

Augmentative Communication and Literacy – The SAIL Kit Approach

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Work at the CALL Centre includes a focus upon the acquisition of literacy (or lack of it) in young children who are non-speaking and who use – or may later use – augmentative communication. CALL's approach is underpinned by the research literature, but for much of the time is essentially practical, in reflection of our own action research findings which indicate the urgent need for practical solutions in classrooms *now*.

The Teaching and Learning of Reading

The teaching and learning of reading has been a highly polemicised epic in the history of education. Battle has raged between proponents of meaning-based whole-language approaches versus those of analytical approaches (and between 'look and say/ sight vocabulary' versus 'phonics' methods). Nowadays, however, there is consensus that literacy involves a complex integration of cultural, social and psychological processes, as well as linguistic and perceptual processes, developing from birth onwards (rather than being a sequence of discrete 'learned' cognitive subskills taught at school). Becoming a skilled reader involves *both* 'top-down' *and* 'bottom-up' processing – in other words, neither an exclusively whole language nor an exclusively phonics approach could be effective – each is necessary but not sufficient. But for AAC users, do we know when, and how, to best teach each method?

For English Language, both the Scottish 5-14 Curriculum Guidelines and the National Curriculum in England and Wales place 'listening' and 'talking' in equally important positions alongside 'reading' and 'writing', helping teachers to a new awareness of the educational value of communication in its widest sense, and to see ways of addressing language and literacy in a more integrated way. Augmentative communication is explicitly included (SOED 1993,14) as a part of the language curriculum for pupils with complex special educational needs. Attainment targets officially permit a variety of access routes such as "voice synthesiser, signing, concept keyboard, scribe" etc. (Part 3 No. 1, 24). Elaborating and adapting the curriculum for pupils who are still working towards Level A programmes of study in 'writing', it is suggested (p.25), may include graphic, interactive, and technology-aided approaches. In England and Wales, the National Literacy Strategy (DoEE 1997) includes the 'The Literacy Hour'. Every Primary class must teach literacy for one hour per day of continuous dedicated time (with scope for adjustment to meet the needs of pupils with special educational needs).

This is a useful background of policy and theory, including a welcome positive emphasis on literacy. In practice, however, the question is begged as to whether we actually know how best to elaborate and differentiate the curriculum to achieve effective literacy instruction for non speaking children who use AAC systems and devices. And where are the materials? (How) can AAC users benefit from The Literacy Hour?

AAC and Literacy

Literacy is a concern for all who work with people with with severe speech, language and communication difficulties. The picture often seems rather gloomy. Children who are learning / using AAC often underachieve drastically in the area of literacy. Many adults, even those who are highly competent communicators using an AAC system, are essentially non-reading, lifelong. There is an urgent need for increased awareness, changes in instructional practice, appropriate materials, and more research.

Koppenhaver et al (1991, 1994); Light and colleagues (1993a, 1993b,1994); Smith (1992) and others, have identified numerous factors affecting the acquisition of literacy that are more to do with physical, social and psychological barriers in the environment than with an individual child's linguistic or cognitive factors. For example: the expectations of others – parents, teachers and others; the priorities of others; the quality of literacy-related experiences, pre-school; lack of exposure to print in the environment, due to restricted lifestyle; degree of physical disability (specifically hand function, as it relates to independent access to books and other print artifacts); the pressure of non-educational priorities upon time, such as physical care needs and therapies; poor school attendance due to illnesses; the 'time on task' actually spent on literacy at school; the amount and type of literacy instruction provided; a passive role in communication, and more.

In spite of these barriers, we know that some non-speaking children and adults 'beat the odds' and do become fully literate. How? Why? We need models of how people with severe communication impairments learn literacy. McNaughton (1998) suggests that there has been too much tacit acceptance that poor reading is a deficit within the individual with communication impairment, and too little exploration of effective

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instructional strategies. We urgently need to know more about what are the best methods of teaching and learning literacy with AAC users. We need to know how best to design, and how to use technology effectively.

