AAC and Literacy intervention

a review of the literature

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**AAC and Literacy intervention – a review of the literature**

The Communication Trust commissioned this literature review as part of a more extensive AAC and literacy intervention project, funded by the DfE. The aim of the review was to collate research informed evidence of literacy intervention practices used to support children who also used augmentative and alternative communication (AAC) systems. This scoping review gives an account of the issues involved. Within the constraints of the project brief, its contents are as far ranging as possible but do not claim to be exhaustive. Literature reviewed included publication dates from 1980 to 2017. Literacy assessment in AAC was not the focus of this review; therefore, little mention of it is given here. For more information on assessment see, e.g., Berninger, & Gans, (1986); Dahlgren Sandberg, Smith, & Larson, (2010); Erickson, Clendon, et al, (2008); Geytenbeek, Heim, Knol, Vermeulen, & Oostrom, (2015); Iacono & Cupples, (2004); King, Binger & Kent-Walsh, (2015); Lund & Light, (2007a); Nathan, Stackhouse, Goulandris & Snowling, (2004); Smith, (2005); Soto & Zangari, (2009) Vandervelden & Siegel, (2001).

**Defining literacy**

Literacy refers to both reading and writing activities. Conceptually, we are considering either a top-down or a bottom-up approach to literacy. A top-down approach starts by considering higher order processes which operate by building up a bank of knowledge based on experiences, expectations and shared knowledge. Bottom-up processes start by focusing on print, and the letter sounds and word structures. Taught in isolation, a bottom up approach may lack context or language cues to support comprehension of the words. The literature suggests that to be a competent, independent reader and speller, both top down and bottom up experiences are important (Smith, 2005).

Several models exist for explaining levels of literacy, many of which imply stages of development and skill (e.g., Erikson & Koppenhaver, 2007; Stackhouse & Wells, 1997). Not all authors agree with stages, suggesting that this merely reflects teaching approaches, rather than truly describing the processes involved in becoming a skilled reader or speller (Smith, 2005). Stages of literacy ability may be conceptualised into four broad areas: (i) pre-literacy, (ii) emergent literacy, (ii) shared literacy, and (iv) independent literacy (Erikson & Koppenhaver, 2007). More traditionally within the UK, literacy may be conceptualised as four stages: (i) pre-literacy, which includes recognition of how to hold a book (front to back), (ii) logographic, which includes whole word recognition and the capacity to spell own name, (iii) alphabetic, which includes the ability to apply letter-sound rules to decode new words, sounding out letters and then blending them. At this point, semi-phonetic spelling is apparent and often vowels are omitted, e.g., burglar – bgl, (iv) orthographic, which includes the ability to decode chunks of text such as prefixes and suffixes. Spelling has become more logical, following conventional spelling rules (Stackhouse & Wells, 1997).
The primary goal of reading instruction is to teach students to read silently and with comprehension. Whilst reading can be considered from several theoretical perspectives (e.g., linguistic, psycholinguistic, sociocultural), here we define reading as the cognitive activity of deriving meaning from text (Koppenhaver, Foley & Williams, 2009, as cited in Soto and Zangari, 2009). Koppenhaver et al (2009) consider reading to be a form of situated cognition, or in other words an experience that requires students to engage within the context of learning, through language skills as well as comprehending the elements of print.

Stages of reading development focus on observable changes in the child’s response to text. Smith (2005) summarised reading as a process in progress through a slightly different four stages. The pre-alphabetic phase, similar to the pre-literacy phase, offers children experience of reading, e.g. that print carries meaning. The alphabetic phase is where children start to decode the relationship between the grapheme and the phoneme, although the primacy of the whole word memory store (sight words) is still evident. The fluency stage is a consolidation phase where there is a rapid increase in sight word recognition, speeding up the process of reading. Finally, the reading to learn stage occurs when the student can process print at speed and automatically. Crucially, the process of reading is subordinate to the purpose of reading.

