Many Textures & Colors of Literacy
Fall 2023 Issue

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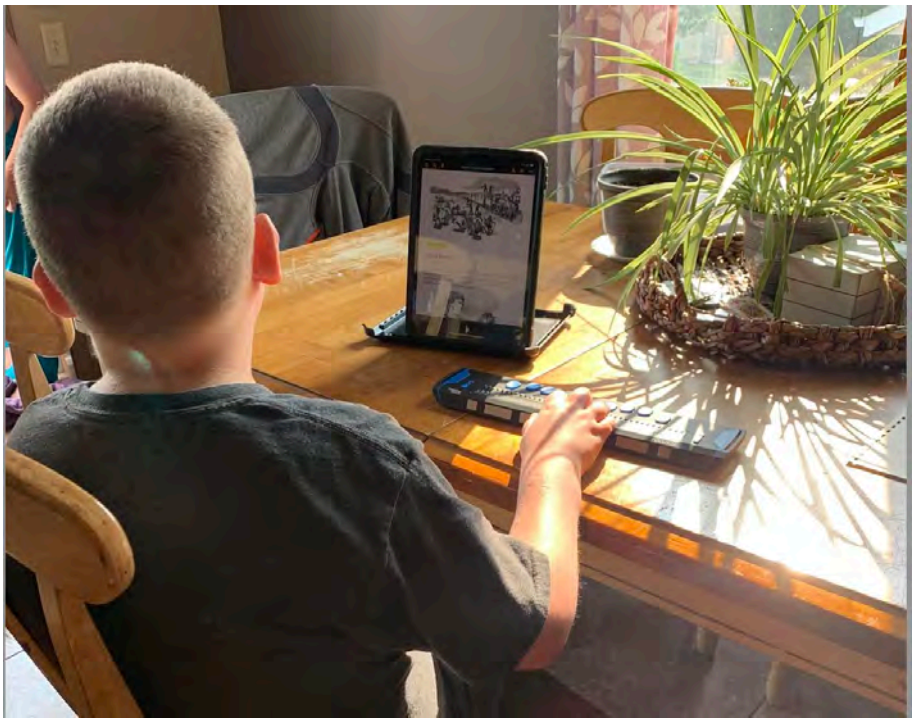

The Voice and Vision of Special Education

Council for Exceptional Children
The voice and vision of special education

Cover photo description: The cover photo contains an image of a 14-year-old Caucasian boy sits at a table using a braille display to read a story. Sunlight streams through the window.

Photo submitted by Sandra Gilliam.

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Message from the Co-Guest Editors

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In this special issue, we explore the ways that literacy touches multiple areas of a person's life. It not only opens a world of knowledge, but it also supports family connections, communication skills, organization of time, and an understanding of the physical environment. Within this collection, opportunities

for supporting literacy are described by a parent, a teacher, an Orientation and Mobility (O&M) specialist, technical assistance providers, university personnel, and a technology center.

We begin our issue with a powerful parent perspective on literacy. This article features one mom's determination to provide her son with meaningful books that would instill a love of reading. She shares about her family's challenges and triumphs. She speaks about those who supported her on her journey and the things, big and small, that made a difference along the way. She also shares about her own quest to create meaningful books for her son and the innovative strategies she used to make each page fun and engaging. Revealing her secrets of how to "hook" reluctant readers, she finds ways to give them an undeniable reason to explore books. Read about her emotionally moving journey and the quest to a love of books.

One of our contributors, Dr. Melissa Pebly, shares her model of partnering with local libraries to embrace universal design as well as the science of reading in providing inclusive storytimes. By designing and hosting storytimes that include support for students with multiple disabilities, Pebly has provided a model for libraries in Oregon and beyond. Within this outreach, teachers in training have meaningful practicum experiences and more families become connected to approaches for promoting literacy at home.