And in the Meanwhile –

Meanwhile, there are teachers of non-speaking children ‘out there’ *today*, who need ideas about good working practices and who need appropriate tools and materials in order to put their ideas into practice. Many children with special communication needs are now being educated in their local schools rather than in special educational settings. One of the good things about this is that expectations may be high that the young child with special communication needs will keep up with the work of his/her peers¹. However, many teachers in mainstream have little background in disability in general and no expertise or experience in severe communication impairment and AAC in particular. Speech & language therapists generally have little or no training or expertise in literacy and may see their role exclusively in terms of facilitating functional personal and interactive communication. All professionals suffer from a chronic lack of time to plan and prepare materials, and are in any case often unsure of the best approach to literacy for these children.

Special Access to Interactive Literacy.

CALL has looked at ways of overcoming some of these barriers to literacy and of providing resources of specialist advice, support and materials for the teaching of literacy to children with severe physical and speech impairments. (Barriers also need to be reduced before there can be anything like a ‘level playing field’ upon which to carry out research.) CALL’s approach is sometimes nicknamed *SAIL* – Special Access to Interactive Literacy. *SAIL* includes:

Leaflet for Parents

Communication and emergent literacy start together, at home, long before school age.

In order to encourage awareness of the importance of early attention to print and to reading and writing activities, CALL has produced a leaflet for parents, nursery nurses, and other carers and professionals. The leaflet stresses the importance of assuring:

- the expectation of success, and lots of support
- opportunities for the child to make choices
- access to a means of communication
- the child’s active participation in print related activities

As well as enjoying story reading, some of the most meaningful and motivating emergent literacy activities are everyday activities like watching / helping Mum follow a recipe, look up a phone number, write shopping lists, etc.. Very young children will learn to ‘read’ familiar text like favourite food labels, and shop logos if their attention is drawn to these.

The SAIL Kit

To stimulate teachers’ ideas, CALL put together a ‘kit’ of ‘ready-made’ examples of educational materials for children with special communication needs.

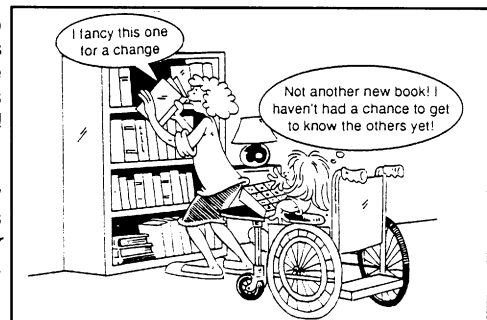
The kit includes:

- Simple materials and games to give print awareness and access to print.
- To supplement the official reader, a range of suitable story books, with interesting stories, clear illustrations, large, simple text, and lots of repetitive lines to stimulate ‘joining in’.
- Adapted books (with page turning aids, for handling by physically disabled children).
- Topic specific low tech communication charts (pictures, symbols, words) to go with the story books.

Who chooses the books you read together?

It’s good for children to make their own choices – and you might be surprised by the books they choose!

All young children enjoy reading the same books over and over and over again....



This helps them to get to know the story and the characters, and gives them confidence. They start to memorise the text, and learn that the words on the page match what the adult is saying.

So next time, let your **child** choose the book.

If the favourite books start to fall apart with constant reading, buy new copies if you can. Then cut the old ones up for games, or to help your child join in and re-tell the story, by pointing the pictures out on a communication chart.

¹Things may go well in primary school, but integration will become much harder at secondary school level. One of the key indicators of success or failure will be the child’s literacy level.