Stages of spelling can also be considered and demonstrate an overlap with elements of the reading process. Again, spelling neatly falls into four descriptive stages. Firstly, the pre-alphabetic phase is typified by random sequences of letters that bear no relationship to the sounds in a target word. Then, alphabetic spelling is demonstrated by the inclusion of vowels and a great increase in the plausible and phonetically informed spelling attempts. Spellings at this point may not always be conventional (rule bound). The next stage, orthographic/semi-conventional spelling, shows conventional spelling patterns appearing with word attempts. This phase provides clear evidence of children drawing on their stored knowledge of words and letter sounds. Lastly, derivational relations spelling incorporates spelling patterns that recognize morphological routes, supporting consistent and complex spelling patterns (Smith, 2005).

Before moving on, it is worth considering writing skills as part of this review. Many aspects of writing link directly to the spelling stages but the opportunity to produce text through writing should not be underestimated. In the preparation phase, children produce marks on the page (writing), yet are often unable to ‘read’ it out loud. Children writing as they speak would mark the consolidation phase. The demarcation between writing and speaking is often characterised by the formality of language content and structure used. The differentiation phase is characterised by differences in spoken and written output. Finally, the systematic integration phase is demonstrated by flexibility of language structure and content, according to the context of use and the people involved, e.g., more informal written and spelling style used in text messages or email. These skills are typically mastered by the end of primary school (Smith, 2005).
Defining Augmentative and Alternative Communication (AAC)

Augmentative and Alternative Communication (AAC) is the term used to describe various methods of communication that are used to get around difficulties with speech or communication. AAC includes systems such as pictures, gestures and pointing, as well as techniques involving computer technology. Some kinds of AAC are actually part of everyday communication, such as waving goodbye or giving a ‘thumbs up’ instead of speaking, or pointing to a picture or gesturing, whilst in a foreign country where you cannot speak the language. Some people have to rely on AAC most of the time.

(definition taken from the ‘What is AAC?’ Focus On Series, Communication Matters http://www.communicationmatters.org.uk/sites/default/files/downloads/focuson/What%20is%20AAC.pdf)

Within this review of literacy development, conventional literacy is considered the ability to read and spell using traditional orthography. This view of literacy is not inclusive of AAC symbol sets, such as graphic symbol or picture vocabularies, as a form of literacy. Such AAC resources may support the development of helpful skills and knowledge that contribute to literacy development but are not regarded as a form of literacy (Dahlgren Sandberg, Smith, & Larson, 2010; Erickson, & Sachse, 2010; Hetzroni, 2004; Koppenhaver & Williams, 2015; Light, McNaughton, Weyer, & Karg, 2008; Soto & Zangari, 2009; Staples, & Edmister, 2012).

Defining intervention

Literacy assessment and intervention must be based on profiles of what students using AAC can do and how their current strengths can be developed and extended. Interventions deemed successful are ones where outcomes are valid from the perspective of each stakeholder. Stakeholders may include the young person using AAC and their family, but also the education and therapy staff. This is often achieved through a process of social validation, whereby the goals, methods and outcomes are recognised as having social significance for everyone involved. Interventions that are socially valid, in addition to being effective, have more credibility than interventions that lack application within a social learning context, e.g., embedding sight words in a story structure compared to reading a list of sight words, (Soto & Zangari, 2009). Whilst there is agreement that developing literacy is desirable, the routes to learning literacy remain much more contentious. The literature seems split between a top-down emphasis on meaning centred approaches, offering a motivational context for learning, or a bottom-up approach developing the skill set for literacy. Over the last few decades there has been an increasing agreement that no one approach suffices. Key to meeting the needs of children and young people who use AAC in their literacy journey is the educator and the opportunities they offer students to engage with literacy experiences (Smith, 2005).
Who are the children and young people we are considering in this review?

