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Emergent Literacy Instruction for Students with Significant Disabilities in the Regular Classroom

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Abstract

Students with severe disabilities and complex communication needs face multiple barriers to participate in the general education curriculum. These students are often emerging in their language and literacy skills. They require comprehensive emergent literacy instruction long after their grade-level peers have become conventional readers and writers. Many educators struggle to provide this instruction in inclusive contexts, leading them to feel that school inclusion comes at the expense of effective instruction.

This article is Part 1 in a two-part series. Part 1 identifies some of the access and opportunity barriers these students face. Next, it describes a rationale for why the field of assistive technology should address these barriers. Finally, it summarizes the essential elements of comprehensive emergent literacy instruction. Part 2 goes on to describe a specific approach to service delivery that distributes comprehensive emergent literacy instruction across the school day, maximizing instructional time and improving access to quality instruction.

Keywords: inclusive education, comprehensive literacy instruction, AAC, severe disabilities

Introduction

This article begins with an anecdote that illustrates what comprehensive emergent literacy instruction can look like in a regular classroom. It then explores the barriers faced by students with severe disabilities and complex communication needs (CCN) when it comes to accessing general education curriculum. These are the barriers that accommodations like assistive technology can help remove. Next, it provides a rationale for inclusive education for students with severe disabilities and CCN. Finally, it describes the essential components of comprehensive emergent literacy instruction. This is the instruction that lays the foundation for reading, writing, and communication, preparing students for instruction in how to read with comprehension, write according to convention, and spell. Comprehensive literacy instruction is the central purpose of the general education curriculum; it can be the entry point to help all students meaningfully participate in the regular curriculum.

Samuel's Classroom

Samuel's 3rd grade teacher is reading aloud a chapter from the book, Charlotte's Web (White, 1952). Samuel sits with several classmates in the front corner of the classroom. When Samuel stirs restlessly, his peers remind him they are listening so they can describe the character of the rat, Templeton. A simple mindmap graphic organizer is in front of them, prompting them to write down words or ideas from the text that suggest key information about Templeton. Samuel's aide is observing this notetaking. She's made sure that Samuel's AAC is in easy reach, as well as a simple single message device. The single message device is recorded to say "that's it". The volume is off right now, but the click of the button when it is pressed is a cue that tells his classmates that Samuel heard something important that he wants written down on the graphic organizer. The students model its use, tapping the device before writing down their own ideas.

When the read-aloud is over, the class moves on to a writing assignment. Some students work in small groups or pairs, while others work independently. Samuel's small group starts work with a simple timeline graphic organizer to refresh their memories of what occurred in the chapter. Samuel's aide and classmates all use a version of Samuel's AAC to model their messages. Two students use a light-tech flipbook that replicates his high-tech AAC, while another has a duplicate of his AAC in an app on a spare tablet. The students demonstrate possible messages that restate and summarize the plot so far. They will post this timeline on a bulletin board their teacher will review with the class tomorrow before starting the next chapter.

Next, they move on to write a character description of Templeton. They brainstorm from the graphic organizer they used earlier to collect words that describe Templeton during the read-aloud. If a term does not appear in Samuel's AAC, they use their versions of his AAC to re-define it. For example, the students decide to restate "no decency" as NOT NICE. They use their AAC to help brainstorm terms that were not used in the text but that they can infer from the story, deciding he is often ANNOYING.

Samuel contributes to this list twice. First, as his peers scan through and consider the words from his

AAC, Samuel responds to BORING. One student asks if he thinks Templeton is BORING. Samuel responds with NOT. The students laugh and agree: Templeton is definitely NOT BORING! The second time, Samuel vocalizes when they consider the word “gluttonous.” They restate it as EATS TOO MUCH. Samuel does not seem satisfied with this and keeps touching his AAC. One of the student’s asks him if he wants GLUTTONOUS added to his AAC. Samuel laughs and smiles, looking up. Samuel’s aide interprets this as agreement and says, “I see you laughing, I think you are nodding yes.” They program GLUTTONOUS into his device while Samuel looks on with satisfaction.

Once they have consensus on a list of terms that describe Templeton, each student selects a term. They use a predictable chart writing process to compose complete sentences about Templeton, using the sentence stem, “Templeton is…” One classmate is the scribe for the whole group. She writes their sentences in a list:

- Templeton is lazy. (Ella)
- Templeton is greedy. (Ismael)
- Templeton is selfish. (Sara)
- Templeton is gluttonous. (Samuel)

Samuel makes his selection in response to partner-assisted auditory scanning. His classmates read aloud their list of brainstormed terms, and Samuel indicates his choice with the single message device, saying “that’s it” when he hears the word he wants. His sentence is, predictably, “Templeton is gluttonous.” One student is the most advanced writer in the group. She will rephrase their sentences to write a complete paragraph, using more diverse sentence structures.

Finally, the students reflect on whether they like Templeton. They use Samuel’s AAC to indicate their opinion, and why. Samuel surprises them by saying he LIKES Templeton. He is the only one of the four to express this opinion. His classmates use partner-assisted auditory scanning to read aloud his “like” words from his AAC. Samuel indicates he likes Templeton because he is FUNNY. This leads to a fierce debate, but Samuel’s opinion stands. As their teacher comes by the table, each student reads their sentences aloud. Samuel independently uses his AAC to say LIKE, and the debate about Templeton resumes.