- Ready made overlays for a range of the most commonly used high tech systems, to go with the story books and common rhymes and games used in nursery and early primary classrooms.
- Computer software, with a single page of simple instructions, to allow easy creation of the symbols needed to make such charts and overlays.
- Simple voice output communication aids (VOCAs) to encourage active participation in literacy activities (in many cases already set up with overlays and stored speech sets, to go with the story books), with simple instructions for programming.
- Reading materials for teachers, with further ideas for classroom literacy activities with communication impaired children.
- A range of switches and adapted switches

In-service Training and Loans

CALL offers in-service training sessions to schools to demonstrate these materials and to discuss implementation techniques. We find that once teachers have grasped the principles of the *SAIL* kit, many are themselves rich in implementation ideas. Scottish schools may borrow items from the *SAIL* kit for one term. A short video² has been made, to support loans and in-service sessions. Teachers are more likely to want to borrow parts of the *SAIL* kit, step by step, than the whole thing at once. It often turns out that schools and speech & language therapy departments already have *SAIL* kit type devices sitting unused in a cupboard somewhere. Staff just need to do a bit of 'cupboard scouring' locally and *need to think about using old devices in different ways*.

Active Participation

Emphasis in AAC has been primarily upon the development of functional, interactive communication, in recent years. Although it represents a slight shift of emphasis, work on early literacy development is underpinned by many of the same principles. It is clear that children are unlikely to become skilled readers if they are merely passive spectators while literacy activities are going on around them. In order to participate fully and directly in literacy activities, children with disabilities need *access to print* in a print-rich environment, and they need *access to a means of communication* – low tech or high tech – in conjunction with *communication opportunities*, if necessary structured specially for them by teachers. They also need *motivation* – a belief that they can participate and can succeed.

Appropriate Vocabulary

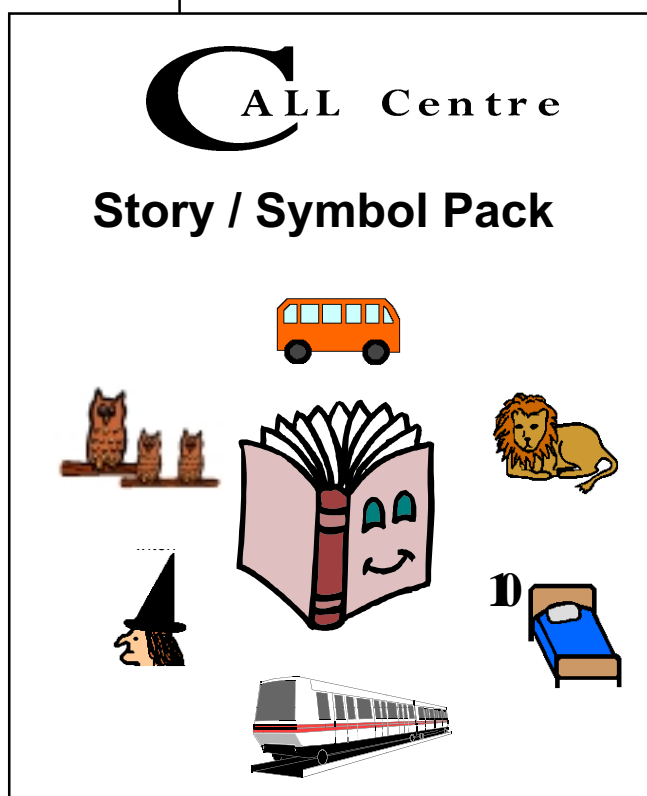
The AAC system must be adapted to each specific activity, in terms of the vocabulary available. It's no good ensuring that the child has 'a system' in front of them during a story about taking a dog to the vet, if all they can do with it is choose between milk and orange juice! (Apart from being useless for stories and games, inappropriate vocabulary might ultimately cause a child to become altogether demotivated by their system since it becomes hard for them to perceive 'what's in it for them'.)

Low Tech

Specific topic linked vocabulary is often best provided through a low tech approach, as illustrated by the *CALL Story Symbol Pack*³. Each of seven specially selected early level story books (c. one line of text per page), has been augmented by an accompanying 8 location colour symbol chart (PCS) which can be photocopied to make additional materials like Snap cards, Lotto games etc. An Apple Mac disk with all the symbols is also available for those with *BoardMaker*.

