



Getting Writing with the Alphabet on the Radar for

Students with Significant Physical and Intellectual Disabilities

For children *without* disabilities, writing is an essential, unquestioned component of literacy development - from the very start.

The active construction of print, through writing, plays a central role in nurturing children's understandings of print (Sulzby, 1990). In the early years of life, young children have hundreds of opportunities to draw, scribble and make pseudo letters – all of which can be characterized as “emergent writing.” As students develop more knowledge about writing, their writing becomes readable and is “conventional” in nature. Central to this discussion is the principle that emergent writing opportunities play a necessary role in preparing children to write conventional, readable text (Teale & Sulzby, 1986). It is no surprise that students with significant disabilities have radically different experiences with writing. Given their significant disabilities, they have dramatically fewer and qualitatively different early literacy experiences than children without disabilities peers (Koppenhaver, Coleman, Kalman, & Yoder, 1991; Light & McNaughton, 1993; Light & Smith, 1993; Pierce & McWilliam, 1993). For students with significant physical and intellectual disabilities who are unable to hold a pencil, writing may be laborious and frustrating and may not even be on the radar (Hanser, 2006). In the recent decade, the importance of writing for this population has been recognized, however, the majority of attention has been focused on writing with words and/or phrases and less on using the alphabet (Musselwhite & Hanser, 2011). Given the importance of writing using the alphabet, this article will offer concepts, activities and strategies for getting emergent writing and early conventional writing on the radar for this population of students using the full alphabet.



No Prerequisites

Based on the emergent literacy view, the conceptual development of writing actually begins at birth, when infants and toddlers are exposed to others writing (Teale & Sulzby, 1986). As toddlers develop, they begin to understand the functions of writing and how it is made. In fact, many toddlers start scribbling before they are 2 years old! Clearly, no child needs to be “ready” to get started with literacy. The same can be said for students with significant disabilities – they don’t have to demonstrate any pre-requisite skills - they don’t have to be “ready” to write (Koppenhaver & Erickson, 2003). Instead, the adults need to be “ready” with the right supports and activities!



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worked in the field of assistive technology and literacy for students with significant disabilities for over 20 years. She works in a variety of educational settings with teachers, related service providers, parents and students. Her primary focus has been on augmentative and alternative communication and literacy for students with the most significant disabilities. Gretchen has a masters in occupational therapy and her doctorate in education.

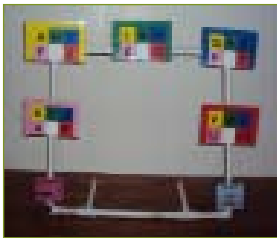


Photo 1 - The color-coded eye gaze frame is used with a partner who sits directly across from the student. Writing is done using a special coding system where the student makes two eye gazes to select one letter. The system is based on the color and/or position of the letters and letter cards. The partner records student's writing.

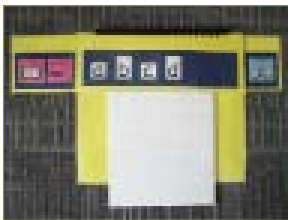


Photo 2 - Used through "partner assisted scanning," the partner scans through the letters presented in separate rows. When the partner points to the letter the student wants, the student signals the partner to write it down. Students can signal using gestures, vocalizations and facial expressions. They can also signal using a single message device programmed with "that's it." Another option uses two single message devices, with one directing the partner to "go to the next" and the other indicating "that's it."

Photos 1 and 2 - From the Center for Literacy & Disability Studies, Writing with Alternative Pencils CD, \$35. For more details about the color coded eye gaze frame, print clip chart and other alternative pencils, go to: www.med.unc.edu/ahs/clds

How Can Students with Significant Disabilities Write When They Can't Hold a Pencil or Use a Standard Keyboard?