Another author, a special education teacher who is becoming a Teacher of Students with Visual Impairments (TSVI) and O&M specialist from Hawaii, shares practical insights for designing a motivating book for her student who is blind and has autism. The book she created supports the student's tactile literacy as well as his self-regulation as he navigates the transitions in his daily schedule.

Highlighting the importance of language, another article features the Communication Matrix Intervention Modules (CMIM). It can be used to recognize expressive communication skills of individuals within the developmental language range of 0-24 months. Used to identify forms of communication and their function, Decker and Steele describe the matrix and discuss the relationship between language and literacy, particularly illustrating a continuum of skills for expressive communication and how this lays a foundation for communication. Authors also provide examples of how to use the communication matrix to identify goals and establish routines and opportunities for instruction.

Reading interventions are abundant for typically developing children, and selecting one that is effective and appropriate for a particular individual can be a difficult decision. In one of the articles in this journal, Jones investigates the effectiveness of using Read Naturally as a reading intervention. This program supports core reading skills identified in the National Reading panel as critical to literacy development. After adapting the program for her students, Jones shares

data regarding its effectiveness and provides suggestions for how it can be implemented with students.

In yet another wonderful contribution to the journal, DeWald explores how literacy fits into O&M. She introduces two important aspects of O&M which are supported through literacy: informational literacy and environmental literacy. Language and literacy are requisites for gathering and retaining information. Information literacy is used in planning routes, communicating directions, writing down directions, addresses, and/or contact information, and reading signs, schedules, or maps. DeWald defines environmental literacy as "competent or knowledgeable about a particular area." Expanding upon her ideas of environmental literacy one can make a direct link to broad language skills such as meaning making and depth of knowledge between and within topics. On the surface, learning positional and directional concepts and naming places, objects, and familiar places is a part of environmental literacy. However, with further development one can begin making connections between and within concepts, using language to define, describe, and explain things. Depth of knowledge is demonstrated by these connections and the sophistication of how one understands the world around them. For example, DeWald discusses the concept of a "sidewalk." By going beyond the simple definition of a sidewalk, an O&M specialist may provide additional facts such as sidewalks separate houses or

businesses from the street; people walk on the sidewalks but don't ride bikes on them; sidewalks may be intersected by driveways; and they may have special features like truncated domes at intersections, curb cuts, mailboxes, or address markers. The conceptual depth is not only important when traveling, but also can be used to expand vocabulary and multiple meanings of words. In the example of a traveler walking on the sidewalk, one may encounter a car parked intersecting the sidewalk. With deliberate attention to the word intersect, an O&M specialist may teach the multiple meanings of the word as well as word variations such as intersecting versus intersection. DeWald points out critical aspects of O&M that connect with literacy and provides several suggestions on how O&M specialists can support literacy development.

Literacy cannot be discussed in absence of technology access. Dr. Siu provides a glimpse into the challenges of technology access and instruction. She offers readers a resource, the Center for Assistive Technology Training (CATT), whose mission is to support technology access. She discusses how a community of practice can support teachers and how the CATT can provide teachers, professionals, and family members with technology support.

We hope you enjoy this collection of ideas from diverse educators from across the country. We encourage you to create, document, and share your own

work to promote literacy for all students with visual impairment or deafblindness at home, at school, at work, and in the community.

President's Message

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Happy Fall! I hope you are enjoying the approach of the holiday season.

We are pleased to have Drs. Amy Parker and Cheryl Kamei-Hannan guest edit this special issue on literacy. As educators of students with visual impairments, we strive to ensure our students have equal opportunities to develop literacy skills, which are so critical to academic achievement and essential outcomes like workforce participation, personal wellbeing, and civic engagement.

We hope you'll find this issue full of useful strategies to help you build your students' literacy skills.