² A short (c.20 mins.) video entitled "*Special Access to Interactive Literacy*", with short accompanying booklet. The video shows children with severely impaired speech using a range of different symbol based, voice output systems for participation in literacy activities. The commentary explains the principles behind this approach, in simple terms.

³ *CALL Story Symbol Pack* – Seven early level story books (c. one line of text per page), with an accompanying 8 location colour symbol chart/overlay (PCS) to go with each book, large size symbols to fit on top of a Big Mack, record sheets. An Apple Mac disk with all the symbols is also available for those with *BoardMaker*.



Use of VOCAs

Voice output communication aids are considered to be motivating and allow children 'to be heard' in classroom groups. However, VOCAs are often under-used in classrooms. Why should this be? Maybe because:

- the device as it stands does not offer the child the vocabulary that is actually required for the curricular activities the group is working on.
- teachers don't have time to program in new vocabulary; set up themes for games or stories; reprogram devices for each new activity; make overlays etc.
- the child doesn't have the time or the spare cognitive energy, to learn, practise and memorise lots of new vocabulary all the time, and to integrate it permanently into his/her personal communication system – vocabulary priorities have to be set (frequency of use for general communication is usually a criterion).
- education staff feel frightened of the device, if they are unsure of how to program it, use it, fix it etc.
- education staff may feel reluctant to alter or add vocabulary to the system, without discussion with speech & language therapists (which may take ages to set up).
- education staff are unsure of how to integrate use of the AAC device into general classroom activities involving speaking pupils.
- they may not be convinced that the child can actually use it effectively.
- the child indeed cannot use it effectively – education staff may be unaware of the amount and type of teaching it takes to develop effective AAC use.

How can these very real difficulties be tackled?

The CALL *SAIL* kit philosophy is based on the principle that to be useful (and used!) in the classroom, VOCAs need to be:

- cheap
- quick and easy to learn, set up, program, and change
- accessible (direct access and switch access)
- versatile
- in some cases, permitting multiple access (for class groups)
- in the *teacher's* 'ownership'

Let's face it – many of the communication aids provided to individual children do not match these criteria...

The Need for Classroom Activity AAC Systems as well as Personal AAC Systems

Children don't always play with the same one toy; it doesn't make sense for them only ever to use the same one communication tool. Let's stop thinking about communication technology as 'going with the child' and start thinking about ways in which communication technology can 'go with the activity'.

We should use the tool best suited to the task, in every given situation. Portable / wheelchair mountable systems like *Cameleon*, *DynaVox*, *DeltaTalker*, to name but a few, are the best tools for personal communication for individual children. Computer work-stations with printers, are the best tools for practising specific discrete tasks and skills, for writing, and for recording work. We're not saying don't use these – of course we want them to be used! But they are not necessarily the best tools for an educational game or activity which is supposed to take about five minutes of classroom time, such as a quick group story telling and interaction session, or a listening and sound-matching game. If they *can't* easily be used, then rather than using nothing, why not use an *additional* VOCA? The best tool for these activities is a device which is quick and easy to set up, and which doesn't have to keep or be put back to their original set of messages. In other words, let's not take communication aids too seriously all the time – let's sometimes go for temporary, *task/topic specific* aids to communication.

With these principles in mind, the *SAIL* kit contains only lower priced items of voice output technology (all under £1,000) that are simple to use. The kit contains:

Single Message Items

- switch adapted loop tape cassette player
- *BIGmack* (5)

Double Message Items

- Two message *Talking Switch* (1)

Multiple Message / Group Access Items

- *SpeakEasy* (1)
- *VoicePal Plus* with taction pads (1)

Multiple Message/ Single user items

- old recycled *IntroTalkers* (2)
- *CheapTalk* (1)
- *MessageMate 20/20 & Mini MessageMate*
- (*ORAC*, *AlphaTalker* and *TouchTalker* also available, through the main CALL Loan Bank)

The idea is that teachers can use these items in classrooms as 'starter' aids. Or they may use these items in classrooms *alongside* more sophisticated communication aid technology that has already been provided for individual children. We find that teachers are excited by the ideas behind the *SAIL* kit, rather than by the devices as such.