As the lesson wraps up, Samuel’s aide snaps a photo of their group writing assignment to send home to his family. She expects that these sentences will be read and discussed tonight. She hopes she will have time later today to do more work with the chart of sentences, such as working with Samuel to turn it into a simple book for his tablet or laptop. For now, she adds the photo to the portfolio they keep of Samuel’s work. She smiles, already anticipating the moment that Samuel uses the term GLUTTONOUS in some unexpected context.

Barriers Faced by Students with Severe Disabilities

Samuel's team has found some effective solutions to the multiple access and opportunity barriers many students with severe disabilities face in regular classrooms (Beukelman & Mirenda, 2012). Access barriers are caused by the nature of the student's disability. These barriers are significant for students with severe disabilities. In contrast, opportunity barriers are caused by challenges outside of the student. Opportunity barriers reflect the policies, practices, knowledge, skills, and attitudes of our special education service delivery systems (Beukelman & Mirenda, 2012). Students with severe disabilities face as many opportunity barriers as access barriers.

Access barriers. Many students with severe disabilities and CCN enter school having not yet learned what most children learn incidentally in the realm of language and literacy. The knowledge and understandings that usually emerge in ordinary early childhood development are slow to develop for students with severe disabilities and CCN, due to challenges such as:

- sensory impairments (e.g., poor visual and/or auditory acuity);
- sensory processing impairments (e.g., cortical visual impairment or disruption to the vestibular sense);
- communication disorders (e.g., an inability to produce speech or difficulties processing symbolic language);
- memory impairment (e.g., reduced working memory, poor memory retrieval);
- cognitive impairment (e.g., slower rate of learning new concepts, difficulty integrating knowledge);
- physical disabilities (e.g., impaired motor skills or difficulties with motor planning).

Students with the most severe disabilities may experience several or even all of these disabilities simultaneously (Kearns et al., 2011). Many of these disabilities prevent students from learning incidentally or through ordinary exploration and imitation in early childhood.

Most students with severe disabilities learn at a slower rate. They struggle to acquire, maintain, and generalize skills. They need to be taught foundational knowledge, skills, and concepts, along with the strategies to recognize how and when to apply that knowledge in ordinary life. They require significant accommodations to remove their specific access barriers in instruction, materials, and assessment. These accommodations generally require "extensive, repeated, individualized instruction and support, substantially adapted and modified materials, and individualized methods of accessing information to acquire, maintain, generalize, demonstrate and transfer skills across settings." (Erickson & Geist, 2016, p.187)

Language development is often the most significant access barrier for students with severe disabilities. Many have complex communication needs. They do not have sufficient verbal speech to meet their face-to-face communication needs. About 1/3 of students with severe disabilities have no or limited use of symbolic communication (i.e., speech, signs, or symbols; Kearns et al., 2011). Up to 10% of these

students lack a clear, understandable form of intentional communication, even by the time they reach high school (Erickson & Geist, 2016). Most would benefit from assistive technologies to augment verbal speech, provide alternatives to speech, and support their receptive understanding. Throughout their school careers, these students are often emerging in their understanding of language and literacy, including the technologies we use to communicate, read, and write.

Symbolic language and literacy skills develop in tandem in these students (Hanser & Erickson, 2007). Their skills in expressive communication (e.g., speech and its alternatives) emerge alongside their skills in receptive communication (e.g., listening and comprehension). Each new communication skill fosters new skills and understandings of how language can be expressed and represented in print, through reading and writing (Koppenhaver et al., 1991). Similarly, symbolic language development has an equally positive, reciprocal relationship with cognitive growth, fostering abstract and conceptual learning (Kearns et al., 2011).

These access barriers reflect the nature of the student's disability. They are the symptoms of the disability itself. They are the barriers that are often the focus of attention for students with severe disabilities and CCN, but they are not the only barriers that must be addressed. To help students with severe disabilities and CCN achieve the most positive outcomes, opportunity barriers must also be addressed.

Opportunity barriers. Students with severe disabilities and CCN face many potential opportunity barriers. These include the amount of time devoted to instruction, the type of instruction, and the instructional goals of that instruction. Opportunity barriers also result when educators do not have the knowledge, skills, technology, and dispositions required to provide all students with an opportunity to learn and interact during effective literacy instruction. Removing opportunity barriers is a central goal of assistive technology. As one aspect of special education service delivery, assistive technology is an accommodation of a student's disability that increases opportunity to learn. Legislation such as the Americans with Disabilities Act (1990) mandates that accommodations should remove barriers to participation, not impose them. Accommodations are meant to be the ramp that provides opportunity for participation.

In order to receive an appropriate education and access the regular literacy curriculum, students with severe disabilities need significant accommodations (Kearns et al., 2011; Lee et al., 2010; Towles-Reeves et al., 2009). Access to augmentative and alternative communication (AAC) systems is one essential accommodation for students with severe disabilities and CCN. Kearns et al. (2011) discovered that, on average, only half of students with severe disabilities and CCN who are pre-symbolic have access to AAC technology. This access to AAC varies considerably across states, ranging from as low as 24% to a high of 77%. Access to AAC is an important predictor of whether students with severe disabilities and CCN will become symbolic communicators by secondary. In their multi-state survey, Kearns and colleagues found that states with the highest rate of AAC access had the most students who had become symbolic communicators by secondary. States that failed to provide AAC were the most likely to have the same numbers of pre-symbolic communicators in secondary as they had in elementary.