As preparations gear up for the annual Council for Exceptional Children Convention and Expo to be held March 13 – 16, 2024 in San Antonio, Texas, I want to remind you that DVIDB will again offer a slate of fantastic presentations, roundtables, and poster sessions led by speakers from across the country. In addition, we are busy planning our annual social event at convention where we will honor this year's DVIDB award winners and enjoy spending time with colleagues and friends. We hope you will be able to attend. Please be sure to watch for VIDBE-Q's upcoming pre-convention issue and our social media channels for more details.

I'm excited to share that DVIDB's 5th annual pre-conference workshop event will be held virtually on March 8, 2024, from 9:00 am – 4:00 pm. This event is free to DVDIB members and at a cost of $100 to nonmembers. Preconvention will offer up to 6 ACVREP professional development hours. The morning will focus on the CVI Protocol as a framework for describing CVI and the afternoon includes a session on the promise of the new braille file standard known as eBRF and a session devoted to connecting with families, transitions, and careers with the APH ConnectCenter. Registration for the preconvention is available on the DVIDB website. We hope you'll join us!

As we get ready to say goodbye to 2023, I'd like to thank our executive board for all the hard work they dedicate to DVIDB. It wouldn't be possible without them. Please be sure to check our website for information on CEC 2024 and preconvention.

Accessible Books for My Son: One Mother's Journey

Sandra Gillam

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My name is Sandra Gillam. I am beginning my 5th year as a teacher of students with visual impairments (TSVI). Before that, I taught in general elementary education classrooms as a third-grade teacher. I am a wife and a mother of two busy, happy boys. My older son, Liam, is 14. He is deafblind. My younger, Finn, is 11. He has typical vision and hearing. I am here to tell my story; a mother who believes in accessible literacy for all. I want to share my journey towards accessible literacy for my son, ideas to support a love for reading, and the importance of encouraging families and staff to embrace literacy as a basic human right.

Liam was born healthy and had typical vision and hearing. He was a chatty, busy, and sweet little boy. Eleven years ago, tragedy hit our family. I was 6 months pregnant with Finn and Liam was only 2 years old. Liam became extremely sick with bacterial meningitis. He was airlifted to a hospital that was a five-hour drive

from our home. Liam spent 3 months in hospitals where he fought for his life. There were times when we did not know if he would make it through the night. To make a long story short, it was traumatic. Due to the complications resulting from his fight with meningitis, there was swelling in Liam's brain that caused brain injury. The doctors told us he would not breathe on his own, eat on his own, he would not be able to process language, he would not be able to walk, he would be deaf and blind. Despite all that was against him, he survived and was able to do all those things we were told he would not be able to do. Little Liam was our miracle boy. He did however, become deaf and blind (DeafBlind). Once we were finally able to bring Liam home, Finn was born a month later. I now had a newly DeafBlind toddler and a newborn. My world was shaken. My hopes for Liam's future were shattered. My sense of "normal" was gone and I was overwhelmed.

Before Liam became DeafBlind he loved to read books. His box of books was one of his favorite things. I clearly remember one day, after we brought him home from the hospital, now DeafBlind, he found his beloved box of books. He dug through his box, no longer being able to see the pages and the pictures. No longer able to hear mom read the stories. He felt the pages and there was nothing on them. He grabbed his box of books, and he threw them. The books he once had loved, were now meaningless to him. I was heartbroken. It was from that moment on I was determined to give him opportunities to love books again. I did not know

how I would accomplish this, and I did not know anything about accessible books or braille, but I was going to figure it out. I was going to make books for him and get books into his little hands once more. Thus began my accessible literacy journey.