The children and young people of particular consideration here are those aged between 0-25 years, with severe speech and physical impairments. Some may also have associated learning disability. All use augmentative and alternative communication technologies for some or all of their conversation, language learning and educational access. Each child has unique skills and challenges, making delivery of a universal design for literacy education challenging, if it is to be effective. The following sections aim to offer insights into the range of unique literacy skills and challenges that should be taken into account when delivering literacy intervention for children and young people who use AAC.

What do we know about literacy skill and development in children and young people who use AAC?

Current evidence overwhelmingly indicates that young children with severe speech and physical impairment have the learning capabilities for early reading and writing skill acquisition (Erikson and Koppenhaver, 2007) and that emergent literacy is not age dependent but is based on experiences with text. Several accessible resources exist to support early literacy experiences (see website resources section), however, these offer only part of the solution and much remains unknown about how best to support children and young people with AAC and literacy needs to become independent readers and spellers (e.g., Bedrosian, 1999; Hanser & Erikson, 2007; Hunt-Berg, 2005; Johnston et al, 2009).

Learning to read (and spell) is extremely difficult for children who use AAC (Dahlgren Sandberg, 2001). Many children and young people with severe speech and physical impairment fail to develop the level of literacy ability commensurate with their cognitive abilities and potential (Smith, Dahlgren-Sandberg, Larsson, 2009). Literacy is the key to educational and vocational opportunities, as well as to the use of more complex AAC systems (Bedrosian, 1999; Foley, & Staples, 2003; Koppenhaver & Williams, 2010). What we have yet to fully comprehend is what factors influence the success of literacy acquisition in children and young people who use AAC. The next section considers a number of elements that may provide us with some answers, or perhaps better questions to ask in relation to the children and young people we may be supporting.

What do we know about the children and young people who use AAC?

Children with little or no speech and controlled motor abilities are able to decode and identify words and actively take part in shared book reading activities when provided with appropriate instruction and access to Assistive Technology. The language and emergent literacy skills development offered through interactive storybook reading are important for all children but especially those who may rely on AAC, as such early experiences lay the foundation for later conventional literacy development. We know that children with severe speech and physical impairment get significantly fewer early literacy experiences, e.g., the
quality and quantity of literacy experience is different. For example, how do you support a child with physical involvement and no speech to share a storybook, and share the joint reading of that story (Kent-Walsh, Binger, & Hasham, 2010; Koppenhaver, Erickson, Harris, McLellan, Skotko, & Newton, 2001; Liboiron, & Soto, 2006; Nordberg, Dahgren Sandberg, & Miniscalco, 2015; Tonsing, Dada, & Alant, 2014)? When a child is encouraged to participate, mechanical aspects of storybook reading, such as page turning, are often emphasised rather than the language and communication opportunities for the child to predict outcomes, contribute to the storylines, or retell the story. This is further complicated by the fact that aided AAC systems are often less accessible to the child during storybook reading and this impacts on the quality and quantity of literacy experiences that are on offer in later education stages (Da Fonte, Pufpaff & Taber-Doughty, 2010). For example, reviews of available baseline measures shows variability in our capacity to determine each child’s skill and need related to their reading comprehension levels, specifically morphology. We lack effective grammar assessment tools and consequently have limited intervention strategies (Binger & Light, 2008).

We know that many children have auditory and visual processing challenges, which impact on attention and memory skills, reducing the opportunity to learn from each experience they encounter. We have some early evidence, reinforced by later studies, to suggest that a differentiated but systematic reading instruction programme can help children improve word processing and recognition (Berninger & Gans, 1986; Binger, Maguire-Marshall, & Kent-Walsh, 2011; Light, McNaughton, Weyer, & Karg, 2008).

Smith (2005) identified four intrinsic factors contributing to reading difficulties in children who use AAC. These are physical differences, sensory and perceptual differences, linguistic differences and cognitive differences. Koppenhaver and colleagues added engagement as a fifth factor (Koppenhaver, Foley & Williams, 2009, as cited in Soto and Zangari, 2009).

