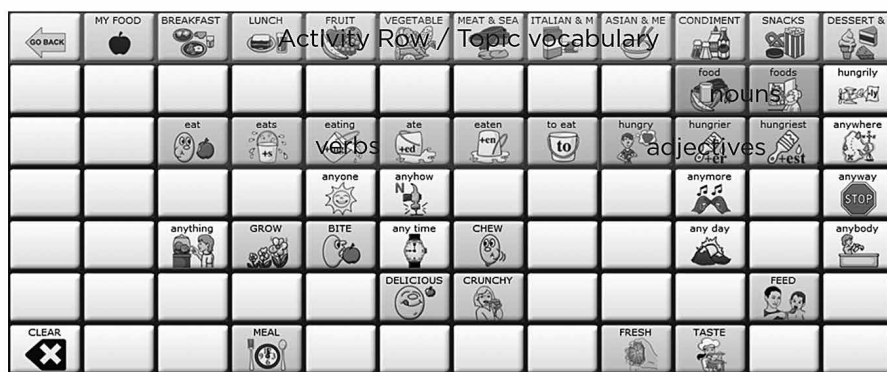


Figure 5



'My...'

Books
Family
Favourites
Food
Games
Likes
Movies
Players
Notebooks
Religion
Social media
Songs
Teams
TV shows
Wants

This means you can easily add personal topic words without wondering where to add them.

Useful tools

Within the vocabulary itself, there are 2 useful tools which can support the user in both learning and implementing the vocabulary.

The *Word Finder* tool allows you to quickly search for a word, and then will either guide you to the word or show you how to locate it (whichever you prefer), allowing you to practise the motor pattern. This is incredibly useful when modelling, particularly if you are getting used to vocabulary in the early days (although I still use this tool to support my practice!!).

Vocabulary Builder allows you to temporarily limit the number of words available on the display – this allows you to focus on a small set of target words while

maintaining consistent motor patterns for those words. You can use it during teaching moments to target specific words you may be learning, and some pre-set pages also help you quickly select appropriate vocabulary for the specific activity or context.

Additionally, the free-to-download *PASS Software 2* enables you to emulate the vocabulary on a PC. This is great for familiarising yourself with the vocabulary, editing, modelling language on a class screen and creating smartcharts (see figure 6) to assist icon learning.

Web-based resources

Finally, resources such as Realize Language 3 and AAC Language Lab 4 are great resources to help to monitor vocabulary use and set goals within Minspeak® vocabularies, including supporting language progression and teaching the Unity vocabulary through the Unity Curriculum Guide.

So, we now know, Minspeak® vocabularies enable automaticity and independent and novel communication. They ensure the rules of language are learned and mean that words can be used flexibly. All of which combines to allow fast and spontaneous communication – much like many of the features of spoken language we considered at the start of this piece.

Minspeak® vocabularies have icons which carry multiple meanings, have rules to help us understand the organisation, are easy to add personal words to, have a wealth of online teaching resources to support them and, in fact, words within a Minspeak® system often take less hits to say than in other more

'page-based' systems. I think we just busted those myths we thought about when we started!

If you aren't familiar with Minspeak®, please do take more time to learn about it – I promise it will be worth it. If you don't believe me, take it from some people who are using it....

Minspeak ...

*"Means I can talk
Lots of words
Always things I need
People can understand me
I can join in conversations
I use it linked up to a computer to do my work
It's easy to use
Have used all since I was very young now 22"*

Zoe, 22

"It is good, I can tell my Mummy and Daddy what to do and what I want"

Abbie, 9

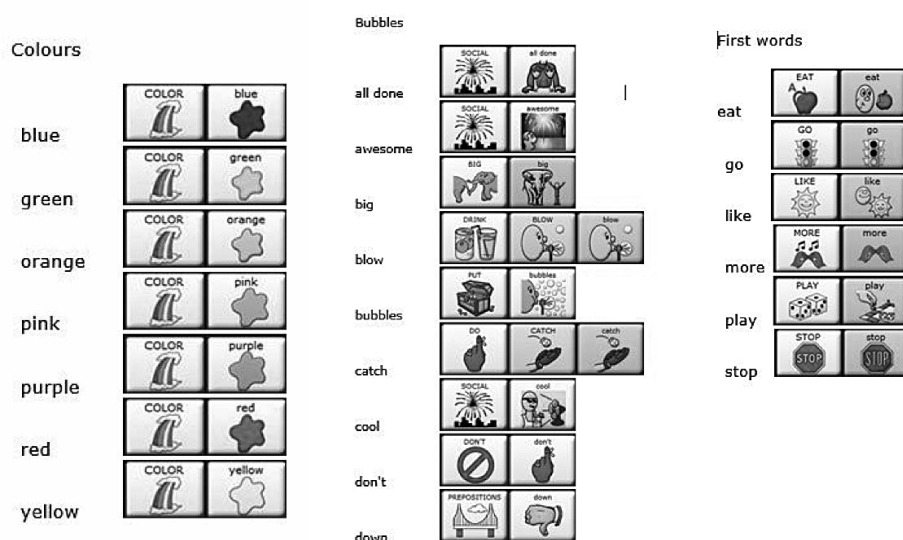
"I do love the language of Minspeak because it did give me the power to do anything anyone else can do. I do work with MP's and I do work with the NHS and the council and Minspeak is helping me. I have company with my best friend teaching our students coding. I am teaching about program coding to users where they have communication aids themselves. If I didn't have that language of Minspeak do you think I have beautiful wife what I have. Remember communication is most important and if I didn't have Minspeak just think where I would be today. If I didn't have language Blissymbols in Minspeak I can be in care home. My teacher believed in me that is most important to thing have. They did say it was hard but she did help to love Minspeak language and she did teach Blissymbols but we didn't have Minspeak at first I can talk about my passion of language of forever haha."

Pete Zein

References

1. www.minspeak.com
2. https://www.liberatorsupport.com/downloads/nv_demo/uk/NuVoiceInstall_en-GB_2018-09-24.exe
3. www.realizelanguage.co.uk
4. www.aaclanguagelab.co.uk

Figure 6





Embedding Augmentative and Alternative Communication in Educational Settings

EMMA BOWERS

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Introduction

With advances in the field of high-tech Augmentative and Alternative Communication (AAC), increases in quantitative research in this area and changes to AAC services in the U.K., there are an increasing number of students being given the opportunities to overcome the communication barriers they face.

When being provided with a means to communicate, it is necessary for students to then be given the reasons and opportunities to do so, throughout all contexts. This study will focus on the educational context.

Offering a means of communication is only the start of the exciting communicative journey that students will embark upon. It is vital for students to subsequently have access to reasons and opportunities to communicate.

AAC in Educational Settings

Students spend up to 190 days in educational placements per year. This offers students consistent opportunities for explicit teaching of alternative communication. However, studies have shown that educational settings can both promote and hinder language development (Von Tetzchner and Grove, 2003). There are high levels of voice output communication aids being abandoned in educational settings, outside of direct Speech and Language Therapy (SALT) intervention.

This may be for multiple reasons, including lack of training, poor transitions and perceptions of the device or the AAC user. It is necessary to identify ways of

embedding AAC in educational settings successfully to ensure its consistent use.

AAC in the Classroom

Best practice strategies for AAC in the classroom highlight that students should always have access to their AAC, programmed with an appropriate language package allowing for a full range of communicative functions. They should also receive comprehensive literacy teaching and be exposed to modelling (aided language stimulation) and a descriptive teaching model.

Naturally, the priority for teachers is teaching and achieving academic targets. There is often a lot of time spent on personal care, demands of the curriculum, limited access to staff, frequent use of agency staff, behaviour management, directing teaching assistants (TAs), difficulties with funding and lack of time. Therefore, the reality of students' access to embedded AAC in the classroom is:

- Complex language packages with redundant or insufficient vocabulary
- A heavier use of fringe vocabulary
- Limited modelling and access to AAC
- Time spent programming ever-changing academic vocabulary into devices instead of core vocabulary
- Limited or ineffective literacy teaching

Time is needed for the teaching staff to be trained fully on the use of high-tech AAC, and additional time spent embedding best practice strategies. When this is in place, the student is better able to

access the curriculum, respond effectively to teaching tasks, and behaviour is improved secondary to this.

Instead, AAC strategies are often embedded one by one, at a time that is best for staff, to achieve the communication target. It is the responsibility of the Therapist to support staff as much as possible to fully embed communication strategies.

The literature recognises that it is vital for students to be exposed to embedded Speech and Language Therapy input, and to be given consistent opportunities to see aided language modelled. To support with this, there have been the development of resources by many sources, including communication systems developers. These resources promote best practice strategies. To review these resources, please observe the 'Further Information' section.

Project Information

This project was based on three case studies. Each student used a different piece of communication software from differing suppliers, in turn with differing support resources available.

The software and supportive resources included:

- Tobii Dyanvox Snap + Core First software and Pathways for Core First resource
- Assistiveware Proloquo2go software and Core Word Classroom resource
- Liberator Easy Chat software and AAC Language Lab resource

Project Aims

1. To quantitatively track high-tech AAC users' progress following the use of published supportive resources.
2. To identify the ability to generalise resources to other modes of alternative communication, including low-tech.
3. To qualitatively review best practice strategies for embedding AAC into learning environments, and the effectiveness of published resources.

Results were interpreted, and conclusions drawn to identify further ideas for embedding AAC in educational settings and to consolidate best practice strategies.

Results for the AAC Users

AAC USER 1:

- Hardware: Tobii Dyanvox i12
- Software: Tobii Dyanvox Snap + Core First
- Resource: Pathways for Core First
- Access: eye-gaze
- Educational placement: home schooled

Prior to the implementation of this hardware and software, User 1 had not had any access to any means of alternative communication at all. User 1 mainly used the device initially to develop efficient prerequisite skills needed to communicate using high-tech AAC. Following the initial introduction to Snap + Core First, the Personal Assistant (PA) was also introduced to the supportive resources. User 1 progressed from an emergent user to emergent-transitional, and is now combining two to three words.

AAC USER 2:

- Hardware: Apple iPad
- Software: Assistiveware Proloquo2go
- Resource: Assistiveware Coreword classroom
- Access: direct
- Educational placement: SEN further education

User 2 had not received previous SALT input in the past, and so parents had self-funded the hardware and software. A re-assessment of communicative needs was completed, and the software was edited down to six cells, with key motivators and needs stored and simple navigation. The device was re-implemented into the classroom and

resources handed over. The teacher reported after six weeks that these were useful initially. However, it was later identified that the resources had not been used. Instead, staff had supported the user to use their device only at times when they had seen the Therapist model this. Staff did not generalise these skills to other times or utilise the resources.

AAC User 3:

- Hardware: Liberator Accent
- Software: Liberator Easy Chat
- Resource: Liberator Language Lab
- Access: switch and row column scanning
- Educational placement: Language resource unit attached to mainstream primary school

User 3 was also at the stage of implementation. The use of the supportive resources was directed initially by the SALT, but after modelling, the TAs began to self-direct and implement the use of the resources. They continued with this independently and reported that the resources were easy to follow. They were an incredibly motivated team, and successful in teaching AAC. User 3 quickly progressed from an emergent user using single words, to combining sentences with four key words.

Review of Supportive Resources

When reviewing the use of the supportive resources, three main themes were identified:

1. Progress was seen in two of the three cases when using the supportive resources

The supportive resources offered creative and descriptive lesson plans and explicit methods of how to teach AAC. These are incredibly useful resources that both promote, and help staff embed, strategies, but the use of these strategies is dependent upon the motivation of the staff team to use them.

2. All resources can be generalised to other means of alternative communication.

Although the resources are developed by independent suppliers, they can be easily generalised to other software packages and low-tech AAC. They offer fantastic lesson plans, materials and target setting/tracking and so reduce demand on teacher time, but again the use of these resources is dependent upon the

motivation of the staff team.

3. The supportive resources do not encourage the staff to embed AAC into the school day.

The prepared resources reduce planning time and demands on staff. The guidelines make embedding easier and help the students to develop their AAC competencies. But unless the staff team are motivated to use them, the resources are also abandoned.

The study identified that the supportive resources are all incredibly useful and supportive. When used appropriately, and the staff are focused on developing AAC users' communicative skills, they are very effective in reducing time and demands on the staff team and support the user to develop their AAC competence.

However, despite the resources being useful, and the prepared resources reducing time demands on the staff, unless the team are motivated to use them, the resources are also abandoned. The supportive resources alone do not encourage the staff to embed AAC into the school day.