My Old Teddy

The *BIGmack* or similar devices fit this description perfectly. School classrooms often seem to have one each. We recommend that they need a *minimum of two BIGmacks* (to allow for interaction at its most basic level) and preferably several to allow for group use. The *CALL Story Symbol pack* (see above) includes a sheet of colour symbols in a large size to fit on top of a *BIGmack*, for each story, and sheets noting what messages need to be stored in each of three *BIGmacks*, and in an 8 location *VOCA*, if used, so that a classroom assistant can program digitised speech output devices without having to look inside the book to remind herself of the story and without having to think about what to say. We timed it – it takes under two minutes!

As an illustration of the same principle but with a slightly more sophisticated device (but which is quickly reprogrammable via disk drive) CALL developed a dedicated package called '*My Old Teddy*', to allow children to use an *ORAC* to read out loud the Dom Mansell story (publ. Walker Books, 1991), fill in missing words, answer questions, interact, and play an interactive 'hospital game'.⁴

The Role of Graphic Symbols in the Development of Literacy

Research is only just beginning into the important area of the role that graphic representational symbols might play in the acquisition of literacy. Preliminary indications are that a strength of graphic symbols, for literacy, is the area of metalinguistic awareness, especially at the early level of 'print / word awareness' (Bishop et al 1994). Pictures and symbols can also certainly help the child to get meaning from text, which is an important step in motivating further attempts at reading. Some authors feel that the facilitative function of graphic symbols in the acquisition of reading as a whole may have been overstated (Rankin, Harwood, Miranda 1994). However this should not be taken out of context – the same authors also stress the value of graphic symbols in providing access to a language base, for AAC users

"Once children become competent users of language for multiple purposes, with multiple audiences, whether orally or with graphic symbols, metalinguistic skills more directly tied to reading comprehension can be facilitated"

(Rankin, Harwood, Miranda 1994 279)

McNaughton (1993) strongly believes that symbols have an important role to play, but that the *type* of symbol used and the *developmental stage* at which they are introduced and used is crucial. She suggests that 'Type One' highly pictographic symbols (e.g. Makaton, Rebus, PCS) may be useful for early language and communication functions. 'Type Two' symbols (eg Bliss) – graphically more removed from their referents – may be relevant for more able children approaching literacy and the higher levels of language processing (but may be rejected if introduced too early.)

The CALL *SAIL* kit approach is to support teachers using symbols from McNaughton's 'Type One' group, in the early stages with younger and developmentally young children, by providing examples of symbol, charts, overlays and sets of individual 'stick-on' symbols to match specific stories and activities. We are now trying to work out guidelines to help teachers to work out *when to move on to the next stage* – to prevent pupils becoming 'stuck' with pictographs when they are actually capable of working with more abstract concepts, more opaque or arbitrary symbols, and indeed words and letters.

⁴The '*My Old Teddy*' package consists of the following: a copy of '*My Old Teddy*' by Dom Mansell (publ. Walker Books, 1991); an application, on disk, for the *ORAC* (digitised and/or DECTalk synthetic speech in 8 and/or 32 locations); a handbook detailing how to use the *Teddy* application, and how it fits in with the curriculum; a set of overlays for *ORAC* (colour, B&W, blank); a sample concept keyboard overlay (A3).

Software to Generate Symbol Materials

To be practically useful, symbols need to be of good quality, quickly and readily available and easy to produce. Standards and expectations have risen – they need to be available on computer (ideally, with a colour printer). Most symbol systems are now available in some form or another for most types of computer (see Millar & Larcher, 1998, for a comprehensive review). The widest range of choice of software, symbol libraries and pre-stored symbol vocabularies is for PC; the choice is slightly narrower for Apple Mac and Acorn Archimedes. Realistically, most schools will need to use the computers they already have. Schools with Apple Mac computers may find PCS symbols most practical (generated by the Mayer Johnson program *BoardMaker*). Schools that have Acorn Archimedes computers may choose Rebus symbols (with the Widge programs *Writing with Symbols* and *GridMaker*). All of these and more are also available for PC.

