

Voice Output Technology

Does it enhance communication in children with autism who use exchange based communication?

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INTRODUCTION

Many young people with autism struggle to achieve effective communication skills and have significant impairment in both verbal and non-verbal communication. The use of augmentative and alternative communication (AAC) can be used to supplement or replace natural speech but its use remains relatively unquantified.

The Picture Exchange Communication System (PECS) is a graphic symbol based intervention package developed specifically for individuals with autistic spectrum disorders. Developed in 1985, PECS focuses on the initiation component of communication. The body of research from around the world supporting its effectiveness "continues to expand" (www.pecs.org.uk). However, whilst some young people become good PECS users, there is also evidence to suggest that some individuals could be supported to move on with or from PECS to voice output communication aids (Checkley & Gaskin, 2006).

The Logan ProxTalker, developed by ProxTalker.com, LLC, is a voice output communication aid (VOCA) designed for children with autism. Like many parents, the father who developed this communication device wanted his son to have verbal communication and the ProxTalker was designed to build on the skills his son already had as a PECS user.

Since its introduction into the UK market, the ProxTalker has received much anecdotal praise. However, seeking more empirical evidence, Logan Technologies, the UK subsidiary of ProxTalker.com, LLC, set out to record clinical evidence to support the use of the ProxTalker by children with autism.

THE STUDY

This pilot study set out to measure the number of exchanges made using a low tech symbol exchange system (PECS) and the number of exchanges made using a mid-tech voice output communication aid (the ProxTalker). It involved nine participants from three different special schools.

Three participants from each school took part in the study (N=9). Age range CA 15:0-19:0. All nine participants were experienced PECS users. Following parental consent, two participants (randomly allocated) from each school were given ProxTalkers for the duration of the study; the third participant was used as a control measure (evidence measured using PECS). Personal vocabulary available to each participant in PECS form was replicated and made available for use with the ProxTalker. It should be noted that no training was given to students on how to use the ProxTalker.

For the duration of the four week study, three classroom based activities and

three snack based activities were observed per week and exchanges recorded: first and last week with PECS books middle 2 weeks with ProxTalker. Following completion of the four-week classroom observations, the participants were allowed to take the ProxTalker home and qualitative data was recorded by the parent/carer. Participant 3 (the control) was allowed full use of the ProxTalker for two weeks, at school and at home after the study period was complete and qualitative data recorded by both parents and teachers.

The table below sets out the schedule of observations recorded.

QUANTITATIVE RESULTS

For the purposes of this article, the results are presented as an averaged figure across the three schools; if you would like the individual results please contact me for a copy of my 2010 Communication Matters conference presentation. Figure 1 represents the participants using the ProxTalker for the study (show in red) and Figure 2 represents the 'control' group.

CONCLUSION

There was no statistically significant difference between the number of exchanges made using the ProxTalker and the number of exchanges made using PECS: see Figures 1 and 2. There-

	Participant 1	Participant 2	Participant 3 (control)
Week 1	Own PECS book	Own PECS book	Own PECS book
Week 2 & 3	ProxTalker with matched personal vocabulary	ProxTalker with matched personal vocabulary	Own PECS book
Week 4	Own PECS book	Own PECS book	Own PECS book
Week 5	Use of ProxTalker at home - qualitative observations recorded	Use of ProxTalker at home - qualitative observations recorded	Own PECS book
Week 6			Use of ProxTalker for two weeks at school & at home - qualitative observations recorded

Table 1 Schedule of observations recorded

fore, to answer our initial question “Does voice output technology enhance communication in children with autism, who use exchange based communication?” we can conclude communication using the ProxTalker, an example of voice output technology, was equal to that of exchange based communication with no voice output.

QUALITATIVE DATA

The benefits of collecting both quantitative and qualitative data are clearly evident in this study. The participating schools gave a profile for each participant and, for presentation at the CM2010 National Symposium, I summar-

ised these alongside individual participant results. Some of this descriptive profile information clearly matched the participants and some did not.

Figure 3 is an example of data that clearly does appear to accurately reflect the participant (“a confident PECS user”, as evidenced by the number of spontaneous exchanges made). Figure 4 is an example of data that does not appear to well represent the participant (who was reported to be a very reluctant PECS user and very passive, although this was clearly not reflected in the data).

These examples are a reminder that when collecting qualitative data the in-

formation given is subjective and may be unknowingly prejudiced by a wide range of variables. Or in fact participants may respond differently however hard we try to keep parameters constant. This is not in any way critical, it simply supports the importance of gathering both quantitative and qualitative data where possible.