Motivation of the Staff Team

For those who identify communication as important, the staff team are incredibly motivated to embed AAC. But this still does not answer, why for some staff teams, they continue to promote limited communication opportunities. Interviews with teachers and TAs were completed, to try and identify the answer to this question (see figure 1).

Some staff reported that they observed the benefits of modelling and so were motivated to model themselves. It was reported that staff thought modelling was very easy to do and there was no reason why some staff could not do it. It was also reported that more consistent and embedded support offered by the SALT, promoted confidence for staff to embed AAC themselves.

Other members of staff reported that they perceived the use of high-tech AAC as an additional task. It was explained that staff struggle to find the time to use high-tech AAC or remember to use it. This is an incompetence of the placements culture, where the staff are not aware that communication always happens, and AAC is a user's voice. For example, one teacher reported it is better and easier for staff to use the AAC device "when there are less symbols".

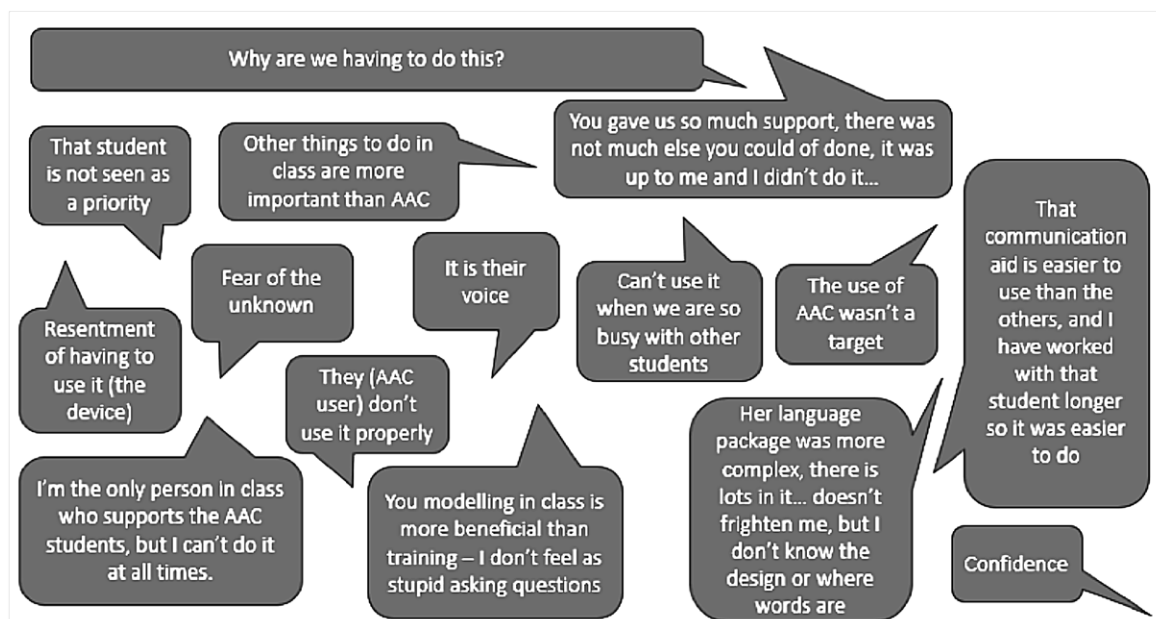


Figure 1

Embedding AAC successfully in educational placements is therefore dependent on the culture of the placement, and it is this that we need to change. The following best practice recommendations have been identified to assist with both cultural change and ensuring the implementation of AAC strategies into the educational environment. It is advised that further studies are completed to test the validity and reliability of these suggestions.

Best Practice Recommendations:

- Senior leadership team to have a communication focus and to support the SALT.
- Positive and supportive therapeutic relationship with SALT and members of staff.
- Essential for all means of AAC needed, and accompanying reasons and opportunities strategies to be outlined in the users' EHCP plan.
- SALT to think of terminology used for AAC and ensure that all staff are aware of its meaning.
- AAC to be identified upon entry to educational placement by SALT.
- SALT to support the student with transition to next placement and continued use of AAC there.
- Regular formal training followed by training competencies staff must achieve.
- Learning walks on the means, reasons and opportunities to communicate.

- Direct AAC sessions with SALT and the AAC user, observed by a TA.
- Frequent and timetabled embedded therapy sessions where SALT models AAC strategies in class.
- Regular staff liaison and handover of supportive resources.
- SALT sets communication target.
- Staff to give regular feedback to SALT about the further support they want.
- Support to be open and consistent from the SALT.
- Information relating to networking and being involved in the wider AAC community to be shared with staff.
- SALTs to offer to do information or training days for newly qualified teachers/trainee teachers.
- SALT and staff to promote the normalising of the use of AAC.

Summary

1. Supportive resources support high-tech AAC users to develop communication competencies when used appropriately by the staff team.
2. Supportive resources can offer additional support for the staff team: reducing planning time, setting targets, tracking progress and offering descriptive teaching strategies.
3. Supportive resources can be generalised to other modes of alternative communication, including low-tech AAC.

4. However, supportive resources will be abandoned if the staff team are not motivated to fully embed means, reasons and opportunities to communicate.
5. Staff can perceive AAC as an additional task and may have negative associations with alternative communication.
6. Embedding AAC successfully in educational placements is dependent on the culture of the placement, and it is this that we need to change if AAC continues to be abandoned.
7. Best practice strategies require consistent, positive and assertive embedding.

Further Information

For further information regarding the supportive resources, please review the following links:

Tobii Dyanvox: Pathways for Core First Learning

<https://www.tobiidynavox.com/en-GB/software/free-resources/pathways-for-core-first/>

Assistiveware: CoreWord Classroom

<https://coreword.assistiveware.com/login>

Liberator: Language Lab

<https://www.liberator.co.uk/resources/aaclanguagelab>

References

- Von Tetzchner, S. and Grove, N. (2003). 'The development of alternative language forms'. In Von Tetzchner, S. and Grove, N. (eds). *Augmentative and alternative communication developmental issues*. London: Whurr. pp. 1-27.



ATMentor Launch Event

FRANCESCA SEPTON

Manager of the ATMentor Service

Email: info@attherapy.co.uk

ATtherapy are leading experts in Speech and Language Therapy who provide support to people who have communication impairments due to a brain injury at birth or acquired later in life. A large team of Speech and Language Therapists with a range of specialisms work with both adults and children to provide a high quality, compassionate service. As well as Speech and Language Therapists, Assistive Technologists and Speech and Language Therapy assistants, the company has a team of highly proficient AAC users whose role is to mentor and inspire others who are learning to use AAC and show them what's possible.

Mentoring is a way of giving time and support to another person to help them make changes in their lives. The ATMentor team know at first-hand what it is like to learn to use AAC, and they are acutely aware of the barriers that AAC users face and how to overcome them. They work as a team around the individual using AAC, and by sharing their own stories they are able to challenge perceptions of AAC, embed positive attitudes, and highlight and describe effective practice and techniques.

The ATMentor service was founded in September 2016 with two ATMentors. As the impact of the ATMentor role was recognised and the need for mentoring





input increased, the team expanded and now includes 6 staff in paid employment. A number of the staff within the team have achieved mentoring qualifications, and the service structure has developed to recognise these different attainments and ensure there is a clear pathway of staff development. On the 22nd May, the ATMentor service was launched as a branch of ATtherapy at Manchester Central library.

The event was opened by Andrea Sharples and Hayley Power (Clinical Directors) who provided an outline of ATtherapy and ATMentor services, background information about the company and an introduction to the ATMentor team - Laith Ritchie, Gregor Gilmour, Jessica Forster, Jodie Turner, Afonso Ramalhoso and Adam Lenartowicz.

The ATMentor team defined their role and shared some examples of mentoring sessions across different environments. The team holds twice-yearly communication groups, aimed to provide lots of fun activities with communication opportunities and parent-carer workshops. Photos and videos were shown from these events and plans for future events were described. The need for sponsorship to continue to run these events was recognised. Video footage from training sessions delivered by the team was also shown and the team listed some of the positive feedback they have received such as, "it encouraged me and my class team to use communication devices more often" and, "having a presentation by a Mentor AAC expert is really enlightening and inspiring".

The ATMentor team outlined other role responsibilities and work commitments, including planning, session write-ups and attendance at workshops on a range of topics including presentation skills, assertiveness skills, planning, confidentiality and safeguarding. Additionally, the team

described their continuing professional development activity and involvement with the AAC community through attendance at training days as well as two presentations at the Communication Matters conference over the past few years, entitled 'Mentoring at ATtherapy' and 'AAC Summer group'. The presentation closed with a recognition of the benefits of working with the ATMentor team for

the employee, including the satisfaction of knowing you have helped another person and also some of the social aspects of work such as work parties.

Following the ATMentor presentation, mentees and their families presented about their experiences of the ATMentor service. Matthew Peers (mentee) presented a short presentation with information about himself, jokes he likes to tell





working with ATMentor, Jess Forster, who she has been working with for 2 years. Ilaria spoke about her first session with Jess at a restaurant, *"meeting Jess for the first time was good. I asked Jess lots of questions like; what is your name? how old are you? when is your birthday? and do you need help eating?"* Ilaria explained how she usually wins when playing games against Jess in mentoring sessions, as she cheats. She added that she has played lots of games in joint mentoring sessions with other mentors and mentees which she has enjoyed. Ilaria stated, *"it has been good to meet someone else who uses a communication aid. It is nice to speak to Jess as she understands how annoying it is when communication aids break."* Additionally, Ilaria reported that mentoring sessions have given her more confidence, have been useful to chat about different equipment (e.g. cups for drinking and wheelchairs) and supported her to stay on the same topic of conversation. Christian Spragg (father) wrote a short summary which highlighted the impact that the mentor service has had on him:

"I'd like to say Ilaria has come on leaps and bounds over the past year, largely due to her participation with Jess, her mentor, and the mentoring team. The mentoring sessions have opened up an avenue to confidence, communicating and Ilaria's sense of worth and well-being. She has progressed and far exceeded all expectations as she has taken up with ease and speed the utilisation of eyegaze technology during group chats with her mentors. I'd like to therefore thank the mentor team for their input and support. They have boosted my little girl's communication, education and confidence to live and partake a more fulfilling role in society."

A video by Lizzie Rigby (mentee) who has received mentoring input from Gregor Gilmour was shown. Lizzie shared lots of information about herself and her likes and hobbies, which are embedded into mentoring sessions. She stated that *"mentoring sessions make me happy! We play pub quizzes about my favourite things like Gavin and Stacey, Bad education and FRIENDS"*. A quote from Lizzie's mother was also presented: *"poor Gregor puts up with a lot from Lizzie's girly team. Liz looks forward to Gregor's sessions and thoroughly enjoys the chat/games – especially if she wins. I personally see Gregor as a super role model for Liz. He has achieved so much and hopefully this will inspire Liz to do similar"*.

others and details of mentoring sessions. Matthew has worked with both Afonso and Laith, and listed what he learnt from having a mentor:

- *"There are lots of different eye gaze devices and they are all a little bit different."*
- *I get scared when my device breaks down. Fons has helped me understand that I can use my communication board when this happens. Fons' device broke in our mentor session and I helped him too."*
- *I have asked Fons if he uses a hoist to get into bed in a hotel. He gave me lots of advice about staying away from home."*
- *Laith helped me to use my device by*

showing me a different way to calibrate and how to check for updates."

Hayley Mason-Peers (mother) then followed to describe Matthew's AAC journey and the quick improvements she witnessed from Matthew having an ATMentor. Hayley stated that, *"prior to the mentor input, Matthew had been developing his skills with Speech and Language Therapists and when changes were suggested, he was reluctant to do so. As the mentors are closer in age and also disabled, he took their advice onboard quickly and learnt new effective ways to communicate"*.

Ilaria Spragg (mentee) delivered a presentation about her experience of



After the presentations, there was a networking opportunity with refreshments.

The event was well-attended and lots of positive feedback was received:

"I just wanted to say a huge thank you for inviting me to the AT Therapy Mentor & Mentee event on Wednesday evening, I was completely overwhelmed at the amazing team of mentors and how they have helped their mentees – I loved their presentations – it was truly fascinating to see. It left me in no doubt about the fantastic work the team at ATtherapy do"

"Really pleased I came as it has helped me understand your mentoring better."

"The event was wonderful, I have identified lots of people who will benefit from ATMentor input".