For children using Bliss symbols, software is newly available on PC as well as Apple Mac. We do not usually recommend Bliss as a ‘general’ classroom tool for producing topic specific vocabulary for literacy activities, but recognise that for a few more able young children, Bliss will be the most suitable overall means of communication, in which case it will be appropriate also to use Bliss throughout their literacy programme.

Minspeak icons are not suggested by CALL as the symbols of choice for very young children as a general tool to support classroom literacy activities. They were not designed to be used in this way and work on a different principle. Of course, if individual pupils already have personal communication aids and MAPs which use Minspeak icons, then spending classroom time in learning the icons that correspond with key vocabulary and high frequency function words recurring throughout the literacy programme is important. (Priorities have to be established; transient and context specific ‘fringe’ vocabulary should not be allowed to dominate the child’s communication system – they need ready access to a working ‘core’ vocabulary.)

Symbols for All

One thing is clear. If graphic symbols are used, as with VOCAs, it is vitally important that they are part of the common currency of the classroom and can be used in a common sense way on a day to day basis by the teacher and auxiliaries. It is not helpful for the symbols to be ‘mystified’ into something that only the speech & language therapist can deal with. If the teacher has to apply to the speech & language therapist each time symbol vocabulary is required for a story activity or a game in the classroom, the chances are high that 1) the therapist won’t be available right then and there and delay may occur; 2) the child will be left without an effective means of active communicative participation – yet again a ‘passive spectator’; 3) the teacher will feel ever more alienated from the child’s communication programme and frustrated with the quality of education she is able to provide.

The best practice that CALL has observed is in classrooms where the teacher(s) and therapists jointly plan their language and literacy programme for the term/ week, and determine well in advance, with the auxiliaries, what vocabulary and materials will be required for specific activities. The designated person(s) – often a classroom assistant – can then print out appropriate symbol-based topic charts, overlays, stick-on symbols for books, flash cards, as required.

This approach undoubtedly takes commitment and advance planning – symbol materials cannot be spirited out of nowhere at a moment’s notice. However, the computer tools now available do make it possible to create high quality charts and overlays within, say, ten to twenty minutes. In spite of the work involved, CALL’s experience is that teachers and auxiliary staff feel empowered by being given ‘permission’ (and the technology) to create symbol materials for classroom activities, themselves. They are also much more likely to *use* such materials with the AAC user if they themselves produced them (rather than being ‘told’ to use something that someone else has produced).

Writing Aids

Writing is not something that follows on, last, after the establishment of reading: listening, talking, reading and writing are held to develop concurrently and to be heavily interrelated. In some cases, it may be easier for disabled children to write independently on computer (by using communication aids connected to computers, special access peripherals and supportive software) than it is for them to speak or read independently, which makes it a particularly important area of literacy activity for AAC users.

Any systems which allow children the motivating and powerfully educational experience of composing text, seeing it written up on a screen for others to read, hearing it build up, sound by sound or word by word, and printing it out, has to be more powerful an aid to literacy than one which simply speaks. Extension of the CALL *SAIL* kit into the full CALL Centre Loan Bank therefore enables schools to borrow devices allowing connection of VOCAS such as the *DeltaTalker* to classroom computers, and a variety of mouse and keyboard

alternatives, and specialised supportive writing software.

Augmentative Communication Systems may Influence the Development of Literacy

With young non-speaking children, it is important to provide voice output technology (classroom devices and personal systems of augmentative communication) as early as possible, to enable active participation and to ensure the development of functional communication for social interaction and for access to learning. However, it should be borne in mind that the nature of the augmentative communication system is itself likely to have an influence on the future development of the child's cognitive and linguistic systems.