While many students with severe disabilities have no symbolic communication, “the lack of symbolic communication in these students does not reflect the students’ inability to acquire symbolic communication, but rather a lack of access to effective communication technologies and systematic instruction to use them” (Kearns et al., 2019). The biggest opportunity barrier faced by students with severe disabilities is the presumption that they do not require the same comprehensive instruction that non-disabled students need to develop their communication, language and literacy skills. Access to AAC is essential to address opportunity barriers for many students with severe disabilities and CCN. It is one of many forms of assistive technology that is essential to maximizing opportunities to learn for students with severe disabilities and CCN.

Barriers to Inclusion in General Education Settings

Many educators assume that some students are “too severe” for placement in an inclusive setting. However, the evidence does not support the notion that students’ level of disability and access needs determine where they can be successful. The biggest predictor of whether a student with severe disabilities is educated in an inclusive classroom is not their functioning level; it is their zip code. More specifically, it is the specific school district the student lives in (Brock & Schaefer, 2015). This suggests that the barriers to inclusion itself are not intrinsic to the student’s disabilities, but are instead opportunity barriers. Access to participation in regular school spaces is currently limited to those students who happen to live within school systems that have committed to removing the students’ barriers to participation.

Few students with severe disabilities and CCN have access to a team like Samuel’s or any access to general education settings at all. Over 90% are served primarily in self-contained settings (Brock, 2018), and less than 5% are served in general education settings at least 80% of the time (Kleinert et al., 2015). Regardless of where they are placed, the Individuals with Disabilities Education Act (IDEA) in the US mandates access to the general curriculum for all students with disabilities (IDEA, 2006 34 C.F.R.). Furthermore, a recent Supreme Court ruling (Endrew F v Douglas County School District Re-1, 137 S. Ct. 988, 2017) set important new requirements. Students must have an opportunity to meet challenging objectives aligned with grade level standards. Their individualized education programs (IEPs) must be both meaningful and appropriately ambitious, given each student’s circumstances, so that each student has an opportunity to make more than minimal progress from year to year.

Inclusion is the result of delivering special education services within regular classroom spaces in a way that fosters students’ ability to access regular activities and quality instruction while ensuring that students make meaningful progress from year to year. Effective inclusive educators prioritize changes in special education service delivery to support access to quality literacy instruction in inclusive settings. In doing so, these changes support physical access to regular spaces, participation in the community, learning progress within the regular language arts curriculum, and positive long-term outcomes for students with severe disabilities (Quirk et al., 2017. The overwhelming evidence from the past 40 years concludes that students with severe disabilities demonstrate better long-term outcomes when educated in regular classrooms (Copeland and Cosbey, 2009; Jackson et al., 2008; Ryndak et al., 2012). Table 1 summarizes

the evidence for outcomes related to foundational communication, language, literacy skills and understandings.

Table 1: Effects of Inclusive Education on Students with Severe Disabilities

When compared to their peers in separate special education settings, students educated in inclusive settings:	**Source of Evidence**
demonstrate improved long-term outcomes, such as greater likelihood of competitive employment, greater choice in housing, and stronger measures of self-determination.	Carter, Austin, & Trainor, 2012 Jackson, Ryndak, & Wehmeyer, 2008 Ryndak, Hughes, Alper, & McDonnell, 2012 Wagner, Newman, Cameto, & Levine, 2006 Wehmeyer & Palmer, 2003
demonstrate greater overall success in school, including academic, social, and behavioral areas.	Bui, Quirk, Almazan, & Valenti, 2010 Feldman, Carter, Asmus, & Brock, 2016 Ryndak, Jackson, & White, 2013 Ryndak et al., 2010 Sauer & Jorgenson, 2016 Wagner, Newman, Cameto, & Levine, 2006
demonstrate more progress in academic content.	Cosier et al., 2013 Kurth & Masergeorge, 2012 Lee, Wehmeyer, Soukup, & Palmer, 2010 Soukup, Wehmeyer, Bashinski, & Bovaird, 2007
receive more instructional time and more individualized attention.	Kurth & Mastergeorge, 2012 Lee, Wehmeyer, Soukup, & Palmer, 2010 McDonnell, Thorson, & McQuivey, 2000 Soukup, Wehmeyer, Bashinski, & Bovaird, 2007
are exposed to more academic and literacy instruction.	Bowder et al., 2006 Ruppar, Fisher, Olson, & Orlando, 2018
learn foundational literacy skills and make progress in the general English Language Arts curriculum.	Bailey, Angell, & Stoner, 2011 Browder et al., 2006 Buckley, Bird, Sacks, & Archer, 2006 Dessemontent, Bless, & Morin, 2012 Dessemontent & de Chambrier, 2015 Mims, Lee, Browder, Zakasm & Flynn, 2012 Ryndak, Morrison, & Sommerstein, 1999
develop stronger communication and language skills when they are included in general education classrooms.	Calculator, 2009 Fisher & Meyer, 2002 Ganz, Rispoli, Mason, & Hong, 2014

Students with Severe Disabilities and the Regular Literacy Curriculum

Students with severe disabilities and CCN are frequently presumed unable to profit from exposure to literacy instruction and a rigorous academic curriculum (Durando, 2008; Katims, 2000). Special education teachers often rely on a student's cognitive ability, readiness skills, and communication skills to determine the potential value of literacy instruction (Ruppar et al., 2011). Attitudes about the potential for students with severe disabilities to become literate are a major opportunity barrier, as is the decreased emphasis on literacy in general, and increased emphasis on "functional" approaches to literacy (Browder et al., 2006) that accompany placement in separate settings.