"loved the launch last night, what you are doing is brilliant and ... we have young people who could benefit"

"You can see how the company has such a massive heart and it was so impactful, particularly hearing from the mentees' perspective and their families. You can see the huge potential of AAC to improve communication and quality of life. The ATMentor team is so important to show new AAC users the potential of AAC but also offer guidance in an authentic and supportive way."

"Watching the ATMentors look so proud as their mentees presented was so lovely to see"

"I just wanted to say how brilliant the ATMentor launch evening was. The Mentors, mentees and Fran have clearly worked so hard to develop and establish such an innovative service. I was humbled and encouraged throughout the presentations and thought the entire evening (including hearing family perspectives) was excellent."

To learn more about the team and the fantastic work they do, please go to: <http://www.attherapy.co.uk/meet-the-team/>

Facebook: **ATMentors**



AAC Summer Group

Run by the AAC mentor team

Jessica Forster, Jodie Turner, Afonso Ramalhos, Gregor Gilmour and Adam Lenartowicz



Group ran on 2nd August 2018 at Manchester Metropolitan University, attended by 14 AAC users

5 AAC Mentor-led stations were set up. There were lots of fun activities to encourage communication! Low-tech resources and feedback envelopes were provided.

A parent/carer workshop took place which included an AAC mentor presentation, discussion around AAC hardware/software and ideas to promote AAC use in the community.

The group was well-received and therefore ATtherapy Mentors are planning to run different themed AAC groups twice a year. Look out for the next event!



Boardgames/getting to know you activities



Pamper



Music Zone with Sing and Sign



Mocktail Bar



Dance workshop



Resources

CALL Scotland – Free Online Professional Learning Resources on AAC

GILLIAN MCNEILL

Specialist Speech and Language Therapist, CALL Scotland

Email: gillian.mcneill@ed.ac.uk

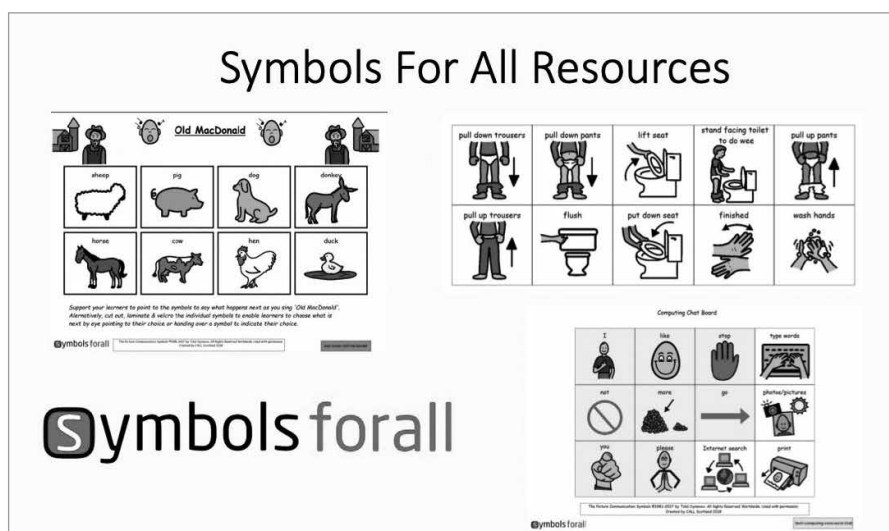
www.callscotland.org.uk

CALL Scotland, based at the University of Edinburgh, has been around since 1983, working as a Research and Development centre as well as a working Service unit, supporting communication and assistive technology for learners in Scotland. Our core funding comes from the Scottish Government, so our work is concentrated in Scotland, although we are in close contact with other organisations which perform a similar role in other parts of the UK.

We respond to questions on CALL Scotland research and development from throughout the UK, and overseas.

We are a team of 10, with a skill mix and backgrounds ranging from teaching, Speech and Language Therapy, Assistive Technology and engineering, supported by ICT and admin staff. Our mission is to help children and young people to overcome disability and barriers to learning created by their environment, and to fulfil their potential. We provide pupils and families, local authorities and professionals with:

- Strategic leadership
- Free Assistive Technology resources
- Specialist Pupil Assessment and Support
- CPD and training
- Information and advice
- Equipment loans and Technical Services
- Knowledge transfer, research and development



To fulfil our aim to provide information and advice, and Assistive Technology resources, we have a range of practical tools available to access from our main and mini - websites.

Particularly popular are our range of posters and leaflets that are free to download. These include our growing number of app wheels, detailing recommended apps for AAC, dyslexia and dyscalculia. Look out for another due in 2019! Our other posters on different topics include communication, eye gaze, and supporting reading and writing difficulties.

Symbols for All (www.symbolsforall.org.uk) is one of our newest mini-websites, with symbolised resources supporting the curriculum and some specifically for shared reading. Shared reading resources

for young readers are available in printed format, as well as device overlays and an iPad app file.

As part of our aim to provide CPD and training, we have developed two sets of online learning modules on AAC, available on our AAC Scotland website (www.AACScotland.org.uk).

These modules were commissioned by NHS Education Scotland as part of the Scottish Right to Speak initiative and were written by Sally Millar, past Joint Co-ordinator and Specialist Speech and Language Therapist at CALL Scotland. They are rooted in the evidence and experience she collected from over 30 years working in the field.

Our first series - an Introduction to AAC, was published in 2014 and is accessible to

Do I need to use AAC in my school?

Yes!

- Communication is vital for well-being and for education.
- All local authorities and schools are responsible for supporting all pupils with additional support needs of all /any kind.

You may already have AAC learners in school.

A learner with complex communication support needs, who needs AAC, could enrol at any time.



AAC is a valuable approach that can transform life for some learners, and can often help and support a wide range of other learners above and beyond those initially identified as having significant communication needs.



how to introduce and support the use of AAC in educational settings.

Where can you find the modules?

The modules are hosted on our newly-updated AAC Scotland website, where you will also find other information and resources for AAC, including videos, links and downloads.

What's in the modules?

The content focuses on positive outcomes for pupils, through developing staff knowledge and skills in AAC. They are evidence based, highlight best practice and provide a large collection of resources. The modules are presented in an online multi-media format, so you will need to have an internet connection.

There are seven modules in total, which can be viewed on your PC or tablet. Each one starts with a description of the learning outcomes and ends with a quiz to test your knowledge and a completion certificate to print. Although it is recommended that everyone starts by viewing the first module – Setting the Scene, the subsequent modules can be viewed individually or in sequence. It is possible to skim through the modules in a relatively short time, however the total learning time depends on the number of modules completed and how much detail is viewed. We estimate this could take up to 40 hours to complete.

The module titles and descriptions are:

1. Setting the Scene

This introduces learners who have a communication support need and why language and communication are central to learning and life skills in general,

AAC in School

people without any previous specialised knowledge of communication disability or of communication aids, and provides an introduction to the topics.

The module titles are:

1. Communication in Everyday Life
2. Communication Support Needs
3. Introducing AAC
4. Helping to Make Communication Work
5. Inclusive Communication

Each module takes about 5-10 minutes to view – or up to around an hour if you want to fully explore the many layers, video clips, links and resources. Each one finishes with a quiz, and a printable personalised certificate. The modules will support induction of new staff and in-service training in education, health and social care professions, the voluntary sector and public and commercial services. They are equally useful for education of students in a variety of disciplines e.g. therapy, education, nursing, medicine, social care, nursery nursing etc.

Our second series – AAC in Education, was published in 2018 and serves to raise the knowledge and skills of staff working with pupils in schools. It addresses many aspects of AAC implementation and support, including a communication-friendly school environment, team roles and transition planning. The content is based on the learning needs of workers at IPAACKS¹ skill level 1/2 and beyond. Much of the content will also be of interest to those

working with children and young people in other sectors, such as health, social care, voluntary and independent sectors.

These modules include contributions from a number of AAC experts, and CALL Scotland are grateful in particular to two Scottish AAC services for their input. To KEYCOMM, the Lothian Communication Technology Service for their input on the CODES framework and their transitions project, and to FAAC, Fife's AAC Team for input on their symbolising schools project.

Who might use the modules?

AAC in Education is written for staff and students more specifically working in education and addresses many aspects of

Specialist information and expert advice

- Open access national information and advice service delivered in response to enquiries by telephone, letter, email.
- Publication and circulation of e-News, newsletter, books, information leaflets and the CALL Scotland web sites.
- Provision of a specialist library and web search facility for all enquirers.
- Provision of online Professional Learning resources on AAC (funded primarily by NHS Education Scotland).



Information and advice



Staff photograph

before prompting you to reflect on the value you place on AAC as a tool for learners, your role to support its use and how ready your school is for AAC.

2. Communication-Friendly Schools

This addresses the benefits of making schools accessible and inclusive for all pupils, including those with different levels of communication support needs, with six suggested steps to creating a Communication-Friendly School and examples of school symbol inclusion projects.

3. Augmentative Communication in Practice

This addresses practical strategies to support AAC and integrate AAC into daily school life, covering six fundamental

issues from having access to an AAC system at all times, equipment management, expectations and opportunities for communication, to core word and appropriate vocab teaching.

4. Educational Frameworks

This describes how communication is at the heart of Scottish Curriculum (the same principles will apply in other countries, although exact details may differ), with most of the module addressing assessment, planning, monitoring and recording techniques and tools, including setting appropriate targets for AAC learners

5. Supporting Teaching and Learning

This extensive module addresses adapting the curriculum and teaching

approaches to meet the learning needs, interests and abilities of AAC learners, with a focus on four important aspects. The first covers the rationale for differentiating the curriculum for AAC learners, while the second covers resources for those teaching learners with Profound/Severe and Complex Additional Support Needs. The next focuses on teaching language and literacy, with inclusive literacy approaches such as shared reading and teaching phonics, and lastly we look at ICT for education, with suggested educational software and case stories.

6. Working together to support AAC

This addresses the need for team working and the many roles involved in supporting a learner with complex communication needs where AAC is involved, especially if this is a high-tech device. It includes working in partnership with parents and families, and strategies for involving and consulting learners.

7. Communication for Life

This module focuses on supporting transitions from school to adult life for young people who use AAC, with a transition project example and resources for preparing for transitions such as Personal Communication Passports.

There has been a great response to the modules from staff, and many individuals have accessed them either individually or as a school group. Our posters, leaflets and other resources are downloaded by individuals around the world on a daily basis, are linked to by many other sites and we receive frequent direct enquiries about them. We really hope that many individuals in the future can make use of them, to enhance their skills and practice.



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Access to AAC for Children with Cerebral Palsy: Potential Challenges and Practical Solutions

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Introduction

Cerebral Palsy is a condition that primarily affects an individual's muscle control and movement, but has a wide range of associated challenges, all of which can impact on communication. These challenges range from movement, sensory and sensory processing challenges to cognitive difficulties and many others. This article aims to discuss some of the main issues faced by children with Cerebral Palsy, which affect their communication and access to Augmentative and Alternative Communication. It will also offer advice on tried and tested methods of implementing both paper-based and power-based AAC that we have found to be successful with this client group.

Potential Challenges

Movement difficulties relating to Cerebral Palsy can impact upon an individual's communication in a wide range of ways. Often, children with Cerebral Palsy have difficulties with making and controlling their movements, which of course include those movements needed to communicate and access AAC. These include: movement of the muscles required for speech itself; production of facial expressions and gestures; achieving finger- and eye-pointing; and those required for the use of alternative access methods such as switches.

Alternatively, issues can arise from the production of uncontrolled or involuntary movements, including athetosis and persisting reflexes such as an ATNR (Asymmetrical Tonic Neck Reflex). In fact, a persisting ATNR alone can affect hand/eye co-ordination, eye movements and tracking, balance and the ability to cross midline, which can all significantly impact upon access to AAC. Unwanted or uncontrolled movements can also often be misinterpreted by a communication partner, who may be unfamiliar with the individual involved, leading to further miscommunication.

Sensory and sensory processing issues are also common amongst this client group. Visual impairments are common in children with Cerebral Palsy and can for example limit an individual's ability to view and interpret symbols or scan across a page to identify the required word or symbol. Auditory difficulties may mean that children struggle to hear what a communication partner is asking, again impacting on communication.