The Beginning

At the time, I checked online, and I could not find a lot of information or ideas on how to create books for young blind children. I was not quite sure what to do but the ideas soon started flowing. I started by finding empty cardboard scrapbooking type books at local crafting stores. I would glue tactile shapes and objects onto the pages. I would purchase already made children's board books that had tactile "touch and feel" pieces on them already. Anything I could think of. I tried to make the books interactive (have pieces you can turn, slide, or flip) and teach little lessons (shapes, counting, positioning, and language). I asked his TSVI if he could help me with the braille for my first set of homemade tactile braille books. I would give him a list of words/sentences to braille on and he graciously and happily provided them on label paper for me. I would stick them onto Liam's new books. Liam did not know braille yet and neither did I! But I was determined he would be a braille reader, and I wanted him exposed to braille and wanted to create a braille rich environment for him. His TSVI shared a few resources I could use to teach myself braille as a starting point, and eventually he taught a

community class in braille so that Liam's team and I could learn basic braille skills.

Figure 1

Christmas Book Pages

I created books for his school in his early elementary years, I made books for pleasure reading at home, books for church, and holidays. I often had more ideas for books than time to make them. That is how the idea of a 'book making party' came to be. Friends, family, and staff would come over to my home. I would gather the materials ahead of time, set up the instructions for book options, and

there would be someone available to help braille the words. At one book making party we produced over 20 books for Liam to use at school! One year, we created a book basket full of Christmas themed books. With a little creativity and some willing friends, we were able to get many braille books (all with tactile graphics) into the hands of a very happy boy.

Figure 2

Liam with a Pile of Books

Supporting a Love for Literacy for All

I want my son to have all the opportunities out there that the world has to offer him; to do the things he wants to do when he grows up. I knew literacy would be a key part in opening Liam's world. I wanted him to experience the power of braille and the impact it could have in his life. To do this I knew he would need to

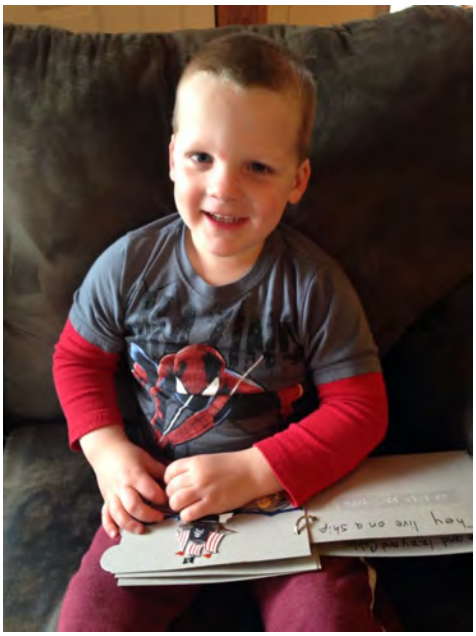
buy into and learn to love literacy. My belief as a mother and educator is that literacy can give the power to learn, to grow, to communicate, to succeed, and the power to enjoy reading. I am an advocate for not just accessible literacy but supporting a love for literacy for all children, at all stages. I believe that all children should be given the opportunities to love literacy and should have books and texts that are accessible to them. No matter their ability or level. Students that may not be braille readers can still enjoy and create books; they still have a story to tell. Start early and get them 'hooked' on literacy at a young age! Make books fun; use anything that will hold their interest. Make books specifically made for them and their unique abilities. If they are into beads and jewelry; add beads and jewelry to the pages or place into a story box. If they are interested in dogs; add dog related stories and items to a book. Make interactive parts; things they can move, slide, and find. Create experience books or have stories about things they are an 'expert' on. Show them that books are fun, are meaningful, and that they can come in a variety of shapes, genres, and activities. Books can be used to learn, share, communicate and to just enjoy!

Allow young children to write in whatever mode they prefer. Encourage them to scribble and create stories, letters, and words. This can be using crayons, tactile writing boards, markers, pencils, braille writers, or a slate and stylus. Let them know and believe that they can write, and their words matter. Especially early

on, promote trying new things and different ways to communicate through writing. Let them be a part in creating their own books that they can then share with family and friends. There is power in ownership of a story and authors have voices!