ASSISTANT/THERAPY FEEDBACK

- *Very motivated but over excited and needed to be told to calm down!*
- *Usually reluctant to change of any kind, the students quickly adapted to using the ProxTalker in preference to their books.*
- *Student was motivated to use the ProxTalker when the other students were using it.*
- *He will only press one symbol unless prompted.*
- *Very motivated and exchanges were a lot faster.*
- *Spontaneously organised symbols into categories.*
- *Highly motivated by food activity, tried to verbalise too.*
- *Even though his folder was in sight, he found the ProxTalker and asked for a snack.*
- *He sequenced the buttons, had his snack and then changed the symbol to pretzel. All done independently, I was surprised!*

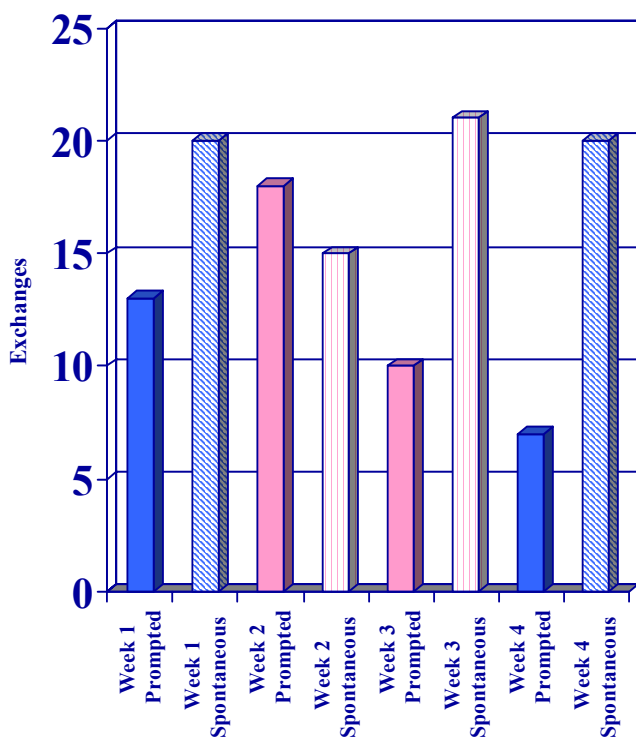


Figure 1 Average ProxTalker Results

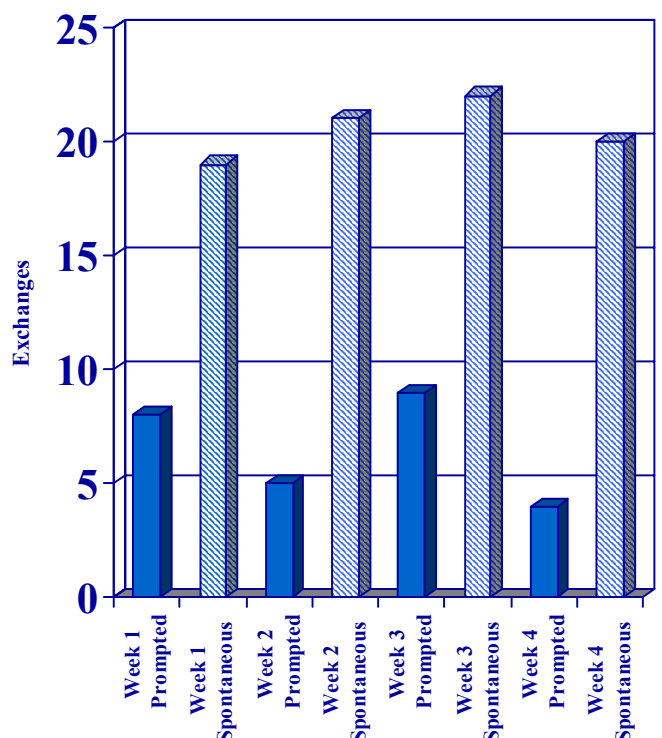


Figure 2 Average Control Results

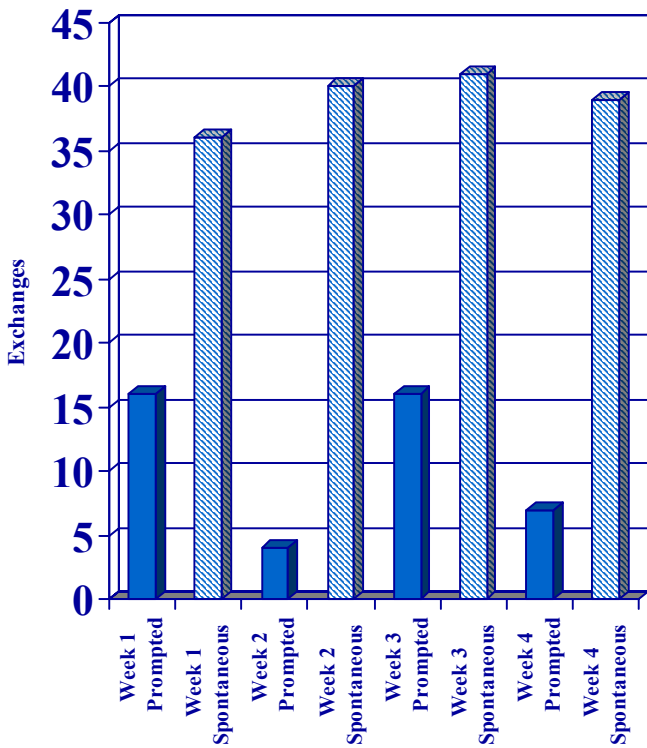


Figure 3 Confident PECS user

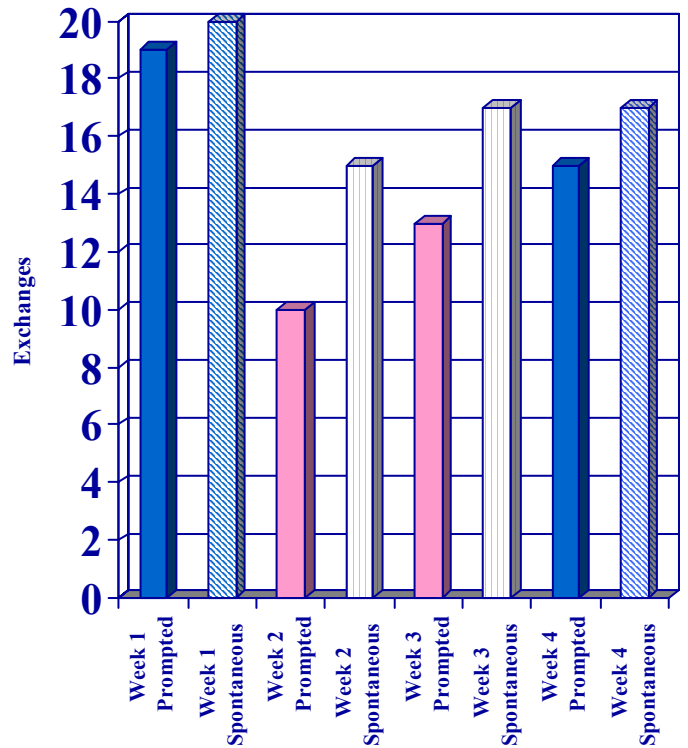


Figure 4 Reluctant PECS user

SLT FEEDBACK

- *In group activities we have seen a positive increase in turn taking and waiting skills.*
- *Anticipation has improved.*