Placement in separate special education settings is one factor that keeps students with severe disabilities from accessing comprehensive literacy instruction, such as that provided to students in the general

education setting. This placement in separate settings often comes with "functional" approaches to literacy instruction that remove literacy skills, behaviors, and understandings from the broader context of communication and text comprehension (Erickson et al., 2009). These "functional" approaches focus on teaching isolated skills with drill and massed practice, using rote teaching strategies (Browder et al., 2006; Joseph & Seery, 2004; Katims, 2000). The result is that literacy skills for students with severe disabilities lag behind what would be predicted given their ability level (Channell et al., 2013), with only 20% reading more than basic sight words (Towles-Reeves et al., 2009).

If separating students with severe disabilities and focusing on "functional" reading skills resulted in improved literacy skills and improved quality of life and participation in their communities, then the evidence of the past 40 years would demonstrate that. Generations of students with severe disabilities would have left school with the language and literacy skills they needed to communicate effectively with others, and to use and access a variety of texts. Unfortunately, they have not. Instead, students with severe disabilities in inclusive settings are ten times more likely to be exposed to comprehensive literacy instruction than students in separate settings (Ruppar et al., 2018). As a result, students who are included in regular classrooms demonstrate stronger foundational skills in literacy than their peers in separate classrooms (Dessemontet & de Chambrier, 2015), and they have improved long term outcomes post-school (Ryndak et al., 2012).

Comprehensive Literacy Instruction

The regular English language arts curriculum is comprehensive (Pressley & Allington, 2014). It teaches students to speak, read, and write for a wide variety of purposes. General education provides a language- and print-rich environment where students are taught word reading, written language comprehension, fluency, writing, and all of the problem-solving and thinking skills required to use literacy across contexts. Literacy instruction for students with severe disabilities and CCN should be equally comprehensive (Erickson, 2017). It must address all components of instruction that are necessary for students without disabilities to learn to read and write (Allor et al., 2010; Erickson et al., 2009). Our instruction must integrate reading, writing, language, and communication in a way that is interactive and engaging. Along the way to conventional reading and writing skills, students should be engaged with a wide variety of high-quality texts, as they develop concepts of print, word identification, and alphabetic and phonological awareness (Erickson, 2017). Educators can accomplish this by pairing evidence-based instructional routines with the appropriate assistive technologies to address barriers and teach communication, language, reading, and writing.

Most students with severe disabilities are emerging in their understandings of how and why we use language and print (Towles-Reeves et al., 2009). They are developing phonological and alphabet awareness. They may not yet realize that when we read a book together, we are speaking aloud the words that appear on the page. Some are only just becoming aware of print or just beginning to attend to language. Others are becoming familiar with the tools and purposes of literacy, such as books, magazines, computer screens, keyboards, and pens. Many still need to develop a self-identity as someone who could comment, ask questions, share a story, or read a book. Comprehensive emergent

literacy instruction addresses all of these things and invites students to join what Kliewer (2008) refers to as “the literacy flow.”

Comprehensive emergent literacy instruction is intended to help students simultaneously develop: (a) understandings of the concepts and purpose of print; (b) phonological awareness; (c) alphabet knowledge; (d) language comprehension and vocabulary; and (e) the skills necessary to communicate with others about reading and writing.

Erickson (2017) describes six evidence-based interventions that can be used in combination to provide comprehensive emergent literacy instruction to students with severe disabilities and CCN. Each is described in Table 2 along with details regarding the student and adult roles and the expected student outcomes. The six interventions described by Erickson (2017) and summarized in Table 2 combine to provide evidence-based, comprehensive instruction. All six interventions remove barriers to participation in the regular English language arts and literacy curriculum when students are provided with the appropriate support to participate. Below, each of the six routines is described briefly with examples of the ways that assistive technology can remove the access and opportunity barriers inherent in each.

Table 2: Comprehensive Emergent Literacy Interventions

Intervention	The student’s role	The adult’s role	Expected outcomes
AAC modeling: communication partners demonstrate the use of the symbol system that we expect the student to learn to use	☐ Observe and attend to a model of how their AAC could be used. ☐ Respond and engage to interesting instruction in multi-modal ways. ☐ Explore possible messages and how messages can be generated. ☐ Notice and accept invitations to express a message. ☐ Initiate messages.	☐ Demonstrate use of the student’s AAC, usually by directly pointing to visual symbols that represent words. ☐ Emphasize high-frequency messages and words. ☐ Model possible messages with no requirement to imitate or repeat the message. ☐ Attribute meaning to the child’s communicative behaviors.	Improved: • symbolic language. • ability to combine and recombine symbols for different purposes. • self-identity as a communicator who can comment, complain, ask questions, and share ideas with others.
Shared reading: a more skilled other reads texts with the student, with a focus on fostering genuine interaction rather than simply page-by-page read-alounds.	☐ Increase engagement and participation in the reading process. ☐ Communicate with the reading partner about the reading experience and the text itself. ☐ Direct the reading process by selecting texts, commenting, and “bossing” the reading partner.	☐ Provide multiple daily opportunities to read aloud with the student. ☐ Comment and respond to the student. ☐ Invite participation and interaction with the text. ☐ Label items of the page. ☐ Connect the text to the student’s life. ☐ Reference the print itself. ☐ Select engaging texts. ☐ Read texts multiple times.	Improved: • knowledge of books and a love of reading. • familiarity with the tools and routines of reading. • awareness of print. • expressive language and receptive vocabulary. • phonological awareness.