Other influencing factors for children with Cerebral Palsy which may affect their communicative abilities and access to AAC are many, and include the following: seating and positioning, medication, pain levels, reasons and opportunities for communication, motivation, fatigue, health, muscle tone and sensory input. It

is useful to note that any and all of these factors can vary from one day to the next within children with the condition, and as a result can influence a child's movements and abilities from one session to the next, which creates its own challenges in terms of developing access to, and using, a suitable AAC system.

Introducing communication and access methods

Use of a power-based AAC device is a complex process, requiring a wide range of competencies (Light & McNaughton 2014, Beauchamp et al. 2018).

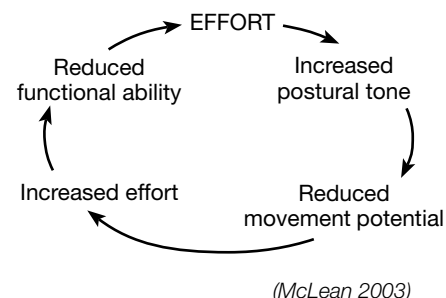
Sometimes, access methods, a vocabulary package and use of an AAC device are all introduced together, leading to a complex and negative experience for children with Cerebral Palsy. In order to make this a less challenging task for individuals and to increase the chance of successful use of the device overall, it is worth considering separating use of the device and development of communication skills entirely from the development of access skills (Burkhart 2018).

Both aspects can be carried out at the same time, but in separate tasks until the individual is more confident and skilled in both areas. This may involve practising use of a switch to access a toy, song, video, or other environmental control functions, as well as aided language stimulation/

modelling by a communication partner to develop an understanding of the AAC device and vocabulary.

It is particularly worth noting the following diagram (McLean 2003), demonstrating the impact of effort on the movement of a child with Cerebral Palsy. For many children with Cerebral Palsy, increased effort (of any type) can cause

an increase in the child's level of postural tone, potentially reducing possibilities for movement, and therefore reducing the child's functional possibilities. It must be noted that 'effort' can include any or all of the following: effort to move, think, look and listen and even just to breathe and maintain one's posture.



Practical solutions for developing access skills

The following section of this article aims to offer tips and advice relating to the development of skills to access AAC for children with Cerebral Palsy.

Direct Access

- Consider what body part they will use (finger(s), fist etc.)
- Work on developing and refining pointing skills/movements required for direct access.
- Start out with paper-based AAC, which can be more easily interpreted by a communication partner.
- When considering the layout of AAC to be accessed via direct access, consider:
 - the child's range of movement and where they can access on a page/screen/table top/wheelchair tray.
 - either enlarging or making symbols smaller, and changing gaps between symbols to facilitate access.
 - increasing the number of symbols over time as access skills improve/ become more accurate.
 - having options for navigating between pages of a book for more complex communication systems or for those that can only manage a certain number of symbols per page.
- Consider direct access settings in apps/software e.g. activate first/last item touched.
- Consider use of adaptive equipment to support direct access e.g. keyguards, styluses etc.
- Consider the mounting of both paper based and power based AAC to enable the child to more easily access the screen/page.

Switch Access

Need to consider:

Active participation, problem solving, appropriate feedback, and motivation are also critical components to learning motor skills for access. (Burkhart 2018):

- Identify small and less effortful movements for switch activation.
- You can always alter how they activate switches/switch type as skills develop.
- Use non-communication-based activities initially e.g. switch toys, playing videos and music.
- Make initial switch activities motivating. Find out what the child enjoys and personalise the activity.
- Consider proximity switches if children struggle with switch presses.
- Enable lots of practice to develop skills both at home and at school. This should make switch use more automatic, less effortful and more controlled.
- Ensure you give clear feedback to help the child to develop their skills.
- Consider two switches (move/next and choose/select) to give the child control of the scan speed and develop their movements to activate the switch without the pressure of timing (instead of one switch with automatic scanning, which relies on the child to hit the switch at exactly the right time).
- Play around with access options/switch settings within software on computers/power-based AAC devices e.g. scan speed, accept on switch press/release, length of switch press required etc.
- Encourage the child to focus on the activity rather than just the physical act of pressing the switch.

Switch Access *continued*

- In the early stages of developing cause and effect, try varying the switch type, position and function so the child is able to understand that a switch does not always do the same thing/action. You might also try using two switches for two different functions/activities.
- Aim to consider healthy movement patterns when looking at switch access so that the child does not develop related complications over time.
- The positioning and mounting of a switch is vital to the success of the client in using it.

Partner-Assisted Scanning

- Options of either visual (partner points to each symbol in turn and child selects) or auditory (partner reads out words and child selects), or both together. Consider any sensory issues when considering which to use.
- Support the child to develop a clear 'yes' (and preferably 'no') response. This may involve practising their method of indication and giving clear feedback to enable them to develop this.
- The child can indicate 'yes' when the partner reaches the desired item, or it may be easier for the child to indicate 'no' to all unwanted items (one by one) and 'yes' to the desired item. This gives them control of the scanning speed and reduces the likelihood of mistakes, especially for those who may struggle with timing and sequencing of movements to indicate yes/no.
- Use one or two Big Macs to say 'yes/no' to introduce the concept of switch scanning and voice output at this stage.
- Partner-assisted scanning can be used with very simple or more complex communication systems, ranging from a few symbols through to a complete PODD book.

Eye Pointing and Eye Gaze

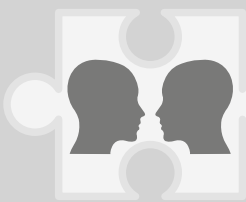
- It is useful to gain information about a child's vision and eye pointing abilities prior to any consideration of the use of eye trackers for access to communication.
- Take a look at *The Functional Vision Project* (Michael Clarke et. al.) for suggestions on how to assess gaze control skills and functional vision for children with Cerebral Palsy and no speech, including *The Eye Pointing Classification Scale*.
- There is some evidence that a child's skills at using an eye gaze device can improve over time, but this can be long term, taking months to years (Borgestig et al. 2016)
- Begin with fun and motivating activities.
- When practising eye pointing, start with two objects and gradually increase.
- Consider using E-tran frames or clear laminate sheets.
- Consider layout and spacing of the symbols _ you can increase the number of symbols as eye pointing skills increase.
- Encourage the child to look at you to prior to selecting, to actively indicate that they are making their choice.
- Give clear feedback on where you think they are looking.
- As with all access methods and AAC, modelling is vital to success.
- Consider using or trialling Look2Talk (ACE Centre).
- Consider trying encoding to increase the number of options, e.g. child looks at square containing the symbol that they want, then looks to the colour of the cell that they want within that square.
- Consider trialling an Eyelink board as an alternative to an E-tran frame. Some individuals find these easier/more intuitive to use.

General Tips and Advice

- Gain as much information about the child as you can from a variety of sources.
- Consider that for some children, power-based AAC might not always be the best option.
- Encourage those around the child to support them to practise using their AAC system, including access methods. This is vital to success.
- Consider seating and positioning of the child and ensure this is regularly reviewed, as this can impact significantly on their ability to access AAC (Costigan & Light 2010).
- Always remember that a child's access method may change over time, dependent on a whole range of factors relating to their condition. Consider regular reviews to ascertain if the child is using the most efficient and preferred access method.

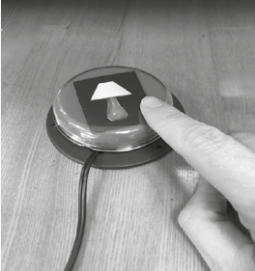
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Communication Matters

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High speed AAC for switch users: rethinking switch frequency layouts

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“Scanning input is an important technique for allowing physically disabled people, unable to use conventional keyboards, to compose text. Such systems, however, suffer from extremely slow text-composition rates” (Damper, 1984).

It’s 2018, and not much has changed – switch access is slow. Damper concludes that, “any increase in input speed which can be obtained is therefore worthwhile”, as, “communication rate should ideally be that of conversational speech – typically 150 words/min”; yet currently, “1 word/min is common for the severely disabled” (1984).

After reading Wade and Koester’s paper, ‘Switch scanning frequency analysis – Analysis of the language of one user to improve scanning efficiency’ (2017), I was left to consider what this meant for high-tech, literate switch users. One of the main benefits of a high-tech system is the access to a prediction engine; in the case of Grid 3 – SwiftKey prediction.

The impact of text prediction

In 2012 SwiftKey started work with world-renowned scientist, and switch user, Stephen Hawking, with the aim of enabling, “...him to write and speak with greater ease for longer periods and minimise typos”. They estimate they roughly doubled Professor Hawking’s speech rate.

SwiftKey state that, “next words are predicted with such accuracy that 33% of suggestions are right the first time and usually (84% of the time) you won’t need to press more than two letters” (SwiftKey,

2015). These figures are based on an ever-growing database of SwiftKey users’ data - 15,800 unique words. Based on this statement, I have decided to look at designing a keyboard based on the letters used most frequently as the 1st or 2nd letter (and maybe 3rd) in a word, with consideration of overall letter frequency (for the 16% of instances where you need to type more than 2 letters). The aim of this is to provide better opportunities to improve text entry rate for users accessing a keyboard with a switch for the purpose of text-to-speech.

Fould states that “it is apparent that a placement of letters which reflects frequency of occurrence, so that fewer cursor steps are necessary to access the more common letter, will increase communication rate” (1972). Currently, the available high-tech switch-access frequency keyboards (commonly EARDU) are based on research by Mayzner (1965), which used a 20,000-word sample, collected from newspaper articles and letters. In 2012, Norvig, a research director at Google, reproduced the research using the Google Corpus Data (37 million times more data than Mayzner), working out the most frequent overall letters, most frequent 1st, most frequent 2nd and

most frequent 3rd letters in the distinct words (2012).

I then worked out the mean of the frequencies for 1st and 2nd letter and the 1st 2nd and 3rd letter. For the 16% of instances where correct prediction required more than two letters to be selected, I worked out the mean of the 1st and 2nd letter, and overall letter frequency, and 1st 2nd and 3rd letter, and overall letter frequency. In response to these results, I designed two different frequency keyboard layouts (Fig 2 and 3), to be compared with existing scanning layouts (Fig 1).

One way that the layouts could be compared is by using the Damper model for scanning input, to predict text entry rate.

Text entry rate – a prediction using Dampers ‘rate prediction model for scanning input’

Damper, “extends the earlier model of Rosen and Good-enough Trepagnier to encompass scanning input systems” (1984) in designing a quantitative method of comparison for text-entry rate. I have applied this model to the newly designed layouts (Fig 2 and 3) and existing keyboard layouts (Fig 1), to predict the text entry rates.

All considered layouts are available on Online Grids (grids.thinksmartbox.com).

Layout	Description
EARDU	A layout based on the most frequent letters in a whole word as determined by Mayzner
ETOS	A layout based on the most frequent letters in a whole word as determined by Norvig
EATSROIN	A layout based on the most frequent letters in a whole word (overall letter frequency) used by Wade and Koester (2017) with partner assisted scanning
AEIOU	A layout designed in particular for auditory scanners, where the vowel appears first in a row, followed by the following consonants

Figure 1: Existing Frequency Layouts

$S_i = 0$	$S_i = 1$	$S_i = 2$	$S_i = 3$	$S_i = 4$	$S_i = 5$	$S_i = 6$
I	E	A	T	H	L	P
I'm	O	I	R	C	W	K
I've	N	S	F	B	X	
I'll	D	U	G	J		
The	M	Y	Qu			
And	V	Z				

A layout based on the most frequent letters in 1st, 2nd and 3rd position in a word and overall letter frequency

$S_i = 0$	$S_i = 1$	$S_i = 2$	$S_i = 3$	$S_i = 4$	$S_i = 5$	$S_i = 6$
I	O	A	E	N	C	D
I'm	T	H	S	L	M	K
I've	I	R	U	B	X	
I'll	F	P	G	J		
The	W	Y	Qu			
And	V	Z				

A layout based on the most frequent letters in 1st and 2nd position in a word and overall letter frequency

Figures 2 and 3: Newly designed frequency layouts for testing

Damper estimated the communication rate for a layout which was designed based on Pratt's (1932) frequencies per 1000 representative words (Tufts Interactive Communicator), first annotating the layout with S_i - the number of cursor steps required to access the i th selection (as seen in Fig 2 and 3). The characters are then ranked. The cursor steps for each character, and the probability of selection

for each character (as defined by Pratt) to $X 10+3$ are then input into table 1. $P_i (S_i + 1) (x10+3)$ for each letter is then worked out, and the sum of these figures / $10+3$ gives the "average number of scan periods to access a letter" (Fig 5).