Usually, the AAC system chosen is one which 'plays to the strength' of the child. For example, where speech is poor, but vision and comprehension of language are good, a system may be provided that is based on sequences of graphic symbols, with meaningful words, phrases or sentences associated with each. Learning and using this system further develops the child's 'strengths', such as visual skills, memory, and semantic processing. However it may do little to develop the child's already weak areas of auditory processing, sequencing, and phonemic segmentation. In time, for communication, the child may rely entirely upon their compensatory 'strengths' while ignoring other underdeveloped areas of linguistic processing (i.e. employing good 'strategic communicative competence' in Light's terms).

Phonological Awareness and Recoding

At some stage, children have to move from using visual and semantic processing (necessary for decoding the meaning of graphic symbols) to the stage of using auditory and phonological processing. Recent research stresses the importance of syllable segmentation, rhyme recognition; onset-rime; in the early stages of literacy learning, and later of alliteration, analogies, sound-letter matching; sound blending and so on (Goswami 1994).

For children with severely impaired speech, ways need to be found to use AAC equipment to not only transmit meaningful words and messages, but also to allow them to 'play' with sounds and rhymes (as young babies do) to hear sound letter correspondences and to themselves accurately (re)produce sounds and blends (for example, in a 'talking version' of the sort of Phonics worksheets that primary teachers regularly use). An urgent challenge for practitioners is to establish the right balance between using voice output technology to bypass defective speech and speech feedback systems, and using it to develop inner phonological skills.

Grammar

Some children may concentrate on 'key' words and their meanings – in order to communicate basic messages – but have weak grammatical skills. This may show up later as problems in the area of reading comprehension and word order in sentences. Lack of experience with phonemic segmentation may be linked with severe spelling problems. It is quite common to find AAC users who have phenomenal visual memory for written words (learned by a form of 'look and say' method) but who are quite unable to segment even very simple words into their component sounds / phonemes. Luckily, for such people, further forms of AAC may be available to support their writing (such as word banks and predictive typing).

The way that vocabularies in AAC systems are set up can also have an effect. Linguistically, it will be much more valuable if a child can able to fill in the correct one 'missing word' in a sentence at the appropriate time, than it is for them to be able to hit one key that 'spews out' a whole long piece of story text.

Literacy Supporting Features of AAC systems

We are not saying that AAC systems are the *cause* of the above mentioned type of language problem. We are certainly not advocating a return to the 'bad old days' when children were forced to repeatedly 'practise their failures' in speaking and writing and had no access to alternative, compensatory ways of communicating, with all the frustration and denial of potential that entailed. What we are saying is simply that in spite of the early stage of research into AAC and literacy, understanding has nonetheless reached the point where we can say to designers of communication aids, and to those who 'prescribe' and set up particular aids for particular children, something about which features of systems may enhance and facilitate literacy learning in young children, and which features are potentially unhelpful, in the hope that the 'next generation' of systems are even better adapted to literacy teaching and learning.

We believe that literacy learning can be enhanced by AAC systems which offer:

- symbol overlays / displays that include words, not just symbols
- displays that includes well formed and correctly spelled text
- symbol displays on which words can be made larger/ bolder and symbols reduced in size, as the child masters the reading of some words.

- displays where words can replace symbols completely (for those for whom this is an appropriate level of language, there is little point in children learning arbitrary symbols for the 'little words' like 'for'; 'to'; 'and'; 'but' – it's better to go straight to text).
- speech feedback can enhance the development of phonological awareness and phonemic level processing – it should be made easier to programme VOCAs so that alphabet letters, blends and clusters speak their sounds (i.e. not their names or word approximations)
- VOCAs set up to mirror the child's level of language comprehension / production, not to deliver a long piece of text gabbled out by a single key press.
- systems which allow for connection to computer to allow for visual display, editing and printing of text.
- systems that allow for exercises to be set up for the practice of grammar (sentence building) and phonics, as well as for the production of functional / interactive messages.

Teachers will be able to add many more to this list. Teaching programmes will include attention to those areas of linguistic processing necessary for the development of reading and spelling which may be under emphasised by the design of current AAC systems.

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