Physical differences impact upon reading opportunity with the majority of individuals who use AAC having congenital physical challenges reducing opportunity to interact with the environment or be involved in activities that support reading development. Alternative assistive technology adaptations may act as alleviators in the process of reading experience, however, related issues such as head control, time-consuming access (through gaze or other switch based systems) and related fatigue negatively impact upon this process.

Sensory and perceptual differences predominantly consider two systems, hearing and vision. Both may have a profound effect on learning to read and spell. Hearing difficulties vary greatly amongst children who use AAC but tend to be an ever present factor. Appropriate amplification for the individual or within classroom systems can minimise effects but may still necessitate sign-interpretation at all times to support full participation in literacy activities.
Visual impairment affects up to 60% of those with cerebral palsy. Also those with cortical visual impairment have to cope with degraded print information but often display inconsistent performance in print processing tasks. For example, atypical eye movements may hinder text processing causing the person to lose their place when processing text. The impact of this was described in a study of adults with cerebral palsy, using a standardised reading measure who came out with a UK-equivalent, Year 8 (England & Wales, or First Year, Scotland & Northern Ireland, i.e., 12-13 years old) reading level for extended text. When the same text was presented one line at a time, the score leapt to a Year 10 level (i.e., 14-15 years) (Koppenhaver, Foley & Williams, 2009, as cited in Soto and Zangari, 2009). This underscores the need to consider tools and strategies to alleviate visual challenges for all children who use AAC.

Differences in linguistic competence may result from a struggle to acquire skills in language knowledge, phonemic awareness, decoding skills, the inner voice and text decoding skills. Restricted vocabulary development and life experience restrict the application of contextual cues to support effective reading with comprehension. Reduced experience of semantic and syntactic components of text constrain sentence or paragraph level comprehension (Sutton, Soto, & Blockberger, 2002; Trudeau, Sutton, Morford, Cote-Giroux, Pauze, & Vallee, 2010; Vandervelden, & Siegel, 2001; Wilkinson, Carlin, & Thistle, 2008).

Skilled reading and spelling skills requires cognitive and metacognitive resources. These are often impaired in children and young people who use AAC (Dahlgren Sandberg, 2006). Assessing the existing skills of children with severe speech & physical impairment is very difficult. Koppenhaver and colleagues insist that the presence of severe cognitive impairment should not be used as an explanation for excluding students from reading instruction (Koppenhaver, Foley & Williams, 2009, as cited in Soto and Zangari, 2009).

Student engagement should include time reading with the backdrop of pleasure and positive attitudes to the outcomes of reading. As reading may be so effortful, many children who use AAC may never get to the point where this is how they feel about reading for enjoyment. (Koppenhaver, Foley & Williams (2009) in Soto and Zangari, 2009; Edmister, & Wegner, 2015).

This review of intrinsic factors highlights that each child and young person may have subtly different motor, sensory, speech and cognitive challenges, making a universal intervention solution likely to fail. The evidence presented suggests that differentiated instruction works best.

The educational and home environments constitute extrinsic factors that may be contributing to delayed literacy achievement. We know that children are better placed for effective literacy development if they have been immersed in language and literacy rich experiences before entering school. Unfortunately, children with AAC needs have far less time available for participating in such experiences due to the complexity of their other
needs (Blockberger, 1995; Broberg, Ferm, & Thunberg, 2012; Bruno, & Dribbon, 1998; Light, & Smith, 1993). Coupled with our knowledge that parental beliefs and attitudes have an effect on the quantity and quality of use of AAC systems and on how these systems relate to literacy development, it is unsurprising to find that young AAC users tend to not get off to a good start with literacy (Clendon, Gillon, & Yoder, 2005; DeVeney, Cress, & Lambert, 2016). Based on this premise, the approach to literacy intervention in the educational context is critical. Reading instruction in a typical education context is multifaceted, with both instructional, modelling and scaffolding supports from the educators, promoting a sense of accomplishment through challenging and varied reading and writing activities for their students. Active involvement in the learning process or contextualised learning encourages social participation and a sense of achievement (Smith, 2005; Stauter, Myers, & Classen, 2017).