Figure 4 Damper used the formula:

$$\frac{1}{\tau} = \frac{C \times P_i (S_i + 1)}{R}$$

Applying the formula to all considered layouts

To enable the use of Damper's formula, I needed to work out $P_i (S_i + 1) (x10+3)$ for each letter. To do this, the layouts were labelled with the correct cursor steps, and the S_i for each letter input to Damper's 'average number of scan periods' table.

The probability of selecting a prediction cell has been worked out using Pratt's frequencies per 1000 letters, and the average length being 4.74 letters per word. The probability includes the <84% of the time only two letters need to be selected + prediction (with the assumption the word will appear as the first item in prediction) and the instances a whole word + space/prediction selected need to be typed (4.74 average word length + space/prediction selected = 5.74 selection to word) - <16% of the time.

For this we have not included the instances where only one letter needs to be selected for correct predictions to be available (33% of the time) (Fig 5).

These probabilities are then input to Damper's formula (Fig 4). I have used the same scan rate of 2/s.

Our findings – using Damper's Formula (Fig 4)

From the predicted text-entry rates, we can see that layouts which are designed based on frequency of letter use (Fig 2 and 3) are the most efficient, with a predicted

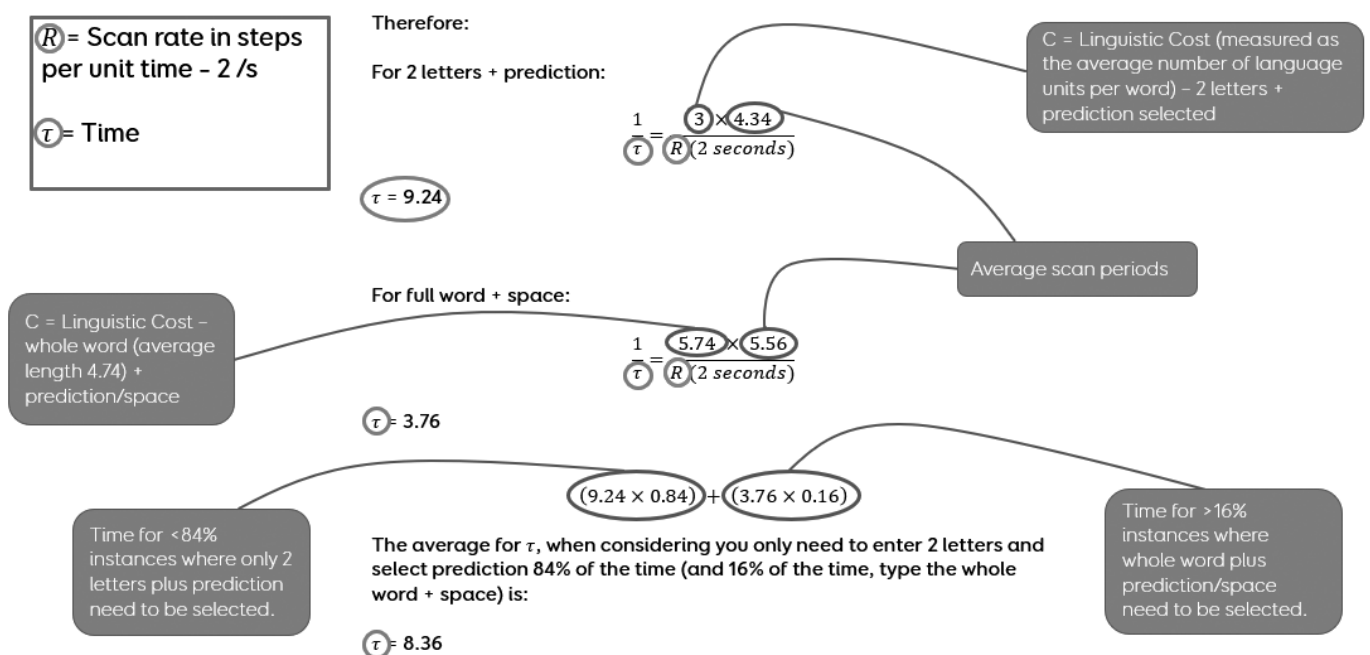


Figure 5

text-entry rate of 8 to 9 words/minute. Both of these predicted rates are higher than that of Damper's for the 'Interactive Communicator' (1980), with "some 6 or 7 words/min", however we should question how reliable these figures are, as the correct prediction will not always be in the first prediction cell.

Damper's model provides us merely with a prediction of text-entry rate, and the model cannot really be considered accurate for layouts reliant on prediction. It was therefore decided that the most suitable comparison would be that made by testing the layouts as they would be used. This comparison was completed by using Grid 3 with a single switch (using row column scan, and tap to advance as it is more

generalisable and quantitative), to type the most commonly used words in the English language (Norvig, 2012), as well as 5 everyday phrases, and recording the number of cursor steps/hits to type the word/phrase whilst using the prediction available (Fig 7).

A comparison of switch frequency keyboards when typing the 50 most common words in the English language, and 5 example everyday phrases

When typing the 50 words, we saw an increase in communication rate by at least 20% when compared to traditional frequency layouts used in high-tech systems. In a 14-hour day, with a scan speed

of 2s, this means you will have the opportunity to say an extra 266 words with the new layout – which to give you an idea, is equivalent to Hamlet's soliloquy – "To be, or not to be, that is the question..." This is typing single words, so without considering next word prediction.

When typing the sample phrase, "we need to check that hospital appointment time", we see a difference of 150 scan steps (with each scan step equalling 2s, this totals 5 minutes) between the newly designed layout and EARDU - currently the most commonly-used layout; so the fastest new layout is over 2 ½ times quicker. As we are using phrases here, it has the extra benefit of using next word prediction. At this time, learning prediction has still not been enabled.

Results

The differences between the considered layouts are more significant when tested via simulation in Grid 3, as opposed to the differences in predicted text-entry rate (Fig 6), however the best-performing layout is the same with both methods; the key difference being the consideration of prediction, which significantly increases text-entry rate, especially with the layouts which are designed to complement the prediction engine.

The keyboard design based on the mean of the most frequent letters in the 1st and 2nd position in words, and overall letter frequency (Fig 3), was the most efficient (fewest number of hits on average to type the 50 most common words in English - with an average of 16.5 hits), being able to type on average 2,982 words a day. These tests were done within a fresh Grid 3 user, with a standard prediction dictionary, and with learning prediction turned off.

Other considerations

The next consideration is how many prediction cells, and where to place them.

Garay-Victoria and Abascal state that for AAC systems, "no more than five to seven proposals are usually offered ... this is the number a user may perceive at a glance" (2006). Koester and Levine calculated that each additional word increases the searching time across a proposal list by 150 ms (1998). Further to the number of cells, is the consideration of the layout of these cells. "[I]n general, showing the proposals as vertical word lists is better, as the required effort to see and process in vertical lists is lower" (2006). As in 84% of instances, after typing just one or two

Layout	Text composition rate (scan rate of 2 /s)
EARDU	5 words/min (with prediction)
ETOS	5 to 6 words/min
EATSRIOIN	3 to 4 words/min
AEIOU	3 words/min
Newly designed layout 1 (Fig 2)	8 to 9 words/min
Newly designed layout 2 (Fig 3)	8 to 9 words/min (workings seen in Fig 5)

Figure 6

	1st, 2nd and overall + prediction (Fig4)	1st, 2nd, 3rd and overall + prediction (Fig3)	EARDU Frequency	EARDU Frequency + prediction	ETOS frequency + prediction	EATSRIOIN Frequency	AEIOU Frequency
He will go to the cinema with me	62 ss	68 ss	202 ss	90 ss	74 ss	64 ss	87 ss
I am going to town later	47 ss	49 ss	137 ss	59 ss	48 ss	55 ss	63 ss
I think I would like to do that	47 ss	46 ss	165 ss	56 ss	46 ss	55 ss	73 ss
I would love to wear that	54 ss	54 ss	134 ss	54 ss	59 ss	53 ss	70 ss
We need to check that hospital appointment time.	93 ss	87 ss	243 ss	95 ss	97 ss	101 ss	126 ss
AVERAGE	60.5 ss	60.8 ss	176 ss	71 ss	64.8 ss	65.6 ss	83.8 ss
Words per minute	3.5	3.45	1	3	3.24	3.2	2.5
Words per hour	213	207	73	180	194	192	150.3
Words per day (14hrs)	2,982	2,898	1,029	2,520	2,716	2,689	2,105

5 everyday phrases typed using all considered layouts

Figure 7



*Modified Text talker keyboard based on the mean of letters most frequently used in 1st position and 2nd position of words, and overall most frequently used letters, including consideration of placement of punctuation, prediction, chat history and function cells.

Figure 8

letters - or even after the previous word has been completed - the correct word is predicted, therefore the prediction cells need to be quickly accessible. In the designed layout, the first prediction cell is available in only two scan steps.

Another consideration is punctuation. For AAC users, punctuation can be used in their spoken discourse to accentuate meaning and add pauses to spoken phrases. Therefore, the primary keyboard only includes punctuation that will affect speech. The 'space' key is included further down in the scan- this differs considerably to current switch frequency layouts. This difference is because in nearly all cases a prediction cell is selected to complete a word; this includes the space.

Grid 3's patented Chat History cells are included in this grid set as another method of potentially decreasing effort and increasing the speed of a user's communication <https://thinksmartbox.com/news/patent/>. The exact impact these cells have on a user's efficiency is difficult to determine.

Conclusion

This research was undertaken with the purpose of improving switch scanning efficiency by optimising the keyboard layout for a high-tech literate switch user.

In testing, we see the new layout is nearly 3 times quicker. (In real terms a user is able to say 500 more words in a 14hr day with a scan speed of 2s than with the standard EARDU layout - a 189% increase.) Therefore, on average, the newly designed layout is the most efficient layout for a single switch-scanning, high-tech user with no other relevant additional needs (such as Visual Impairment or Learning Difficulties). Further research would need to be done to consider the effect a learning prediction has on efficiency, and also to evaluate the frequency of use of prediction, punctuation, chat history and function cells, to further optimise the layout.

Further information and instructions on how you can get the grid set can be found here : <https://thinksmartbox.com/news/brand-new-frequency-keyboard-in-text-talker/>

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Communication Matters Poem

Dave Young, The Shouting Mute, winner of the 2018 Alan Martin Award, presented the Plenary Address at this year's Communication Matters Conference. Ahead of the event, he invited CM members to send him 'one word' about what CM meant to them. From those words Dave created this wonderful poem.



www.theshoutmute.com
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Communication Matters is learning and chatting confidently about AAC.

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It's a mission and it's powerful.

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It's people and technology.

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It's people, it's expression, it's brilliant.

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It's amazing, it's friends, it's cake.

Communication Matters is where people can express themselves properly without being judged.

It's a place where I can socialise with people like me.

Communication Matters shows me you can get a job in AAC mentoring.

It's exploring, and sharing, and great.

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A Challenging Case: Cantonese and AAC

KONSTANTINOS KARAOGLANIS AND MARTIN HENDERSON

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Introduction

In this case study, we discuss our assessment of a Cantonese-speaking client with Motor-Neurone Disease (MND) for Augmented Alternative Communication (AAC), reflect on the experience, and set out what we have learned in the process.

In addition to the usual challenges of supporting a client with a rapidly degenerative illness to maintain independence, additional challenges were presented by our client's complex linguistic environment, and the lack of availability of Cantonese-language AAC solutions.

The Cantonese Language

Cantonese is the second most widely spoken Chinese language. It might sound similar to Mandarin, but it has different pronunciation, grammar and lexicon. Written Chinese is pictographic, and consists of a series of complex characters, where a single character is associated with an idea or concept and a sound, roughly corresponding to a single word. A character is composed of a number of brush-strokes. Entering Chinese writing into a computer is not straightforward, as there are many thousands of characters; there are a number of different systems for encoding characters, called input methods, each of which follows a different paradigm for identifying the desired character, for example by the position and number of its brush-strokes (Cangjie, Stroke). Another input method is the Romanization of Cantonese (Pinyin method) i.e. letters of the English alphabet

are put together to represent how a word would sound in Cantonese (this requires a sound knowledge of the English speech sounds). These input methods are not intuitive to learn, even to native speakers of Chinese languages, and there is a possibility that older generations may not have even learned to use computers at all.