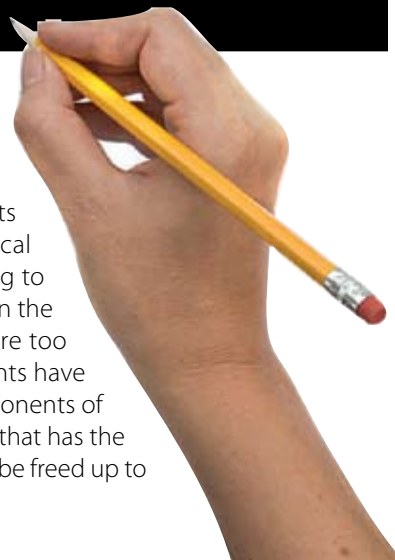
Students with significant disabilities typically have multiple physical challenges. It's no surprise that this is a common problem limiting writing opportunities. Even the best, most elaborate modified pencil grips, splints, cuffs and straps, will not be enough to allow these students to easily generate print. Using standard keyboards are not usually an option either, as they require some degree of fine motor skills. In these cases, professionals need to identify alternative ways for students to write. Luckily, there have been tremendous advances in the assistive technology world that have led to solutions, from light tech paper boards to computer based eye gaze systems. While not by any means comprehensive, below are some examples.

- Augmentative and alternative communication (AAC) systems
- Paper based eye gaze frames and print flip charts – for students who can't use their hands and are struggling to develop access skills. Helpful for students with some eye gaze and those who are learning to use switches. Photos 1 and 2.
- Portable handheld electronic eye gaze device – useful for students who have some eye gaze skills. Photo 3.
- Battery operated labelers - useful for students with pointing skills, but with limited range of motion. Available in most office supply stores. Photo 4.
- Enlarged computer keyboards – useful for students with some targeting skills who benefit from larger targets. Photo 5 and 5a.
- Small computer keyboards – useful for students who have some targeting skills, but limited range of motion in their shoulder and elbow. Photos 6 and 6a.
- Computer based onscreen alphabet displays made using authoring software - appropriate for students who are using scanning via one to two switches, head tracking systems, or eye gaze systems. Photos 7 - 7c.
- Tablet-based onscreen alphabet displays – useful for students who have some targeting skills, but need customizations. Keyboard layouts can be configured to accommodate pointing skills and range of motion. They can also be set up with word prediction. Photo 8 - 8a.
- Keyboards within tablet-based AAC systems - useful for students who have some targeting skills, but need customizations. Keyboard layouts can be configured to accommodate pointing skills and range of motion. They can also be setup with word prediction. Photos 9 - 9c.

For more complete device listings, see Abledata (www.abledata.com), Assistive Technology Industry Association (www.atia.org), and Closing the Gap (www.closingthegap.com).

Consider the Motor Demands

In order to select the most appropriate alternative pencil, professionals need to understand students' motor skills and the motor demands of the different alternative pencils. Whatever physical method is chosen, professionals need to closely observe how the student deals with its motor demands during writing. If students are spending too much mental effort on controlling their physical movements (i.e. struggling to maneuver an adapted pencil, trying to isolate a finger to type on a keyboard, straining to hit a switch), then the motor demands may be too great. When the motor demands are too high, writing becomes a challenging physical exercise, and students have little energy left to focus on the more important conceptual components of writing. The bottom line is: Select an alternative pencil for writing that has the least amount of motor demands. This ultimately allows students to be freed up to engage with the content.



Classroom Vignette:

Jim is a first-grader with autism. He is non-verbal, with fine and gross motor delays. When students arrive at school, the teacher has them all sign in. When Jim signs in, he uses an adapted marker and makes multiple circles of different sizes. The team's focus has been on handwriting, however, the teacher felt that handwriting hasn't allowed Jim to learn how to express himself. She wanted to try another way for him to write. So, she began having Jim sign in using an enlarged keyboard, the IntelliKeys (IntelliTools). Over the following weeks, he typed a scramble of letters, which consistently included multiple "J"s. As time progressed, the majority of his sign in became js. With the right pencil, she was able to more clearly see Jim's understandings about his name. The right pencil also let him move beyond making circles; he could explore a range of letters that he wasn't able to write by hand.