In a systematic review by Koppenhaver & Williams (2010), we find that we remain uncertain of the appropriate instruction dosage for effective literacy development. All papers cited described that different amounts of literacy intervention time afforded students under different (research) experimental conditions. The studies included ranged from seven hours to many hundreds of hours over an academic year to develop particular literacy skills. This is unsurprising, given that we have already acknowledged the heterogeneity of intrinsic factors influencing learning trajectories. Counting of hours spent on particular activities is perhaps not an appropriate focus. During these hours, detailing the ways in which students are receiving differentiated instruction to achieve success in any aspect of literacy might yield greater understanding of the students’ progress and on-going learning needs. Motivational learning opportunities may result in greater social participation and literacy development, e.g., tapping out component parts of words rather than sounding them out, working with words, shared reading, self-selected reading (Emms, & Gardner, 2010; Erikson & Koppenhaver, 2007).

As already stated, completing baseline assessment of literacy ability is complicated, requiring consideration of the influence of many characteristics within the learner and the learning environment that they experience. Current evidence recognises the need to develop reliable baseline measures to determine the amount of progress and the influence of teaching methodologies on individual children’s progress. Emerging evidence suggests that we need to consider the role of augmented input as an important ingredient to help children and young people learn new vocabulary and increase expressive and receptive language skills (e.g., Binger & Light, 2007). There are some paradoxes in the research literature too. Whilst some studies indicated that the use of (teacher led) prompts, questions and scaffolds did support language and literacy development over time (Barker, Akaba, Brady, & Thiemann-Bourque, 2013), other studies suggested that the amount and type of teacher questioning and prompting reduced language and literacy development (Barton, Sevcik, & Ann Romski, 2006; Romski, Sevcik, et al, 2010). A final point from the literature suggests that use of AAC by peers (who did not need to use the system) was
positively related to language and participatory outcomes for children and young people who use AAC.

In conclusion, we should be mindful of the fact that we are not merely considering very young children at the early stages of literacy development. Many of the elements debated here still apply to older children and young people, suggesting that literacy development needs further exploration in terms of our aspirations and expectations of those with severe speech and physical impairment (Foley, & Pollatsek, 1999; Hunt-Berg, 2005; Lund, & Light, 2007a).

What are the implications in terms of existing Assistive Technologies and technological developments?

Within the field of Assistive Technologies (AT), many resources and technologies exist to alleviate motor and access challenges. Several software options support early literacy development (example resources and links are listed below in the website resources section). One of the more commonly used frameworks (Four-Blocks, Erickson & Koppenhaver, 2007) takes both a bottom-up approach, e.g., learning sight words, and a top-down approach, e.g., theoretical constructs embedded within a reading and writing programme.

Millar and colleagues (2004) demonstrated that children and young people who use AAC receive significantly less literacy instruction than their non-disabled peers. They delivered two components of literacy instruction to promote phonemic awareness skills in children who use AAC. The components comprised (i) direct instruction and (ii) a writing workshop, which embedded writing instruction within group writing activities. They concluded that a literacy instructional programme that combines direct instruction with embedded, meaningful activity may facilitate greater literacy experience and greater literacy success. Perhaps as a consequence of emerging research evidence, there is an emerging array of AT hardware and software to support the more motivational aspects of contextualised learning, where young people can work collaboratively to problem solve the literacy activity (example resources and links are listed below in the website resources section). Many of these resources offer personalisation features to ensure that the particular literacy learning needs of each child can be addressed. In particular, beginning writers are given affordances to utilise core vocabulary which is based on research evidence (Clendon, & Erickson, 2008; Clendon, Sturm, & Cali, 2013; Wood, Appleget, & Hart, 2016).