Client History

Our client lived with her family. She communicated using spoken Cantonese with her partner and daughter, and spoke English to a limited extent. Her partner was only able to speak Cantonese and was not literate in English or Cantonese. Her daughter was literate in English, but had never learned to read and write Chinese characters. As our client's condition progressed, she developed dysarthria, which removed her primary means of communication with her family, and she became increasingly dependent on carers, who spoke only English. Our client's social web formed quite a linguistic puzzle!

Our client was diagnosed with MND one year prior to being referred to the KM CAT adult team. Her condition had progressed quickly from her feet upwards, and affected her breathing, which was supported by Continuous Positive Airway Pressure (CPAP). Since she had lost her ability to speak, our client was compensating by using a notebook to write using Chinese characters to communicate. Photos of her writing were translated by friends and family abroad using a messaging app. Most of her day was spent in

a wheelchair that provided inadequate postural support, which had a negative impact on her ability to write. Our client wore glasses.

The Assessment Process

As none of our team spoke or read Cantonese, our assessments were facilitated by interpreters. This was in line with NHS England's Guidelines (Principles for high quality interpreting and translation services) to ensure accurate and effective communication. Technical members of our team researched Cantonese software options in parallel to the assessment.

Our client's goal was to be able to communicate with her family and friends. Therefore, the aim of our intervention was to provide her with the means to create novel messages and form sentences in Cantonese, as she had indicated that her ability to spell in English was poor.

Over the course of the assessment process, our client's condition progressed; she was initially able to write but over the course of several weeks, this became more difficult.

Our client's decreasing muscle tone meant that finding an appropriate access method was challenging. A head mouse was not appropriate due to her poor head control/support, and her glasses, poor head support and breathing mask (in situ 24 hours) would be likely to interfere with eye-gaze technology. Our client showed some potential to use a switch with her hand, however her hand control

was declining, and we could not know for how long this would be an option.

It became apparent early on that the main challenge in establishing high-tech AAC would not be access, but inputting Chinese, as our client was not a computer user, and was therefore not familiar with any Chinese input methods. In addition, our team could not find an AAC software package that provided Cantonese voice output, only third-party text-to-speech software – this would make the system more complex to use, e.g. by requiring text to be copy-pasted from one application to another, and would have placed too great a burden on our client to develop new technical skills.

In parallel with our assessment for high-tech AAC, we also explored low-tech and mid-tech AAC. Our client showed some potential to use a text-based system to select categories, words and phrases to communicate; therefore, we gathered relevant vocabulary and created a bespoke communication book for her (with text appearing both in English and Cantonese). Although her family reported that our client had found this helpful, she required some facilitation to use this functionally to communicate; therefore, introducing a complex vocabulary package on a high-tech device was not considered to be appropriate. As our client's partner could not read English or Cantonese, and was unable to support her in using her communication book, we also provided a GoTalk device; this had 9 key messages with a voice recording in Cantonese, which her partner was able to understand.

Reflection

Working with Interpreters

It was helpful having a professional at the assessments who was able to interpret what our client was trying to communicate to us via her writing as well as the information we were trying to communicate verbally to her. However, this assessment process was complex due to a combination of linguistic factors, specialist technology and our client's complex needs; therefore, it was not always clear that the interpreters understood what they were asked to interpret. It is acknowledged that interpreters cannot be expected to be familiar with clinical and technical terminology. To ensure that the interpreters understood the purpose of the assessment, the context of what they would be asked to interpret and that

they would be comfortable asking for clarification from us if necessary i.e. for unfamiliar terms, we always made sure to have a brief discussion with them on the day of the assessment prior to carrying out our session; however, due to time constraints it was not possible to have a more comprehensive joint preparation with them i.e. on separate days.

Inequity of Language Support

This case was a stark reminder that the computer technologies that high-tech AAC is built on are not developed equally for all languages, and therefore the communication needs of certain communities are currently unmet.

In the course of our preparation, we discovered that there are no Cantonese AAC software solutions on the market, and while it may be theoretically possible to string some translation and text-to-speech applications together, the end result would be much harder for the client to use than a purpose-built software package, and require additional technical support in place.

Getting the Balance Right

For clients with rapidly progressing degenerative conditions, the goal should not be to find the perfect solution, but rather to find a good-enough solution quickly.

Our client and her family were both very keen for us to persevere with looking for a suitable Chinese computer input method, so that she could create novel messages in her preferred language and, therefore, a significant part of our assessment time was spent on exploring this. Unfortunately, our client passed away so it was not possible to identify an appropriate high-tech solution in the end. Our intervention, however, also focused on exploring low-tech and mid-tech AAC options to aid our client's communication, and we were able to identify and provide her with a combination of solutions, i.e. communication book, yes/no cards, Go Talk device (our client's family has since fed back that our client used her communication book "till the end").

By addressing our client's needs holistically, we demonstrated to the client (and her family) that their needs and expectations were listened to. It was particularly important for our client and her family that we "didn't give up" on exploring options to optimise her communication, and this seemed to motivate her family

to engage with facilitating her to use AAC.

Reflecting on our experience of this case, we resolve to prioritise the establishment of reliable communication and remain open to exploring all options.

Limitations of Technology

It is often our experience that high-tech AAC is anticipated to be superior to low-tech. This case demonstrates why low-tech is so important: it was the most efficient method of communication for our client, because where the limitations of technology made access unreliable and message construction difficult, our client's communication partners were able to reliably interpret her gestures, and support her in getting her message across.

Switch Elimination

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Switch elimination method

Switch elimination is an alternative access method to conventional switch scanning. It typically requires two or more switches, although a single switch can be used,

differentiated by short and long presses. Switch elimination can be selected using the drop down box for "Activation" in the access settings menu in Grid 3.

To initiate the process the user presses

any of the switches, and the cells on the screen are then split up into groups. At present, Grid 3 has 2- or 4-way switch elimination scanning, so the number of groups will be 2 or 4, with individual switches being assigned to select a particular group. The user then presses the switch assigned to the group in which the desired cell is situated, and all the cells in the other group(s) are eliminated. The desired cell is selected by converging on it through a series of iterations of the same select/eliminate process.

For example, say a person is using two switches for switch elimination and wishes to select the "Jokes" cell in the bottom right corner of the grid shown in Figure 1 below:

They press either of the switches and the grid is split into two colour-coded groups (Figure 2):

The "Jokes" cell sits in the blue group, so the user presses the switch associated with this particular group (it is useful to match the colours of the groups and the

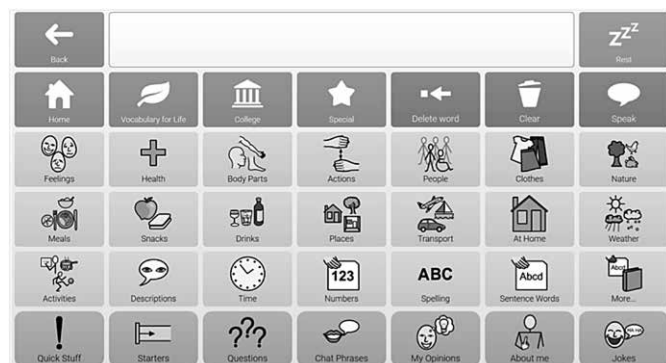
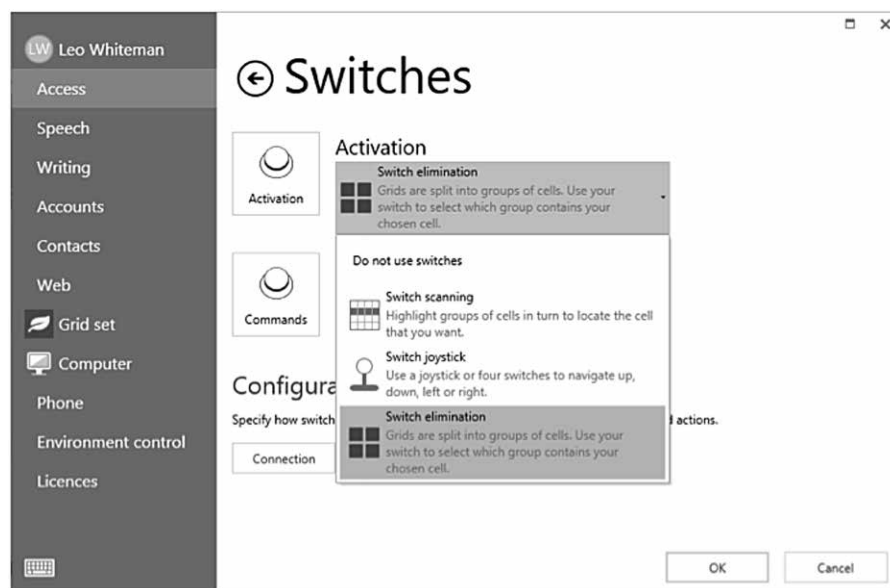


Figure 1



Figure 2



Figure 3

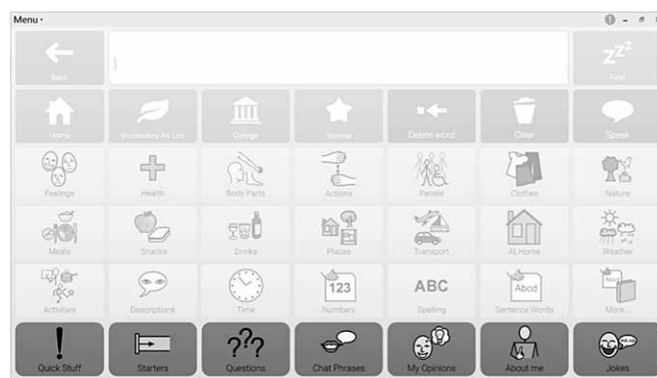


Figure 4

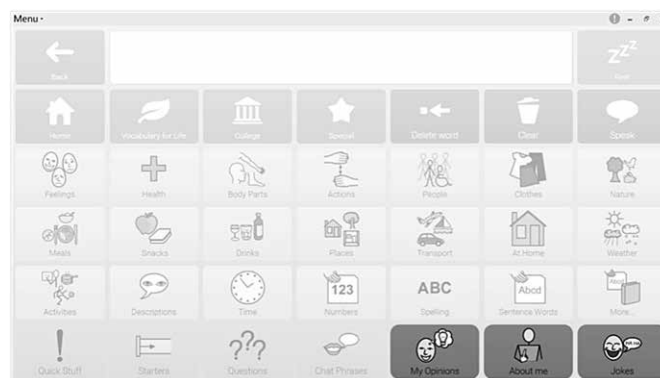


Figure 5

colours of the switches if possible). The blue group is then split into two, and the cells in the red group are all eliminated (Figure 3):

“Jokes” is in the blue group again, so the user presses the switch associated with this group, and again the group is split into two and the other cells are eliminated (Figure 4).

“Jokes” is in the blue group, so the user presses the associated switch (Figure 5).

The pattern has now converged on to the desired cell (there is just one cell within the group). The user presses the associated switch and the cell is selected. It should be noted that if the user had wished to select either “My Opinions” or “About me”, they would have to press the switch for the red group, and then carry out one more iteration.

Discussion

The advantages of switch elimination scanning are perhaps most apparent when comparing it to 2-switch scanning (progress and select). In the previous example of selecting the cell in the bottom right corner of a 7x6 grid, the user had to carry out 5 switch presses. This is as opposed to 38 for single cell scanning, 14 for row/column, and 11 for block scanning (using a typical 4 block pattern). However, the “Back” cell in the top left corner requires 6 switch presses with

2-switch elimination, whereas the other scanning methods can all get to the cell in 2-4 presses.

Although some cells require more presses with switch elimination, access to the full range of cells in the grid is more equitable. For the particular grid used in the above example, no cell requires more than 7 switch presses. The cells all require 5, 6, or 7 presses to select, including a switch press at the start to initiate the process. The table below gives the mean and standard deviation for the number of switch presses required for all cells in the grid used above. It can be seen that on average, switch elimination requires fewer presses than all of the 2-switch scanning methods, and has the lowest standard deviation, meaning the number of presses required is less spread out and there are fewer cells requiring a high number of switch presses.