Intervention	The student's role	The adult's role	Expected outcomes
Shared writing: a more skilled other provides a scaffold to support the student to generate their own text, replicating the experience that non-disabled children have when an adult scribes their story.	□ Participate in generating text by contributing their own ideas. □ Attend to highly predictable sentence structures that reflect their personal interests. □ Attempt to read, reread, and rebuild sentences. □ Focus on individual words within sentences.	□ Elicit the student's attention and participation in generating text. □ Identify a meaningful sentence stem and choices to complete it that are meaningful to the student. □ Provide frequent opportunities to share and (re)read the student's text. □ Scribe the student's ideas.	Familiarity with the routine of shared writing. Improved: • awareness of print and sentence structure. • concept of word. • understanding that writing conveys meaning. • word identification skills. • self-identity as a writer.
Alphabet instruction: student is taught the names and forms of letters of the alphabet, along with the sounds these letters represent.	□ Observe the use of letters in context. □ Explore letter selection and writing tools. □ Notice "important-to-me" letters in print. □ Explore personalized alphabet materials, such as alphabet books. □ Participate in naming and recognizing the letter form and sound(s).	□ Provide short daily lessons with explicit, targeted alphabet instruction. □ Teach letter names, upper- and lowercase forms, the sounds each letter represents, and their use in text. □ Demonstrate how the letter is written or selected. □ Emphasize "important-to-me" letters, such as letters in student names. □ Provide repetition with variety in alphabet instruction.	Improved: • understanding of the alphabetic principle. • letter name and letter shape (upper- and lowercase) recognition in isolation and in text. • awareness of letter sounds. • ability to produce or select letter forms.
Independent reading: student independently explores reading materials and a range of texts	□ Independently explore, handle, and attend to texts in various forms. □ Develop preferences for different genre or text types and for specific books. □ Sustain attention to texts.	□ Provide daily opportunities for students to independently engage with a range of texts. □ Provide a large library of accessible texts, including digital texts and text readers. □ Read books aloud with eagerness and enthusiasm.	Improved: • understanding of why we read. • desire to learn how to read. • self-identity as a reader. • ability to access and select books and texts. • ability to sustain attention during independent reading.

Intervention	The student's role	The adult's role	Expected outcomes
Independent writing: student independently explores writing tools, generating text with letters of the alphabet	Explore, engage, and experiment with writing tools. Select or produce letters and words to convey a message. Observe demonstrations of how experienced writers select or produce letters to form words and messages.	Provide frequent demonstrations of how we use writing tools. Provide a range of writing tools, including keyboards, alphabet boards, and other alternate pencils. Use think-alouds to make the writing process visible and observable. Provide frequent, authentic daily opportunities to write. Maximize opportunities to share and read student writing. Provide feedback on the content or topic of student writing. Celebrate student writing. Encourage students to write more.	Improved: • ability to select a topic and generate ideas related to it. • understanding that letters form words and convey meaning. • ability to apply knowledge of letters, letter sounds, and print to generate text. • understanding of why we write and the purposes it serves. • self-identity as a writer.

For detailed information regarding how to implement each routine, see the webinars at InclusionOntario (https://www.inclusionontario.ca/Emergent-Literacy.html) and the professional development modules at Project Core (http://project-core.com).

AAC modeling. AAC modeling is a strategy where adults and peers demonstrate how an AAC system works in ordinary face-to-face communication (Biggs et al., 2018). The adult or peer indicates symbols in the AAC system while speaking with and interacting with the student with CCN. Adults and other communication partners attribute meaning to the student's communicative attempts and reflect back possible messages while selecting key words on the AAC system, such as commenting "I see you smiling, I think you LIKE it! I LIKE it, too." These responsive demonstrations of AAC use during interesting activities invite students to engage and interact with language. AAC modelling should occur all day, every day. AAC modelling often includes directive language, but should be balanced with the open-ended, playful, and emotionally affirming interactions that build language skills in all children (Hart & Risley, 1999).

Students with severe disabilities and CCN experience an impoverished language environment when they lack access to both AAC and to AAC modelling. Without AAC, and demonstrations of how to use it, students with CCN observe speech as it is spoken to and around them, but lack access to a model of language they can observe, explore, imitate, and attempt to use. These students may not otherwise produce sufficient speech to interact symbolically with others, restricting their language development. AAC modelling ensures every student has access to a symbol-based means of communication and interactive models of how to use it.

AAC modelling removes opportunity barriers by creating an immersive, dual-symbol language environment. The symbols in the AAC system are paired with spoken language to indicate their shared meaning, and their use is demonstrated by others in reciprocal and rewarding interactions. The student

is invited to use this shared symbol system with communication partners, replicating the experiences that develop language in speaking children. In addition, the student observes communication partners demonstrating various of Light's (1989) AAC competencies, such as the operational skills of generating messages, the strategic skills of when to generate them, and the repair skills when a mistake is made.