Figure 3

Liam Smiling with a Book



Supporting a love for literacy starts when there are young, but it should not end there. As Liam grew, I continued to find new ways to show him the power of literacy in a way that was important to him. He learned how to email and text friends and family. He learned how to read books on his braille note and later his tablet. He loved that he could tell me a topic he was interested in and that I could find him books that matched that topic on his tablet. He had a choice and he loved that! The importance of technology for communication is especially relevant for a

child who is DeafBlind. Liam can now use his tablet and refreshable braille display to communicate with others who do not know braille or ASL. This would not have been possible without those early years learning the value and appreciation of braille.

Thoughts from Liam

I asked my son, now as a freshman in high school, if he would like to share a few personal thoughts about literacy:

> Mom made shapes on books a long time ago. I felt happy reading the shapes. I am DeafBlind and it is important that I am good at reading books. I read full books. I read books at high school. Reading helps me in math. I like reading all books! My favorite things to receive are books (and beads and candy!).

Encouraging and Empowering Families and Staff

From the beginning, I had a heart to share my ideas and books with other parents and staff that were in my shoes. As I mentioned before, at the time, there were not a lot of ideas on accessible literacy online that you could easily find. I wanted to help other people that wanted to make accessible materials too! I reached out to my state's DeafBlind Project Director and shared with her my desire to share my ideas with others. She mentioned to me that there was a site that was new and was looking for people to contribute ideas, Paths to Literacy. I reached out the manager of that site and she ended up being a great resource, supporter,

friend, and encourager. I shared my ideas from when Liam was in preschool through all his elementary years as "Liamsmom". It is fun to look back on my blogs. It is like a journal documenting my son's literacy journey!

Because a TSVI believed in me, I learned braille and created accessible books. Because a state DeafBlind Project Director supported me, I felt empowered to share my ideas with others. Because staff surrounded me, I felt comforted in a very difficult time in my life. Because a manager of an educational website encouraged me, as a (then) single mom, I felt brave enough to go back to school and to earn a master's degree to become a TSVI. They helped turn a very dark and lonely time in my life, into a time of hope and triumph. Whatever you do, whatever your part is in working with a student who is DeafBlind and their families, know that you play an important role. The kind words, the encouragement, the times you go the extra mile matters.

Some families and students that you serve have gone through incredibly hard things. Unimaginable things. Sometimes their day-to-day lives are hard. The future holds many unknowns that are tough and overwhelming. For families, the educational journey can be very lonely and isolating. Sometimes you are the only other adults the families may talk to. Letting them know you are there can mean the world. Not every parent is going to want to go and make bins of books, learn braille, and do all the things. It can be overwhelming. I remember being in the

hospital and being given packet after packet, booklet after booklet about my son's disability and possible support options. It was too much. As a mother, I encourage you to listen to your families. Ask what they need. Give tools and ideas one step at time. But please, do encourage them to be a part of their child's literacy journey in one form or another. Meet them at their level. Create activities that they can use to support their child at home. Support them and mentor them if they do want to learn how to make materials (story boxes, books, or experience books) or learn braille. Cheer them on and let them know they got this. Acknowledge the days that are hard. They may not have the time or energy to make things but may be willing to try things at home if it is ready to go as is. Some may be willing but think that they cannot or do not know how. In addition, have grace when parents seem to do 'nothing' at home to support literacy. They are the ones living this life every day and we have not walked in their shoes.

As a mother, and TSVI both, I want to thank you for what you are doing to support children who are DeafBlind, their families and staff. I always enjoy sharing about the topic of accessible literacy as it has been deeply connected to my walk as a parent and educator. I hope that you were encouraged as you read about the journey towards accessible literacy for my son, ideas to support a love for literacy, and the importance of encouraging empowering families and staff. If there is one thing you take away, I hope that you know you really ***do*** make a difference!

The Future Belongs to Everyone

APH is committed to building a future that belongs to everyone by offering a wide selection of inclusive and accessible products, and valuable resources, to support those who are blind and visually impaired, are deafblind, have CVI, or multiple disabilities.