	Mean switch presses	Std. Dev.
Icon	20.5	8.6
Row/column	8.6	2.8
Block	7.8	1.8
Switch Elim.	6.4	0.6

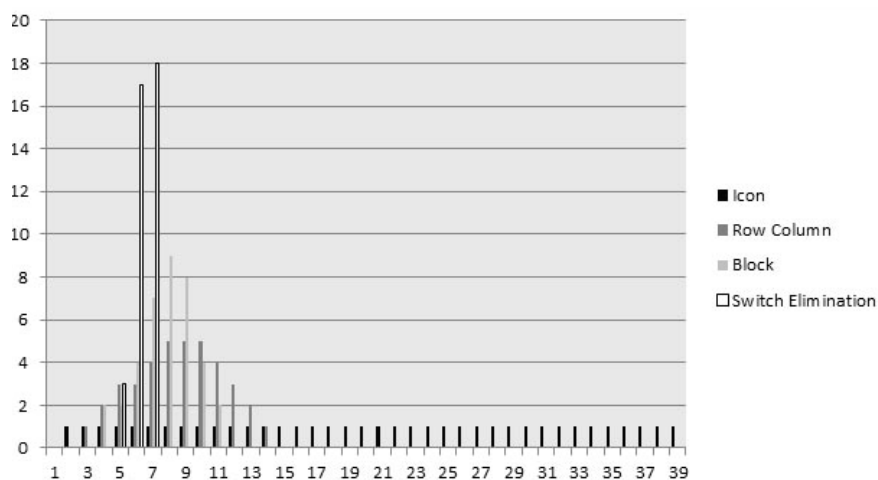
This is further illustrated in the histograms overleaf. The second histogram shows the same data, but with “Icon” scanning removed to allow for a more

direct comparison to the perhaps closer matched row/column and block scanning patterns.

For conventional switch scanning methods it is fairly intuitive to see that the cells in the top left corner of the display will tend to be the most accessible, whereas the cells in the bottom right will be the least. This has led to the development of grids optimised for switch users such as frequency layout keyboards, which provide switch users with a much more efficient alternative to conventional keyboard layouts such as QWERTY. However, it is not uncommon for switch users to reject frequency layout keyboards, despite being made aware of the improved efficiency, and to instead stick to a more familiar layout, such as QWERTY, or one which they can more readily navigate, such as an ABC layout.

When considering grid design for switch elimination, it is perhaps less straightforward to appreciate where the most accessible cells are located, as the convergent process does not follow a unidirectional sequence.

An analysis was completed and a method developed to determine the number of switch presses required for any given cell in any grid. It has not been included in this paper because it ultimately only serves as further proof that access to all the cells in a given grid is fairly equitable with switch

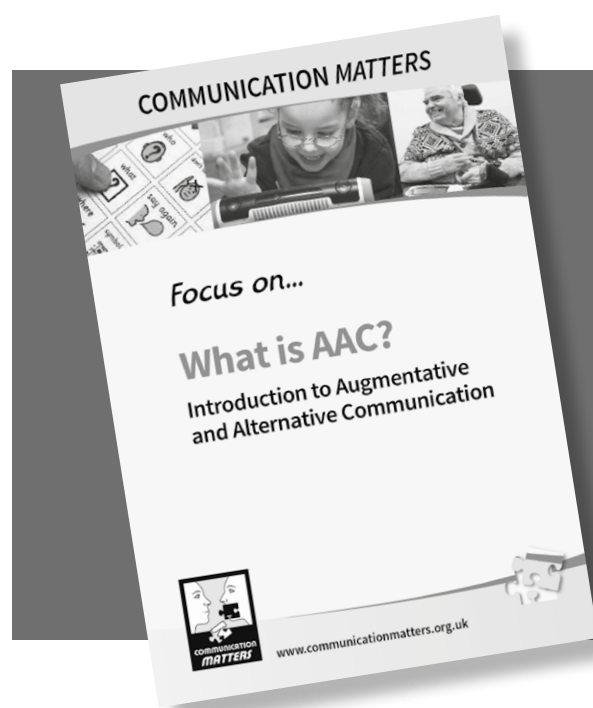
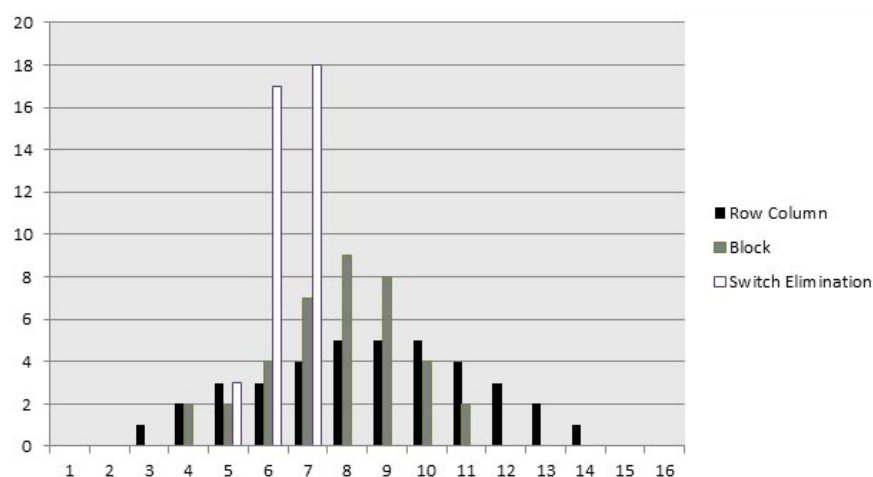


elimination, however the author is happy to share it upon request. It is argued that given the equity of access for switch elimination, any advantage of efficiency that might be realised through a grid designed for optimal frequency layout would not outweigh that of a more intuitive layout.

As such, a switch elimination user would be more or less just as well off with whichever keyboard layout they prefer. This equity of access is also of benefit for symbol-based vocabularies. Most symbol-based communication grids adopt a layout that supports sentence structure and language development. Core words are often located in cells on the right side of the screen and in the bottom corner. This can make them cumbersome for conventional switch scanning users, but less so for switch elimination.

A drawback with switch elimination is that it is an irreversible convergent process; if the user makes a mistake early on in the process, they have to keep going until a final selection is made. However, this can be overcome by assigning a different type of switch press to stop the process. This could be an additional switch or a long press of one of the switches already being used in switch elimination.

A more subjective factor to consider is the intuitiveness of switch elimination compared to other switch access methods. When using coloured switches matching the colours of the associated groups, switch elimination essentially becomes a task of selecting the colour seen on the screen. This is a lower-level cognitive task than deciding between progressing/ selecting.



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Give Me a Minute – visual indication of message creation

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Introduction

For many high-tech AAC users, it is difficult to see when they are composing a message. Two examples are eye-gaze users and switch users, where it may not be clear when they are actively preparing speech.

We implemented a system that visually indicates when communication software is being used. This enables a more natural interaction and encourages good communication practice, giving adequate time for composition and respecting personal space. The visual feedback reassures others in the conversation that the AAC user is actively involved.

The system continually monitors the AAC software to show when new messages are being entered, without the user having to manually trigger a “hang on” type message and interrupt their composition.

The system consists of a BBC Micro:bit connected to the AAC device. The Micro:bit has an array of bright LEDs which are used to give a clear indication of when a message is being composed. The BBC Micro:bit is a small educational device, provided to schools for students to learn how to program. It was chosen as it is cheap, easily available and safe. The software has been created using a freely available platform and is available for download from GitHub[GitHub].

Figure 1 shows Give Me a Minute being tested at Beaumont College by a student who uses an eye-tracker to interact with her communication software. The position of the BBC Micro:bit that indicates when the communication software is in active use is marked on the figure.



Figure 1: Give Me a Minute in use at Beaumont College. The BBC Micro:bit displays a moving pattern when the communication software is in active use.

Development

Beaumont College in Lancaster educates around 100 students with a spectrum of disability. Many of these students require AAC and use high-tech communication aids. The need for the Give Me a Minute system was identified by the Assistive Technologists working at the College. Some students at Beaumont College use eye-gaze technology to interact with their communication software. During a conversation with these students, it may not be clear when the student is using their software. This leads to a temptation to look over the student's shoulder at their communication device to check that the conversation is progressing. This is an unnatural way to interact during a conversation, and potentially irritating for the student using the communication device. Some communication software has a 'give me 5' button, which when used will indicate that the user is composing speech. However, using this button could distract the student from composing new speech. Having an automated system that constantly monitors the communication software allows the student to concentrate on communicating.

Implementation

A video of the system in operation can be found on the project website [<https://www.seismicmatt.com/give-me-a-minute/>].

A BBC Micro:bit [BBC] attaches to the communication device – typically a tablet PC – through a USB socket. The BBC Micro:bit is a 5cm x 4cm circuit board, which receives power from the communication device through the USB socket. Some freely available software and a script written in Python is installed on the communication device. A Micropython script is installed onto the Micro:bit. Detailed instructions on how to install software on to both the communication device and the Micro:bit can be found on the project website. The software on the communication device can be set to run automatically when the device is switched on. The software on the Micro:bit will run when the board is powered on.

The Give Me a Minute script on the communication device monitors the window

that is running the communication software. When the software detects that new text has been entered, or existing text deleted, a signal is sent to the Micro:bit through the USB port. The Micro:bit then displays an animated pattern over about one second to indicate that the communication software is in active use.

The top 20% of the window containing the communication software is monitored twice a second by the script running on the communication device. Typically, only this part of the window containing the communication software is used to display the text being prepared for speech. By monitoring only this part of the window rather than all of the window, the amount of resources required by the software is reduced. The fraction of the window being monitored can easily be changed by editing one line of the script running on the communication device.

A programmable 3-colour LED was also tested as the visual indicator for the system. The technologists at Beaumont selected the BBC Micro:bit, as the display was deemed more suitable. The Micro:bit also has a preferable form factor and lower cost. The flat shape of the board allows it to be easily attached to the back of a communication device. An off-the-shelf cover was found for the board, to improve the visibility and make the device look more friendly. This can be seen in Figure 1.

The BBC Micro:bit is distributed to 11-12 year-old school children to introduce programming in schools. The board is designed to be safe for this age group, removing the safety concerns of using it with our target user group.

Give Me a Minute was tested using Smartbox's Grid versions 2 and 3 and the communication software supplied with a Tobii eye-tracker. These are two of the AAC packages in use at Beaumont College. Currently, the Give me a Minute system is implemented on Microsoft Windows-based devices. If interest is shown, the software could be ported to Apple iOS-based devices.

The software installed on the communication device works by monitoring the top portion of the window running

the communication software. When a change occurs in this window, a software signal is sent to the attached Micro:bit. A threshold is set in the software for the minimum change that needs to occur with the communication software interface to signal that it is in use. This threshold is implemented to prevent a blinking or moving cursor from being falsely detected as a change in text. The threshold can be adjusted, which allows the software to work on different size displays, where the level of 'noise' created by a blinking or moving cursor varies.

The system was tested in July 2018 at Beaumont College. The volunteer who tested the system uses a Tobii eye-tracker. She was so pleased with the system that she took it with her, and has been using the system since then. At least one of her friends has expressed an interest in having the system implemented on her device.

Future work

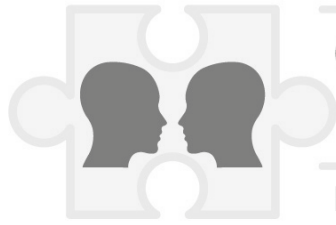
Interest has been expressed in having the software used with physical switches for Assistive Technology (AT) users who use such small motions to interact with their AT that it is difficult to know when they are using it. This leads to the same situation as with eye-gaze users – it is not transparent if there is an ongoing two-way conversation.

The creator of the system is happy to be contacted and to add features to the software if there is a take up of Give Me a Minute in the AAC community.

The project software is freely available on the project GitHub site. Any developer is free to clone the repository and improve the system. The Micro:bit can be bought for around £12; the low cost of the board and the free software allows Give Me a Minute to be easily replicated.

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Perceptions of people who use AAC about the potential of speech-generating devices to express identity

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Introduction

A voice conveys personal information about the speaker to the listener and is unique to them (Mills et al, 2014). The physiological voice represents and expresses an individual's identity and allows them to be recognised even when they are not seen (Creer et al, 2013; Schall et al, 2015). However, individuals with speech, language and communication needs may not be able to produce natural speech due to an acquired or developmental condition. These individuals may use a variety of Augmentative and Alternative Communication (AAC) strategies to help deliver their message to the listener and allow them to communicate effectively with their families, friends and strangers. The role of Speech Generating Devices (SGDs) is to augment natural speech, or to provide the individual with an alternative to natural speech through the use of synthesised or digitised voice output (Schlosser et al, 2007).