AAC modelling simultaneously addresses both opportunity and access barriers so long as the AAC system we model is visually and motorically accessible to the student. Students with severe disabilities and CCN frequently have co-occurring motor, sensory, and sensory perception challenges. Many students will find it difficult to access desired messages on an AAC system. Some students cannot physically target and indicate graphic symbols on a display. They need an alternative access method, such as switch scanning, eye gaze, head pointing, or partner-assisted scanning. Many students with severe disabilities struggle to visually process all of the symbols on the display, due to difficulties perceiving contrast and the differences between symbols. These students may need symbols that are color-saturated and visually distinct. Many students struggle with visual complexity, the ability to perceive a single symbol across a visually busy display. These students may need fewer symbols on each page of their display. Some students will benefit from partner-assisted scanning, where communication partners speak aloud and/or point to the symbols in a consistent order, while inviting the student to respond when they hear their selection. Partner-assisted scanning helps build an auditory map of the location of messages, so that message location becomes automatic and is less taxing on working memory. Over time, all these students will need carefully designed AAC vocabularies to ensure access to a wide range of messages.

AAC modelling can begin immediately with any student who cannot rely on speech to meet their communication needs, even before they have had an individual AAC assessment. Some school systems make a range of simple AAC technologies available to all classrooms, for any student who may benefit from graphic symbol support. Project Core offers a range of free, downloadable universal graphic symbol displays (http://www.project-core.com/communication-systems). Project Core includes a simple Universal Core Selection Tool (http://www.project-core.com/communication-systems) that can help teams match their students with symbol displays designed to meet a variety of visual and motor needs, including alternative access and 3D tactual symbols. These free symbol displays ensure that classroom teams can begin modelling an accessible symbol modality without delay while waiting for an individual AAC assessment. Individual AAC assessments can then occur after students have experienced the instructional opportunity to learn how symbols work to represent words and express meaning. Dynamic assessment during AAC modelling will generate data about the student's AAC needs that can be used when evaluating the student for their long-term, robust, individualized AAC solution. Regardless when they occur, AAC assessments should recommend a system that offers sufficient symbols for students to learn to distinguish between individual symbols, and to learn to use and combine symbols for a range of messages and purposes across multiple partners. Any student who fails to make progress with expressive symbolic language, despite access to AAC and AAC modelling across their school day, should be assessed for additional unmet access needs.

AAC modelling can also remove access barriers caused by receptive language challenges. Speech is both rapid-paced and fleeting, creating barriers to receptive language comprehension for students with auditory processing and language processing barriers. AAC modelling slows the communication partner's rate of speech. It prompts communication partners to share more concise messages and restrict their vocabulary to the most high-frequency words. Indicating symbols as we speak provides the student with a consistent visual referent for key words, supporting receptive language for students who struggle with comprehension. Some students benefit when AAC modelling occurs on high-tech devices with voice output, because the digitized speech is more consistent and has less inflection than spoken language.

AAC modelling develops symbolic language skills and visual symbol recognition (Biggs et al., 2018). Students learn to combine and recombine symbols to meet a variety of communication needs. Students with CCN who have no access to AAC systems or AAC modelling may perceive themselves as people who do not participate in the world of language. AAC modelling supports these students to develop their self-identity as communicators who can comment, complain, ask questions, and share ideas with others.

Shared reading. Shared reading is the interaction that occurs between an adult and student while they read text aloud (Ezell & Justice, 2005). Read-alouds provide access to texts that are beyond the student's current reading level. During shared reading, the reading partner invites the student to engage with both their partner and the text itself. Reading partners draw students' attention to print while demonstrating how we can speak aloud and discuss the words printed on a page. During shared reading, adults demonstrate why we use texts and how we handle the tools of reading, whether that tool is a book, a magazine, a website, a personal letter, or a shopping list. The goal of shared reading is to foster knowledge of books and a love of reading while students learn to participate in and direct the reading experience.

Students with severe disabilities face multiple opportunity barriers to participate in shared reading. Young children with severe disabilities are read to less often than their nondisabled peers (Marvin, 1994). Some of this is simply lack of time. Many families spent the early years focused on addressing medical and personal care needs, leaving less time for play and reading. Attitudinal barriers may also play a part, particularly if the child did not respond to speech or did not appear interested in books. In the absence of comments from the child, parents and other reading partners may simply read text aloud from front-to-back, with limited interactions with what can be pointed to on the page. This knowledge and skill barrier can be addressed by teaching reading partners how to foster interaction and follow the student's lead.
Many students face access barriers to engaging in shared reading. Children with severe disabilities may demonstrate less apparent interest in text-based activities. Receptive language difficulty or sensory processing challenges may make it difficult to engage in joint attention or even just to sit still. Children with visual or auditory processing challenges may turn away from books. Without AAC, children with CCN lack access to a means of commenting, requesting, or directing the actions of their reading partner. Motor disabilities may prevent children from touching the page to show their interest or drawing the attention of their reading partner to something on the page. The result is that many students with severe disabilities are passive participants in the reading experience.

The intervention of shared reading requires the partner to read the text in an engaging manner, drawing the student's attention to what can be pointed to on each page. The reading partner models AAC, demonstrating a possible comment. AAC modelling with each page of the book invites the student to participate in the reading process. The reading partner provides adequate wait time so that the student can consider a possible message and organize their body to respond.