- *Sentence structure has improved and sentences are frequently of a 5 word length with competent users.*
- *Student was confused by change of device. Seemed quite relieved to have his PECS book back.*

This final statement is very clearly supported by the statistical data as shown in Figure 5. Much prompting is given initially but with very few spontaneous responses using the ProxTalker.

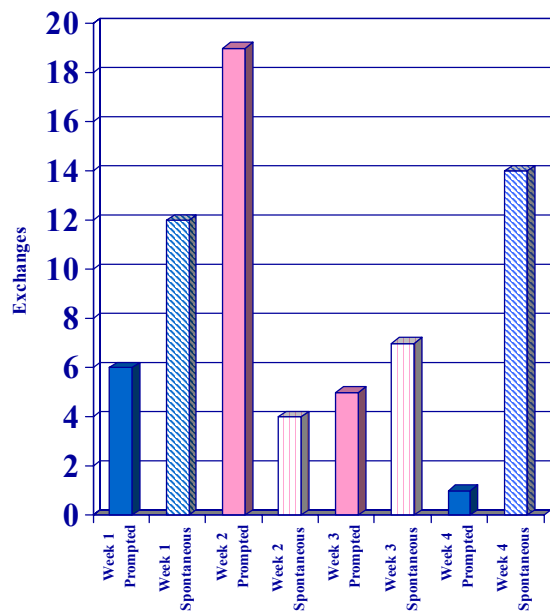


Figure 5 Prompted use of ProxTalker

The data shows spontaneous responses picking up again when returning to use of the PECS book. But in fact, in the context of this study, it was not a typical response. For a group of people who find change difficult, it was a surprise not to have had more results like this.

DISCUSSION

These are the salient points that need to be considered when interpreting these results:

No formal instruction was given on the use of the ProxTalker

To ensure consistency and for the purposes of the study only, it was felt that to give no instruction would yield fairer results. Ultimately, this strategy reinforces the simplicity of the device and raised questions concerning where input would be most valuable.