From products that support braille literacy and low vision, to physical education, fine arts, math, health and science, and more: begin building your toolkits for inclusive learning by reading our Toolkit blogs.

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The APH ConnectCenter offers curated advice and resources to assist children, parents, adults, and job seekers who are blind and visually impaired, and their associated professionals. It includes:

- VisionAware: for adults and seniors
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- CareerConnect: for job seekers
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- ConnectCalendar: for people and organizations to find and share info about upcoming events in the field of blindness and visual impairment
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Inclusive Storytime: Universal Design and Reading Science in Libraries

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"There is no substitute for books in the life of a child" (Chase, 1952, p. 14).

Mary Ellen Chase (1952), American teacher and author, captured the importance of reading for children in the above quote. The benefits of reading include improved language and communication skills, better speech skills, increased academic success and enhanced concentration and attention to tasks. Children who experience complex support needs, including those with visual and/or multiple disabilities, require additional tools and strategies to facilitate meaningful engagement with books and activities that will impact later reading and reading success. These tools and strategies may include adapted books, use of assistive technology, communication supports such as tactile symbols or high contrast core boards, and the use of realia to make language and concepts from books accessible. Introducing children to the magic of reading is one of the primary missions of the public library. Through interactive storytime programs,

children can engage in literacy-rich activities that promote early reading, provide parents with important models of how to engage their children with books and develop a connection with the library that can become a valued lifelong resource.

Figure 1

Reading at the Library

Research suggests that children with disabilities who do not demonstrate school readiness skills upon entry to kindergarten are often placed in self-contained special education settings where opportunities to learn to read and write are diminished (Ruppar et al., 2011). Despite the critical role that storytime programs play in equalizing the opportunities for children to learn early literacy skills, librarians report having few children with disabilities in their programs, and those that do attend experience difficulty participating due to sensory, behavioral, motor

and communication challenges. Librarians in public libraries report minimal training in how to support children with disabilities and their families in meaningful participation in public library programs (Adkins & Bushman, 2015; Copeland, 2011; Kaeding, et al., 2017; Myhill, et al., 2012; Prendergast, 2016; Ross & Akin, 2002).

The Inclusive Storytime Project, a partnership with the Washington County Collaborative Library Service (WCCLS) and faculty from Portland State University's (PSU) Department of Special Education, aims to provide equal access to the activities offered during the storytime experience that promote early literacy skills linked to reading and writing success in school. The Inclusive Storytime Project provides a context for authentic pre-service instruction for undergraduate and graduate candidates in special education, orientation and mobility, and speech and language pathology while supporting families in the community who may have been reluctant to attend public library programs. The Inclusive Storytime Project welcomes all children to enjoy the storytime experience, as well as gain skills in sound-symbol associations, print-awareness, vocabulary and early writing, skills predictive of future literacy success.

Rory and Aubree

Rory, a bright, energetic, three-year-old enters the library and quickly chooses his spot on the carpet. Rory was prepared for the group storytime

experience by reading a social story at home that describes what will happen and how he will participate. He knows that there will be a visual schedule to help him transition from activity to activity and is familiar with the repetitive songs and structure that will help him fully engage in the session. Rory holds his favorite "fidget" and is ready to sing the familiar book song paired with symbols designed to support all children be active participants in the routine. Books are chosen based upon the interests and language abilities of the children and supporting visuals and activities are carefully designed to support the early literacy skills that the children will need to be "school ready". Lacey, Rory's mom says, "The visuals and take-home activities help Rory the most. Also, having access to fidgets and the ability to move around if he needs to."