Classroom Vignette:

Mary is a 14-year-old high schooler with spastic cerebral palsy. She is non-verbal, in a wheelchair and unable to use her arms. Accessing an AAC device has always been a struggle; she has been learning to use head switches for two-switch row-column scanning. When using her device for writing, with much effort and accidental switch hits, she was able to generate two to three letters per minute. It was not even clear if those were the letters that Mary had wanted. As a result, Mary frequently shut down and declined to write. It was then decided to try another tool with less physical demands. A simple alphabet eye gaze frame constructed out of PVC pipe was tried (Writing with Alternative Pencils CD, Center for Literacy & Disability Studies, 2009). Physically, the eye gaze frame was far easier and faster to use; Mary was able to generate eight to 10 letters per minute recorded by a scribe. Because the physical demands of the task were minimized, Mary was able to devote her full attention to writing. In journal writing, using the eye gaze frame, teachers found that Mary was doing early sound spelling – a skill they had never been able to see before. While the ultimate goal is to have Mary use her AAC device for writing, in the interim, she can use an alternative pencil to engage in writing.



Photo 3 - MegaBee, \$1219
www.megabee.net



Photo 4 - Brothers Labelers
PT-70, \$19.99
PT-D200, \$39.99
www.brother-usa.com



Photo 5 - IntelliKeys, \$395
www.intellitools.com



Photo 5a - Big Keys, \$159
www.bigkeys.com

Choose Open Ended, Purposeful Activities



Photo 6 - I-TouchFree Keyboard, \$126; www.infogrip.com



Photo 6a - Ultra Mini Keyboard, \$79.95; www.ergonomicsmadeeasy.com



Photo 7 - Classroom Suite, \$345; www.intellitools.com



Photo 7a - Clicker 6, \$300 www.cricksoft.com

Regardless of the students' needs, whether emergent or early conventional in nature, they need regular opportunities to write. Emergent writers who are developing early foundational concepts, such as print awareness, need opportunities to "scribble" using technology. Early conventional writers who are just starting to write recognizable text need tons of opportunities to simply learn how to get their ideas on paper. For all of these students, it's important to flood them with personally meaningful, open-ended writing activities. It's important that these activities do not have specific "right or wrong" answers. Such goals are better addressed during comprehension lessons. Examples of open-ended activities include writing picture captions, cards, signs, journal entries, poems, stories and emails. For older students, all of these activities can be accomplished using age-respectful materials.



Topic Setting for Writing

When engaging in emergent, unrecognizable writing, children without disabilities talk about their writing; they describe it and pretend to "read it." The adults rely on this and the context to help them make sense of the writing. Students with significant disabilities, who are non-verbal, are unable to do this and will need support setting a writing topic ahead of time. Topics can be offered to students using a range of strategies, such as offering pictures, objects, parts of objects, classroom lists, students' personal writing topic list, verbal choices and remnant books (Musselwhite, 2011). For example, if the activity is journal writing, students could use one of the above strategies to choose a topic.

Classroom Vignette:

Jake is a 14-year-old with cerebral palsy. He is non-verbal, profoundly deaf and legally blind. The class is writing list poems about an important life event. For topic setting, Jake uses a remnant book. His mother uses inexpensive, small photo albums and fills them with remnants from things that Jake has done. Examples include a lock of hair from a haircut, chopsticks from dinner at a Chinese restaurant, postcards from friends, pictures, a napkin with a logo from a fast food restaurant and birthday cards. Jake is unable to point to the pages; instead, he uses "partner assisted scanning" to make a choice. His teacher goes through the remnant book page by page. When she is on the page that Jake wants to write about, he lets her know with a huge smile. She records his topic and he begins to write.