Some of the qualitative comments suggest that therapy input may well be better spent with support staff, rather than the user.

As a practitioner I have not previously experienced providing communication equipment without formal instruction - and lots of it! Finding out how the device works and communicating this to the user can be very time intensive; this is not the case with the ProxTalker.

The ProxTalker statistics were gathered over a period of two weeks only

I consider this to be the most significant factor in this study. Over a period of two weeks the participants were making the same number of exchanges as they previously made using their PECS books. This, with no formal instruction and no additional therapy input. Obviously, a longer term, larger scale study is required to draw any firm conclusions, but this was a very impressive result.

Personal vocabulary was matched to PECS books but was limited

Vocabulary was matched to PECS books for snacks and for topic specific lessons. Entire personal vocabulary sets were not reproduced so participants did not have full access to their vocabulary. This may well have had an influence on the number of exchanges made.

Data was collected by learning support assistants familiar to the participants

This was necessary to minimise the number of changes for the participants. In our initial consultations, the participating schools all felt it absolutely necessary not to change the staff working with the participants. However, statistically this is considered a confounding variable.

CONFERENCE PRESENTATION

The benefit of the Communication Matters National Symposium is that you are offered the opportunity to share professionally with like-minded busy practitioners who understand that noth-

ing is perfect but who value your contribution and offer constructive comments. Following the presentation of this study, I engaged in a number of lengthy conversations about the results and was truly encouraged by the observations made. In my own mind I had concluded that if you only trial a device for two weeks, you will probably spend the first week getting to know it (and the person working with you will probably prompt more, thus producing a lot of prompted responses in this period). Therefore, I concluded, the second week of trial would be statistically more valuable.

This premise was rightly challenged and it was suggested that during the first week there were more responses because the participants were genuinely excited about the device. Absolutely, why not? Of course we cannot know the answer, but it was great to have input from people not involved in the study, simply looking at the results.

And finally, the best omission of all – had I asked the participants whether they preferred their PECS book or the ProxTalker?

Sometimes even the most obvious elements are omitted and this is one of them. Thank you to the practitioner who so casually asked me this innocent

question! It's on the new recording form already!

So those were our mistakes. Now for the bit which was really valuable and one which I urge you to consider even in very small studies such as this – the use of 'randomised control participants'. This was invaluable in our study and certainly considered good practice, adding weight to the efficacy of the study.

Quite often it feels as though you are reducing participant numbers by using some of your participants as a control, but it has only been possible to compare our results because data was also collected for the PECS group.

FUTURE AREAS FOR STUDY

- A longer term or follow-up study would generate valuable statistics.
- This study looked at young adults, age range CA 15:0 - 19:0. A study involving younger children would be very informative.
- Criteria for this study included participants being PECS users. A comparative study involving children who have not been PECS users would be very interesting.
- Time and speed of communication.

- Measuring the impact on verbal output – a concern for many parents.
- The Social impact of using the ProxTalker – use within the family and the wider community.

I hope the essence of this study will inspire and encourage those of you who are thinking about research for it is in this way that evidence-based practice will truly become a reality. Maybe then we will have available more user-inspired devices like the Logan ProxTalker. *

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ACKNOWLEDGMENTS

Special thanks to Selworthy Special School in Somerset, Sunfield School in Stourbridge and The Ridgeway Community School in Farnham for their support in this study, and to the nine participants and families who consented to take part. Also thanks to Glenn Dobbs and Sandra Hartley for their impartiality and genuine support of the project.

REFERENCES

Checklye R & Gaskin A, (2006) What is the Impact of Access to High-Tech Communication Aids on Children with Autism? *Communication Matters*, 20,3,40-43

WEBSITE

Pyramid Education Consultants website: www.pecs.org.uk



NATIONAL CONFERENCE

25-27 SEPTEMBER 2011 UNIVERSITY OF LEICESTER

The Communication Matters / ISAAC (UK) National Conference is an annual event embracing a wide range of issues relating to augmentative and alternative communication. The two and a half day event provides a forum to meet and to exchange information with representatives from all disciplines associated with AAC, including people who use AAC and their family members.

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All registrations allow full access to all the presentations and trade exhibition. The registration fee also includes refreshments, lunch and evening meals. Residential registration additionally covers accommodation in student halls (with breakfast). There is a substantial discount if you register and pay before 31 July. Prices from £385 for full residential registration.

There are a number of subsidised places for people who use AAC, and their family members. Book early to avoid disappointment.

BOOKING FORM & INFORMATION

For further information and a booking form, please visit www.communicationmatters.org.uk, or ring Communication Matters on 0845 456 8211 or email: admin@communicationmatters.org.uk