Figure 2

Library Activity

The theme for this week's session at the library is worms. Two books are chosen including *We Dig Worms* by Kevin McCloskey and *Inch by Inch* by Leo Leonni. Aubree, who is five, is learning about how worms build tunnels in the earth through the use of toy worms and tunnels made from toilet paper rolls. The complex text in the book was adapted to highlight the use of the letter name and sound for Ww in the title and included explicit instruction with the participants indicating yes/no when presented with letters on slides before reading the book. During a shared reading of *Inch by Inch*, participants received explicit vocabulary instruction in the word *measure* and *inch* and then provided with rulers, some of which were created with a 3D printer to accommodate the need for visual and tactile cues. Participants were able to measure along with the reading of the text and had repeated opportunities to use the word "inch".

Figure 3

Reading at the Library

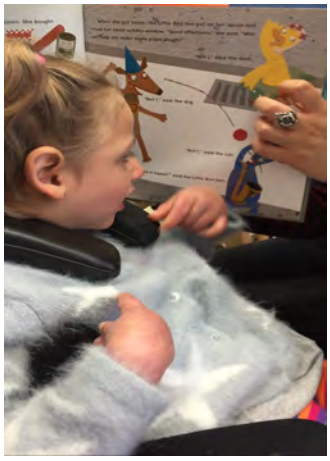

Figure 4

Thematic Craft Activity

Part of the instructional routine during storytime sessions focus on emergent writing. For this session, emerging authors chose pictures and/or objects to measure and used alternative pencils such as letter stamps, cut out alphabet letters, markers, or alphabet flipcharts to complete predictable writing prompts. The culminating activity for this week is a thematic craft where opportunities to request "**more**" materials and making choices to design their own inchworm.

Parents play a key role in the storytime sessions. Facilitators, including graduate students from PSU's special education or speech pathology program, model how to use tools and strategies, engage their children with books and experiment with assistive technology during the sessions. A take-home sheet

outlining the skills addressed in the storytime session and tips and resources is provided to families.

Figure 5

Storytime

Figure 6

Interactive Storytime

Our public libraries play a key role in getting students ready for academic success. For children with disabilities, the library provides another avenue to help nudge the reading and writing skills that are so important in their future school experience. According to Lacey, “In a way, storytime has become an extension of school, giving him an additional day where he can practice sitting, listening, working on an activity with friends around him. He only gets four hours of special education preschool, and during the summer there will be several weeks where he has no school at all. Storytime gently reinforces all the important skills he will need to be ready for kindergarten in an accommodating environment.”

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Creating a Schedule Book for My Student

Kira Swearingen

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Elijah is a third-grade student with unique learning needs due to his total blindness and ASD diagnosis. To support his educational goals and provide a more inclusive learning environment, I designed a multisensory book tailored to his interests and needs. This paper outlines the objectives behind the creation of the book and proposes evaluation methods to assess its effectiveness.

Objective 1: Improving Tactile Scanning Abilities

One primary objective of the book is to enhance Elijah's tactile scanning abilities. To achieve this, the book consistently places braille on the left side of each page and a corresponding object on the right. This predictable format encourages Elijah to use both hands to explore each page actively. To evaluate this objective, we can track his progress by observing object recognition through scanning both hands to identify the braille and object during reading sessions. Regular assessments can measure improvements in his scanning skills over time.

Objective 2: Encouraging Page-Turning Motivation

Elijah's enthusiasm for discussing his schedule served as motivation for turning the pages of the book. The book incorporates familiar elements related to his daily routine, creating a sense of anticipation for what comes next. To assess his objective, we can record the frequency and duration of Elijah's engagement with the book, focusing on his willingness to turn the pages independently. Increased interest and initiative in page-turning would indicate success in this aspect.

Objective 3: Supporting Sequential Language and "And then" Usage

Elijah frequently uses the phrase "and then" as a stim and script. Our third objective is to provide functional meaning to this language by linking it to sequential events within the book. By practicing the language he already knows and loves in the context of the book, we aim to build the foundation for using sequential language in a meaningful way. To evaluate this objective, we can assess Elijah's ability to verbally express the sequence of events within the book, including his use of "and then" to connect them.