Pleasingly, there is growing recognition of the need to consider the memory processing demands of on-line activities, especially when the children may have additional physical/coordination fatigue issues. We know that the memory and language representation demands of AT, and specifically AAC systems, is different from traditional methods of speech, reading and writing activities. Young AAC users are operating on multiple levels of learning for simple communication and literacy acts (meta-skills) (Murray, & Goldbart, 2011; Stadskleiv,
The field of AT, including AAC, is able to draw from an emerging evidence base defining the literacy learning needs and learning styles of children and young people who use AAC.

**What are the implications for the education of the educators?**

The literature suggests that quality literacy instruction occurs when there is a collaborative team around the young person who uses AAC. This has been evidenced in a number of ways. Teachers, Speech and Language Therapists, Occupational Therapists and assistant educators working together, completing shared training activities, and maintaining high expectations resulted in improved literacy outcomes (e.g., Binger, Kent-Walsh, Ewing, & Taylor, 2010; Douglas, 2012; Grether, & Sickman, 2008; Kent-Walsh, Murza, Malani, & Binger, 2015). Also identified was the delivery of appropriate and timely family training and support. Family inclusion in the decisions made about approaches to reading and spelling experiences increased their expectations and aspirations for their young person (e.g., Bruno, & Dribbon, 1998; DeVeney, Cress, & Lambert, 2016; Kent-Walsh, Binger, & Hasham, 2010).

Collaborative working ensures that the team (including family members) have a collective understanding of the functional, cognitive, and participatory challenges for the child, and consider curriculum delivery adaptations accordingly. For example, AAC modelling alongside literacy activities to ensure the child has access to language that can be translated into the written word, or, to use AAC to scaffold support for grammatical constructions (e.g., Binger, & Light, 2007; Binger, Maguire-Marshall, & Kent-Walsh, 2011; Light & McNaughton, 1993).

Collaborative working also supports effective baseline measurement. Currently, few standardised measures have been developed with this group of young people in mind. Within the UK there are several types of resource to support appraisal of the child and young persons current reading and writing skills (e.g., literacy flow chart, pathways to literacy: CALL Scotland, [www.callscotland.org.uk/](http://www.callscotland.org.uk/); CandLE, [http://www.candleaac.com/](http://www.candleaac.com/); Therapy Box [https://www.therapy-box.co.uk/educational-apps](https://www.therapy-box.co.uk/educational-apps); Tobii Dynavox [https://www.tobiidynavox.com/en-GB/products/software/](https://www.tobiidynavox.com/en-GB/products/software/).

Key to all children’s literacy development is keeping a final literacy destination in mind, being aspirational and realistic with achievable steps along the way. Collaborative working supports everyone to recognise milestones in the process of achieving the final goal, e.g., improved core strength increases access alternatives and potentially reduces fatigue, thus increasing concentration for literacy activities. As children and young people who use AAC may follow a range of paths to literacy, traditional literacy education methods may be insufficiently differentiated to be able to describe small steps of improvement. All educators should receive training in reading and writing instruction, which will in turn make them knowledgeable and confident in their teaching abilities and methods for children who use AAC.
Mileau teaching appears to support greatest achievements in literacy development by offering a combination of strategies, including (child) experiences of formal literacy instruction with informal learning activities, e.g., skill development in reading and writing might be addressed within story reading activities with preschoolers who use AAC (Blischak, 1995; Blockberger, & Johnston, 2009; Erickson, & Sachse, 2010). Purposeful, age appropriate experiences are essential, dovetailed to current literacy levels by appropriate and motivational adaptations, (e.g., reading comprehension materials matched with a problem solving activity, switch toys to facilitate involvement in a story, computerised stories that support experience of pre-literacy skills of, for example, beginnings and endings, experiences demonstrating that print carries meaning). The use of prompting hierarchies involving a time delay (for the child to respond, Todman, 2000) are considered an effective way of measuring the level of support a young person may need to achieve a specific literacy task, or spontaneously use the target literacy skill. Prompting hierarchies typically proceed from least to most intrusive. Extensive examples of different ways to apply prompts and scaffolds in relation to storybook reading, and more generic literacy activities are available within the AAC and literacy intervention literature (e.g., Binger, Kent-Walsh, Ewing, & Taylor, 2010; Binger, Maguire-Marshall, & Kent-Walsh, 2011; Blockberger, 1995; Edmister, & Wegner, 2015; Erickson, & Koppenhaver, 2007; Mirenda, & Dattilo, 2009; Smith, 2014; Stauter, Myers, & Classen, 2017). These studies range in focus from grammatical and morphological prompts, sound-letter matching, to word construction with vocabulary support. The majority focus on reading/input strategies and there is a suggestion that much work still needs to be done looking at writing/spelling/output prompts (Koppenhaver, & Williams, 2010).