Previous research has highlighted difficulties surrounding the use of SGDs, their appearance and limitations affecting communication (Beukelman et al, 2007; Yamagishi et al, 2012; Creer et al, 2013). Although research into AAC has grown significantly over the past few decades, there are still gaps in the research as to how individuals feel about their SGD and more specifically how individuals feel about their voice output on their SGD.

As technology has advanced, SGDs have the opportunity to express the age, gender, nationality and mood of the individual through increasing options

available on SGDs (Yamagishi et al, 2012). Individuals are now able to produce personalised synthesised voices unique to them through new technologies. Previous research has highlighted limitations of the voice output currently available on SGDs due to technological limitations, such as volume and rate of speech (Beukelman et al, 2007; Judge and Townsend, 2013). However, the literature surrounding individuals' opinions of the voice output options on their device is limited.

This study aimed to find out:

- Whether individuals using AAC would like a wider choice of voice output on their SGD.
- If there are specific characteristics the individual using AAC would like on their SGD.
- How the individual feels about changing their voice.

Methodology

Information about the interviews and a copy of the questionnaire were distributed directly to specialist colleges and schools across England via email. These were also shared with members of the Royal College of Speech and Language Therapists, 1Voice and the Communication Matters Research Involvement Network through post, forums, bulletins and social media.

At the bottom of the questionnaires, respondents were given the opportunity to volunteer to take part in a face-to-face interview by giving their contact details. The questionnaires consequently became recruitment material for the participants

who responded and opted to take part in further interviews.

A total of three participants took part in the semi-structured interviews, consisting of two males and one female. Two participants responded via completion of the questionnaire, and one participant responded after seeing the study through the Communication Matters Research Involvement Network. The participants were aged 21 to 32 and were from a range of geographical locations across the North of England. Table 1 gives information about the age, gender and geographical location of each individual.

Participant	Age	Gender	Geographical Location
1	32	M	Yorkshire
2	21	F	Lancashire
3	22	M	Lancashire

Table 1: Participant Information

A qualitative methodology was used to elicit the individual's perceptions of their voice output on their SGD using semi-structured interviews and a questionnaire. The interviews were recorded and transcribed verbatim. Codes were then assigned to meaningful chunks of data and the codes were then analysed and categorised into hierarchical thematic networks consisting of basic themes, organising themes and global themes (Attride-Stirling, 2001).

The interview duration ranged from thirty to forty-five minutes. Interviews were conducted in a setting of the participant's choice for their ease, safety and

to lower any anxiety as the setting was somewhere they felt confident speaking in. The participants were asked to provide a quiet environment as this would ensure accuracy in the transcription of the audio and video recordings. The interviews took place at one participant's home and two participants' educational settings.

Participants could opt to be accompanied by a Communication Partner to the interview. This was an individual of their choice who was familiar with their communication strategies and could support them during the interview. The Communication Partner was required to give consent for any comments they made to be included in the transcripts, ensuring the full context of the interview was detailed.

Results

Two global themes emerged from the data set: 'Representation of Self' and 'Opinions of voices available on SGD'. These two

global themes, along with their organising and basic themes, are illustrated in Figures 1 and 2.

Global Theme: Opinions of voices available on a Speech Generating Device

This global theme was divided into two organising themes:

'Selecting the voice on a SGD' and 'Communication is the priority'. To summarise the findings of this theme:

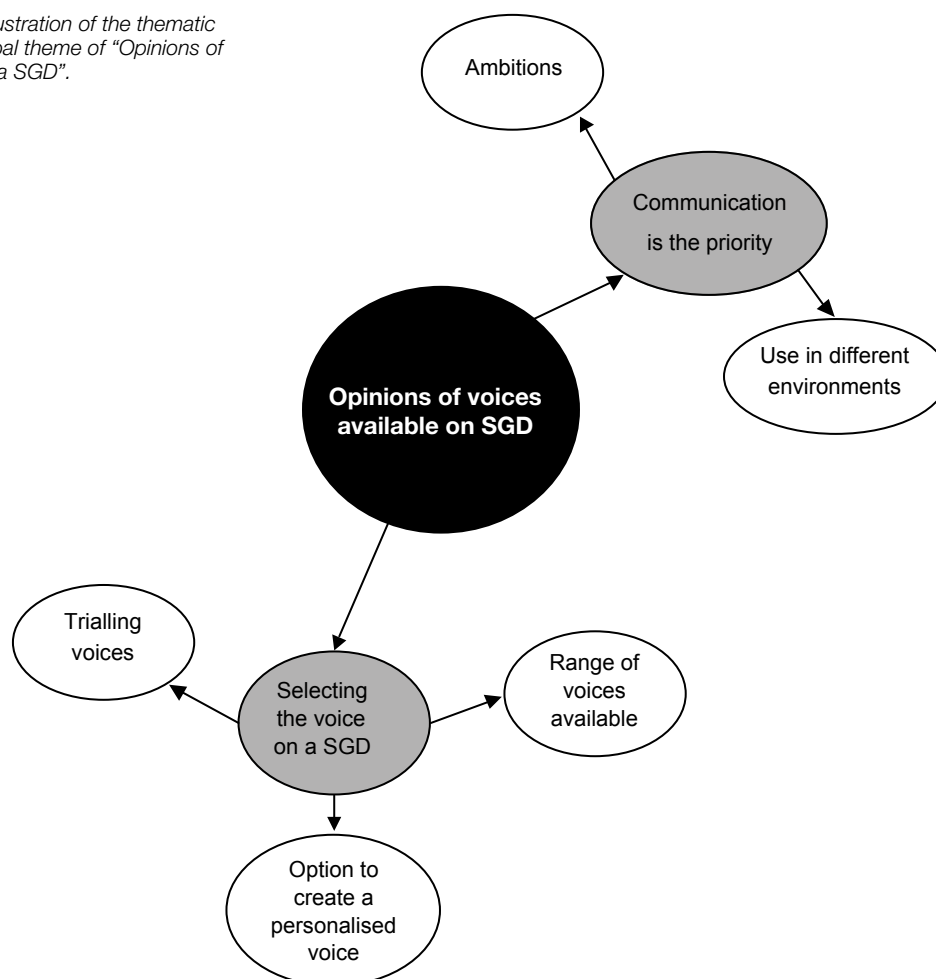
Selecting a voice on a SGD

The participants were all able to trial voices and choose the one that they liked best. Trialling devices seemed to be effective in finding the voice most suited to them, based on differing criteria. There were differing opinions on the range of voices available, but participants were interested in advances in AAC speech technologies to create more personalised voices. However, who recorded the voice recordings and the participant's perception of the uniqueness of the voice was a factor in this decision.

Communication is the top priority

Communication was found to be the top priority for individuals, and one participant expressed that they would not be able to communicate their message effectively if they did not use their SGD. Participants in this study recognised and reported the opportunities available to them via the voice output on their SGD for engaging in social activities. Two participants felt they would use their devices more if they had a voice that was better. However, all of the participants reported they did not feel the voice hindered or prevented them from communicating when they wanted to. The limitations of the SGD, such as the lighting and volume, were barriers to communication and prevented the participants from communicating fully in all social situations, potentially preventing them from fully engaging with their peers. Interestingly, the participants raised desired functions of the voice to help them achieve their future aspirations in film and music.

Figure 1: A visual illustration of the thematic network for the global theme of "Opinions of voices available on a SGD".



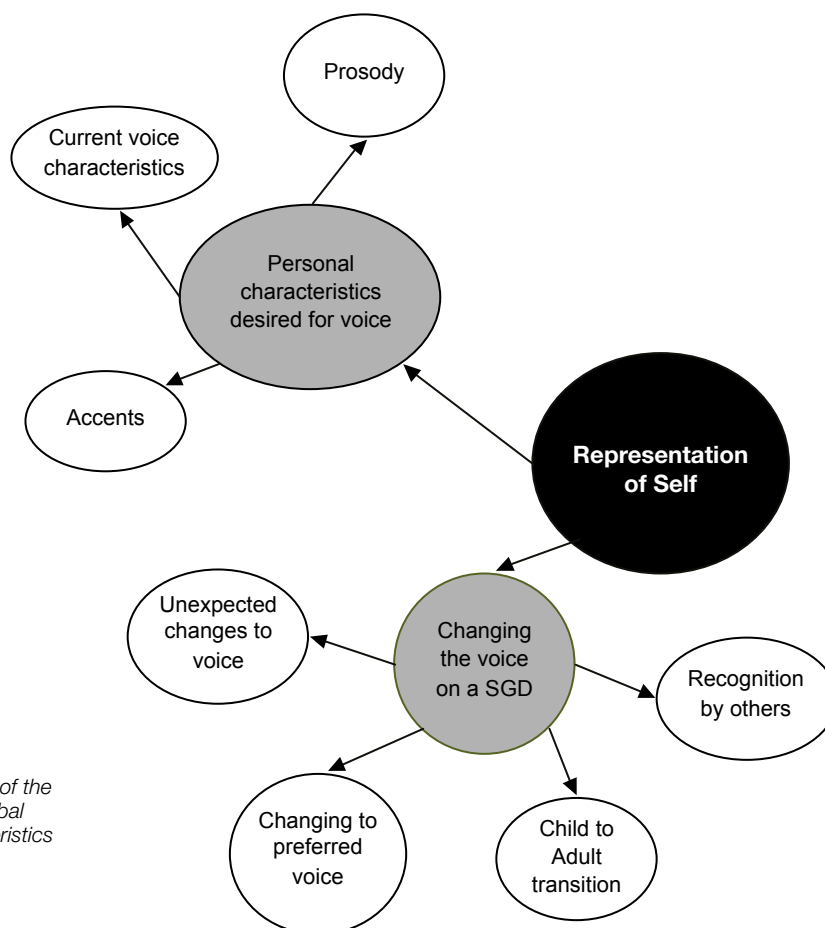


Figure 2: A visual illustration of the thematic network for the global theme of "Personal characteristics desired for voice".

Global Theme: Representation of Self

This global theme was divided into two organising themes: 'Personal characteristics desired for voice' and 'Changing the voice on the SGD'. To summarise the findings of this theme:

Personal characteristics desired for voice

Each participant had individual desired preferences for the voice output on their SGD. This included the choice of an accent, the clarity, the prosody and the personal qualities it conveys to others about the individual. All of these properties are naturally occurring in physiological voices.

Changing the voice on the SGD

Changing the voice due to a sudden change in the device has been highlighted in the literature as being a common event when using a SGD due to device breakdown. All participants had previously changed their voice due to changes in age or simply for a change. However, participants had different opinions about changing their SGD, and subsequently their voice. Participants were happy to change to a voice which they selected and which they deemed as a positive change. Conversely, an unexpected sudden change to the voice

on their device was perceived as a negative event due to the unknown qualities of the new voice and the loss of identity, as others may not recognise it as them. Therefore, opinions towards change were largely based on whether the change was planned or unexpected.

Conclusion

As the research into how individuals using a SGD feel about the voice output options available is limited, this study acts as a baseline to allow researchers, professionals in the AAC field and families of individuals using AAC to have an insight into how individuals feel about their voice output. This study can be used as a baseline for further research to compare against, and to explore using a wider population to find trends and commonalities between the preferences of individuals using AAC.

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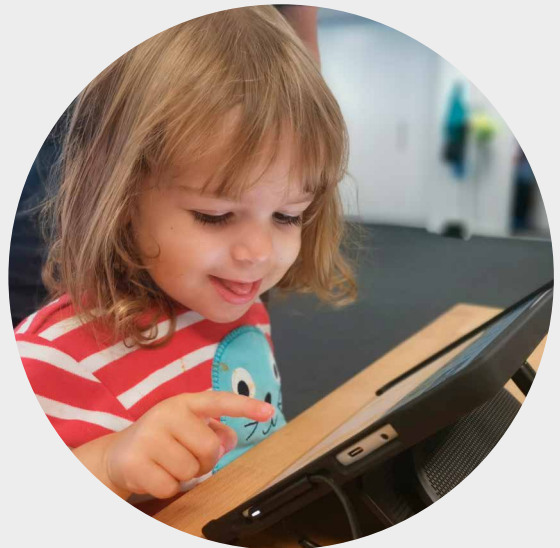


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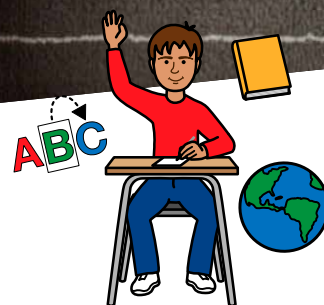
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