Shared reading addresses both access and opportunity barriers. Daily shared reading builds experience with reading so that the routine becomes familiar and predictable to the student. The time committed to this routine begins to compensate for missed opportunities to read with others earlier in childhood. Adults physically handle the books, removing motor barriers. Educators support attention by focusing on interaction rather than simply finishing the read-aloud. Page-by-page interactions with text and visuals foster attention and support working memory. The emphasis on engagement reminds educators to identify the characteristics that are most appealing to that particular student, such as a joyful tone of voice, simple bold visuals, or a slower reading pace. Multiple readings of the same text fosters self-identity as a reader, when students begin to memorize repeated phrases and predict what is coming next. AAC modelling combined with shared reading demonstrates how the student can participate in the reading process itself.

Independent reading. Independent reading gives children access to texts so they can explore them on their own, practicing the reading behaviors they have observed. Students physically handle the reading materials and directly manipulate the pages. These interactions with reading materials are the student's opportunity to independently apply what they are learning about print while developing the dispositions required for lifelong reading (Owocki & Goodman, 2002). All students need to experience independent reading, long before they are able to read or understand printed words.

Students with severe disabilities face multiple access barriers to independent reading. Many do not have the motor skills to independently explore traditional books or even move over to where books are available. Sensory processing challenges may cause the child to fixate on the physical properties of the book so that they just crinkle or rip the pages. Vision impairment or challenges with visual processing may limit access to printed text and images. Students with CCN may struggle to indicate their interest in text and their choice in reading material. These access barriers contribute to opportunity barriers, where adults may restrict access to books to prevent property damage. Adults may interpret the student's access barriers as lack of interest or readiness for reading.

Students with severe disabilities need access to a large collection of interesting, age- and ability-appropriate reading materials. Many students require digital texts that can be manipulated with switch access or simple swiping motions on a touch screen. Students can follow along in their own version of a text while a reading partner or computer program reads the text aloud. Many students enjoy exploring wordless picture books, simple personal experience stories, text written by peers, environmental print like cereal boxes, captioned photo albums, and even videos with closed captions.

Shared writing. Shared writing instruction occurs almost incidentally when a typically developing young child draws a picture, then speaks the idea behind it to an adult who writes it down. The child generates the idea and the adult demonstrates how to represent that idea in print. The adult provides the scaffold for the child to imagine herself as a writer, as the adult supports her to capture and share her ideas with others. The shared writing process demonstrates the tools of writing while engaging students in co-creating the text itself. Shared writing experiences create the motivation for students to learn to generate text independently.

Students with severe disabilities and CCN face multiple access barriers to participate in ordinary early writing experiences. Without oral language, these students may have never generated symbolic language or seen their own idea represented as print. Sensory or language processing challenges may have affected how they attend to spoken language. Visual impairments may have restricted their ability to observe other people writing. Motor challenges may have meant that their attempts at scribble were never recognized as expressing an idea.

Shared writing as an intervention attempts to replicate these ordinary early writing experiences for students with severe disabilities and CCN. Students are scaffolded to generate text even before they know what writing looks like, how to produce it, or the purpose it serves (Erickson & Koppenhaver, 2020). Predictable charts are one of the most common and systematic methods to demonstrate writing tools and engage students as participants in the writing process. The adult selects an open-ended sentence frame or stem that is complete once the student provides the key idea that gives the sentence meaning. The sentence stem helps students stay on topic and reduces the cognitive and language demands of generating a complete sentence. The sentence stem is repeated with multiple students, combining repetition of the key words with the variety of individual responses. The resulting text is inherently engaging because it represents the students' own ideas and interests.

For example, the adult might select the sentence frame "I like to…" Students are encouraged to reflect on their favorite activities to finish their own sentence. Each student's name is written at the end of their sentence. The resulting chart might look like:

- I like to golf. (Mr. Johnson)
- I like to swim. (Ahmed)
- I like to play basketball. (Aleasha)
- I like to shop. (Malakai)

As the chart is created, students see their idea represented in print and hear the text spoken aloud. In follow-up activities, they re-read the print and explore conventions of print such as word order and punctuation. Teachers reference the print, noticing features such as word length and initial letters. These kinds of shared writing experiences provide students with severe disabilities an authentic way to create and participate in print beyond the level they can produce independently.

Independent writing. Young children engage in independent writing whenever they scribble with crayons, bang on a keyboard, text a string of messages from a parent's phone, or carefully compose a page of indecipherable shapes and explain that it is a letter to Nana. Independent writing is the process of exploring the tools of writing, problem-solving how to express meaning, and sharing ideas with an audience, even before the student can generate anything that is decipherable as a word.

Students with severe disabilities face multiple access barriers to participate in ordinary writing exploration. Motor impairment may make it impossible to grasp and coordinate the use of a traditional pencil or writing tool. Sensory defensiveness may prevent the child from grasping tools, while difficulties with range of motion or finger isolation can make a keyboard inaccessible. Vision challenges may make it difficult for the child to notice environmental print, observe models of writing, or distinguish individual letters. These access barriers can exacerbate opportunity barriers when students are perceived as random or destructive with traditional markers and paper. Knowledge barriers may result in educators focusing on the motor tasks of handwriting and tracing, rather than the cognitive work of generating ideas and sharing them in print. Assistive technology is usually necessary to provide students with a means of exploring and selecting letters. This technology can include keyboards, letter boards, alphabet flipcharts, label makers, magnetic letters, and much more. Students might access these technologies directly or with alternate access, such as switch scanning, eye gaze, or partner-assisted scanning.