This review has demonstrated that a small but informative research evidence base exists to support educators of children and young people who use AAC to acquire literacy skills. The resources cited (with the exception of the website resources) have all been through an academic review procedure. The dilemma within practice and education, is that much good work is happening but may not have been included here because, for example, the aim of the research was unclear, no baseline was conducted or the project report was insufficiently detailed to allow replication. This is not to say that the work completed in such projects was not purposeful, and useful to the children and young people.

What is not covered here?

This literature review attempted to scope the research evidence that exists to enhance literacy intervention where AAC is a factor of consideration. Interpretation of this review should proceed with some caution, as much of the research relates to small sample sizes and describes the complexities of the children’s disabilities. As a reader, what may be most useful to consider is what of this content is readily transferable to the children and young people.
people you may support, rather than all comments are generalizable to all. The findings imply that there are three key areas ripe for further research. These include (i) identify appropriate training content and support for educators, (ii) exploring the dosage of intervention support for different aspects of literacy education, and how they relate to individual learning needs, and (iii) descriptions of the characteristics of children who use AAC and their particular literacy needs.

This literature review has extensively considered intervention principles and approaches. It did not appraise the impact of appropriate and well-informed literacy assessment for children and young people who use AAC. This would be an important element to determine in any young person’s literacy education.

**Website resources (correct at the time of publication)**

AAC Scotland – website resource for AAC, language & literacy  
[www.aacscotland.org.uk/](http://www.aacscotland.org.uk/)

Sally Clendon, literacy site  
[https://www.pinterest.co.uk/salclendon/](https://www.pinterest.co.uk/salclendon/)

CALL Scotland – specialised AAC service, education & literacy resources  
[www.callscotland.org.uk/](http://www.callscotland.org.uk/)

Communication Matters – UK AAC charity, supporting AAC awareness  
[www.communicationmatters.org.uk/](http://www.communicationmatters.org.uk/)

CandLE – Communication and Learning Enterprises (Marion Stanton) – education & literacy strategies to support people who use AAC  
[http://www.candleaac.com/](http://www.candleaac.com/)

Karen Erickson and David Koppenhaver, Centre for Literacy and Disability Studies  
[http://www.med.unc.edu/ahs/clds/resources/downloadable-resources](http://www.med.unc.edu/ahs/clds/resources/downloadable-resources)

Jane Farrell, literacy site  

Liberator Ltd – text based resources  
[https://www.liberator.co.uk/resources/vocabulary](https://www.liberator.co.uk/resources/vocabulary)

Caroline Musselwhite, literacy intervention  

Carol Zangari, AAC & literacy site  
[http://praacticalaac.org/tag/literacy/](http://praacticalaac.org/tag/literacy/)

Therapy Box – literacy and educational resources  
[https://www.therapy-box.co.uk/educational-apps](https://www.therapy-box.co.uk/educational-apps)

Tobii Dynavox - Accessible Literacy for All (ALL™) and Pathways for Core (vocabulary)  

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