The Power of 26

Students with significant disabilities often write by selecting words and/or phrases presented in on-screen toolbars or word banks. While these are useful and have their purpose, it is essential to also provide opportunities to write with the full alphabet. For students with significant disabilities, including intellectual disabilities, who have never written before, using the full alphabet seems to be an area that has been given the least amount of attention. However, the benefits of using the full alphabet are multiple. Writing with the alphabet allows students to develop critical concepts of print, such as the concept of a letter, a word and the alphabet (Clay, 2005). Through the use of the alphabet, students are also exposed to the fundamental notion that individual letters are linked to sounds (Clay, 2005; Koppenhaver et al, 1991). Such critical discoveries about the alphabet are crucial for later conventional skills, such as decoding. Additionally, and perhaps most importantly, writing with the full alphabet is the one way that students can learn to generate truly novel ideas.



Photo 7b - Discover:Screen, \$199.99; www.madentec.com

Foster an Interaction

Early literacy development is grounded in the teaching power of the social interaction (Justice & Ezell, 1999; Vygotsky, 1978). This is something that occurs naturally for students without disabilities, however, it can be easily applied to students with disabilities (Kadaravek & Rabidoux, 2010). Given that writing with the alphabet may be a relatively infrequent or new activity, students may be unclear about the what, the why and the how. Adults should discuss the possibilities and the connections while shying away from the temptation to correct. Afterwards, share and celebrate students' writing. Celebrating their efforts can teach students that their writing matters – it is worthwhile.



Photo 7c - Boardmaker with Speaking Dynamically Pro, \$749; www.mayer-johnson.com; From Jill Senner, PhD.

Model, Model, Model

Children *without* disabilities are immersed in environments where they see others using a range of tools for writing. These tools are the very same tools that children will ultimately become proficient with for their own writing. Through models, children learn about not only the form, but also the many different purposes of writing (Teale & Sulzby, 1986). Students with significant disabilities are at a serious disadvantage, as it is not likely they have seen others use an "alternative pencil" (e.g. eye gaze frame, flip chart, head pointer, switches on the computer). Modeling is a key teaching strategy for not only building fundamental conceptual literacy knowledge, but also for the motor component of writing. Given this population's serious motor challenges, modeling allows students to see the expected motor response that contributes to students' ability to develop a more efficient motor response (Mulder, 1991; Schmidt, 1988). In addition to modeling during writing activities, professionals need to identify other activities during the day where they can quickly model writing with an alternative pencil.



Photo 8 - Panther Writer, \$29.99 www.panthertechnology.com

Classroom Vignette:

Mrs. Dalls is a high school teacher in a self-contained classroom. All of her students use some form of an alternative pencil. During a word wall activity, she chooses one of her student's alternative pencils and uses it to write students' names in a short sentence with word wall words. While she is writing, she does extensive think-out-louds about what she is writing, why AND how to use the alternative pencil to select the letters..



Photo 8a- Abilipad, \$19.99 www.apptherapy.com

Attributing Meaning to Random Behaviors

When it comes to literacy, some students may be seen as “random” and “inconsistent.” From an emergent literacy perspective, this randomness is considered to be part of the developmental process. Accepting and attributing meaning to students’ seemingly random behaviors have been found to be a useful strategy for facilitating more purposeful attempts during literacy activities (Koppenhaver, Erickson & Skotko, 2001). This strategy helps students learn what their actions mean. Over time, as they develop more knowledge about how print works, their behaviors become less random.

Class Vignette:

Brian is in third grade and has cerebral palsy with unknown cognitive skills. Brian is non-verbal and doesn’t have a clear yes/no response. He frequently bangs his head on his wheelchair headrest; he also likes to slap and pinch things. During writing time, Brian is learning to use an alphabet flip chart using “partner assisted scanning” with a single message device programmed with “Write that down!” The class will be writing notes to important people in their lives. Brian is writing to his brother. At the beginning of the writing activity, the teacher models how to use the alphabet flip chart using Brian’s single message device on his lap tray. The teacher holds the alphabet board and begins presenting the first row of letters (a-d) on the flip chart. Brian looks away and slaps the flip chart. The teacher starts with presenting the “a” to him. She points to the letter and says it. Brian begins slapping his single message device repeatedly saying, “Write that down!” The teacher responds right away. She becomes quite animated and says, “Oh my goodness you want the “a!” I hear you. I am glad you can tell me. Excellent. Let’s write that down.” She writes his letter selection with a large black marker where he can see it. The teacher returns to the flip chart, and points to and says “a,” again. Brian does not look at any of the letters and he repeatedly hits his single message device to say, “write that down!” Again, his teacher responds and makes a big deal about his selection, and then writes it down. This continues for six more turns until Brian has selected a string of a’s. Towards the end of the activity, his teacher observed that he was slowing down with hitting the single message device. She was also very pleased because Brian looked at the letters a couple times.

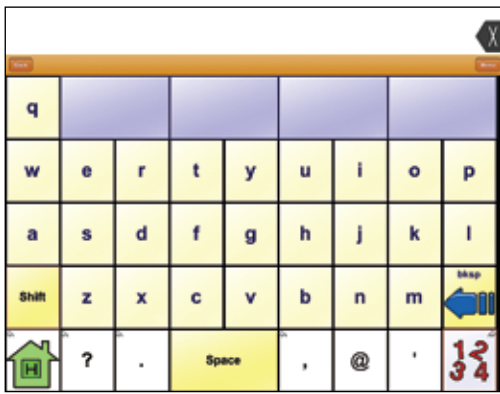


Photo 9 - Word Power 48 in TouchChat, \$149.99; www.touchchatapp.com



Photo 9a - Alexicom, free version or full version with monthly fees; www.alexicomaa.com



Photo 9b - Proloquo To Go, \$189.99 www.assistiveware.com

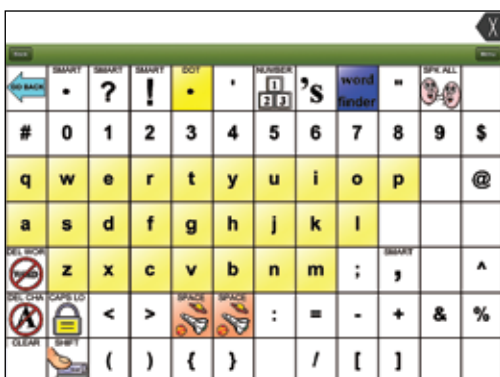


Photo 9c - LAMP Words for Life, \$299 www.aacapps.com



Give Students Instructional Feedback

For all early writers, especially those who have had very limited or no writing opportunities, it is critical to avoid the notorious correcting “red pen.” However, it is important for teachers to give students some type of feedback. The type of feedback depends on students’ needs.

Students who are “scribbling” with technology need support with learning the fundamentals about writing. Feedback might focus on how the random letters can be used to represent real things and how the letters can be written again using the alternative pencil. Feedback might also focus on having the student visually attend to their selected letters, noticing their specific features, teaching the concept of “letter” and the notion that letters can be put in different orders.

Feedback for students who are just starting to write recognizable words might look slightly different. These students need lots of experiences with simply getting their ideas out on paper, so feedback should target having students write *more*. Discussion should focus on the importance of what students have written, its potential and the power of re-reading writing to add more. It’s also important to teach students to take risks with their writing, especially when it comes to spelling. When students are having trouble spelling words, encourage them to write down the sounds they hear in words. It’s important to not let unrefined spelling skills restrict what the student can write – especially if the goal is learning to get ideas out.

Summary

For children without disabilities, it has been said that “writing challenges students to actively think about print” (International Reading Association & National Association for the Education of Young Children, pg. 200). Given this critical vehicle to understanding, it is clear that students with significant disabilities need to be writing. The time to start is now. Identify the most appropriate alternative pencils, have open-ended, meaningful reasons to write, use the full alphabet, make it fun and celebrate students’ efforts!

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