Independent writing instruction models the writing process, then invites students to write their own ideas. This model of the writing process includes thinking of a purpose for writing, considering the audience, and selecting the individual letters. Educators start this instruction whenever they narrate "think-alouds" as they consider what to write and which letters to select. They maintain it when they provide students with accessible tools to select letters and set a topic along with daily opportunities to write. Educators complete the instruction when they celebrate the student's writing, provide specific feedback, and encourage the student to write even more. Whenever possible, the student's writing is published and shared, so that family, friends and others can celebrate the writing as well.

Independent writing is often paired with AAC, photos, remnants, or other cues about context. These support the student to indicate their topic for writing, the same way that a speaking child might say "I wrote a letter to Nana!" before sharing the letter itself. During independent writing, the student might select a photo of themselves swimming, then generate a string of letters. The photo sets the topic, so the adult has context to provide a response. The adult might comment, "I love what you wrote about swimming! I see lots of S's. I like to swim too! Can you write more about swimming?" This kind of feedback sustains motivation and confidence as students continue the hard work of learning to write.

Alphabet and phonological awareness. Knowledge of the alphabet is the foundation of conventional reading and writing. Students first develop awareness of the alphabet: the idea that letters exist, letters have names, each letter has its own unique form, letters are different from numbers or shapes, and letters are associated with specific sounds. This awareness evolves into the alphabetic principle: the understanding that the letters of the alphabet form a stable and predictable symbol set that represents

the sounds of spoken language. Alphabet knowledge includes the ability to name and recognize letters (in both uppercase and lowercase), produce the form of each letter, and identify the sounds that letters represent. Reading and spelling are built on a student's ability to apply their knowledge of the alphabet and letter patterns.

Phonological awareness refers to a student's ability to distinguish and manipulate the sounds of spoken language. Students with strong phonological awareness can identify how many words are in a sentence or how many syllables are in a word. They notice that cat sounds like *hat* but different from *can* or *cot*. They can manipulate these sounds to create a rhyme with *mat*. They notice the alliteration of the *cat is crammed in the can*.

Students with severe disabilities and CCN struggle to develop phonological awareness (Dessemontet et al., 2017). Their access barriers include a lack of speech with which to babble and experiment with language. These students may be slow to develop an internal voice with which they can manipulate and explore language. Knowledge of the alphabet may also be slow to develop. Vision impairments may make it difficult to distinguish letters. Motor impairments may reduce their ability to handle and explore ordinary alphabet materials. Opportunity barriers, however, are likely the biggest barrier these students face in developing alphabet knowledge and phonological awareness. Special education programs have traditionally focused on rote letter identification without integrating that instruction into activities that demonstrate how students can apply that knowledge to reading and spelling (Browder et al., 2006). As a result, many students with severe disabilities demonstrate strong letter recognition but have not learned how letters are associated with the words we speak, spell, and read. Alphabet knowledge is associated with stronger future reading skills in students with severe disabilities educated in regular classrooms, where alphabet instruction is just one component of comprehensive literacy instruction rather than an isolated instructional task (Dessemontet & de Chambrier, 2015).

Students with severe disabilities and CCN need some explicit instruction in the alphabet and phonological awareness that teaches them to use their inner voice to name letters and manipulate the associated sounds. Like children without disabilities, they are likely to learn the letters of their own name before they learn other letters. Learning personally important letters helps students discover that they can learn letters, which in turn develops their curiosity in the rest of the alphabet. They benefit from instruction that is meaningful and relevant, such as creating and reading personalized alphabet books that associate letters with things the student knows and cares about. The student's AAC can be incorporated in phonological awareness instruction, as individual words are sequenced and re-ordered to form a variety of sentences. Students who cannot speak letter sounds may still be able to clap, nod, or rock their bodies to indicate they hear the beat of music and the syllables in words. Alphabet and phonological awareness instruction is easily embedded in shared reading, such as when we read books with rhyming text. We also provide this instruction during shared writing when we draw the student's attention to letters and words, notice features of different words, cut apart sentences into individual words, and explore word order when reconstructing sentences.

Conclusion

Students with severe disabilities come to school with a variety of access barriers to learning literacy and language skills. As educators, we have no control over the type and volume of access needs of the students in our classrooms. We do, however, have control over how we problem-solve solutions to these barriers and maximize opportunities to access literacy instruction. Careful attention to a student's access barriers helps us ensure that we have provided the assistive technologies and other accommodations that the student requires.

Comprehensive emergent literacy instruction removes the barriers to ordinary early childhood experiences of language and literacy. These routines are explicit and intentional at recreating the ordinary literacy opportunities that students with severe disabilities have often missed. They come together to provide comprehensive literacy instruction, removing barriers to language development and literacy.

The specific interventions that combine to form comprehensive emergent literacy instruction are generally familiar to early childhood educators. But they may be unfamiliar to educators of older students, particularly those at the secondary level. The list of interventions may appear daunting to these educators. Many interpret this list of interventions as a call to implement six new interventions, each with many steps of their own. The need for those interventions may then be used as a reason to remove a student from general classroom settings. However, each of these routines can be integrated into the day-to-day routines in regular classrooms. Samuel's team demonstrates that it is possible to incorporate the instruction he needs without excluding him or limiting learning opportunities with his peers. Teams do not have to choose between quality comprehensive emergent literacy instruction and inclusive education. Part 2 of this article presents an instructional framework developed to meet the needs of educators in inclusive classrooms.

Declarations

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