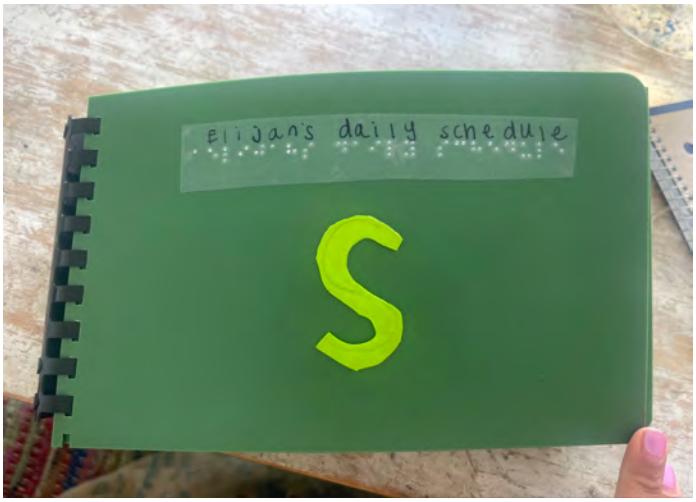
The creation of a multisensory book for Elijah addresses specific learning objectives related to tactile scanning, page-turning motivation, and sequential language development. By maintaining a consistent format and incorporating elements related to his interests, striving to support his educational goals

effectively. To evaluate the book's impact, I will use a structured assessment plan, including observations of scanning skills, page-turning motivation, and language use to measure Elijah's progress and ensure that the book is meeting its intended objectives. This personalized approach exemplifies the importance of adapting education materials to meet the diverse needs of students with disabilities and promotes inclusive learning environments.

See adapted book below

Figure 1

Schedule Page



Note. A raised letter 'S' boldly signifies the word "schedule" on the page, drawing attention to its importance.

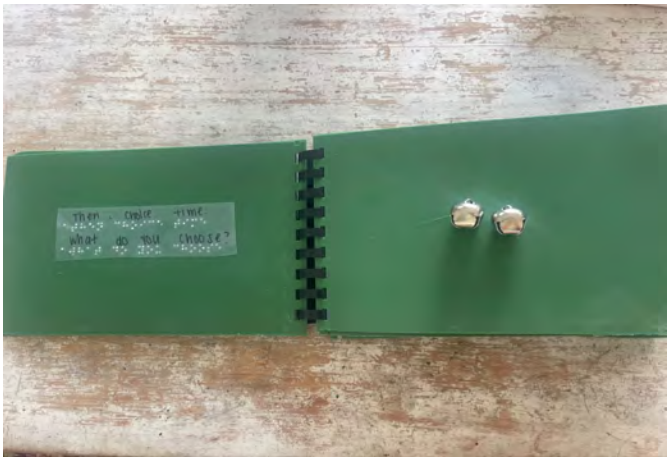
Figure 2

Seat Page

Note. A 3-D orange square serving as Elijah's seat for morning meeting, stands prominently on the page.

Figure 3

Music Page



Note. A pair of shiny jingle bells symbolizing the essence of music.

Figure 4

Recess Page

Note. The page showcases an array of green grass and brown leaves, from the outdoors, effectively capturing the essence of recess outside.

Figure 5

Schooltime Snack Page

Note. A bag full of goldfish snacks sits on the page, symbolizing Elijah's familiar schooltime snack.

Figure 6

Braille Activity Page

Note. On the page, a familiar Braille activity and a frequently used gemstone, integral to his individualized curriculum, are prominently featured.

Figure 7

Lunchtime Page

Note. A white plastic spoon, symbolizing lunchtime, stands out on the page.

Figure 8

Sensory Room Page

Note. A fuzzy triangle, made of the same fabric as the swing in the sensory room he loves to play on, is prominently displayed on the page.

Figure 9

Individualized Curriculum Page

Note. On the page, a familiar Braille activity and a frequently used gemstone, integral to his individualized curriculum, are prominently featured.

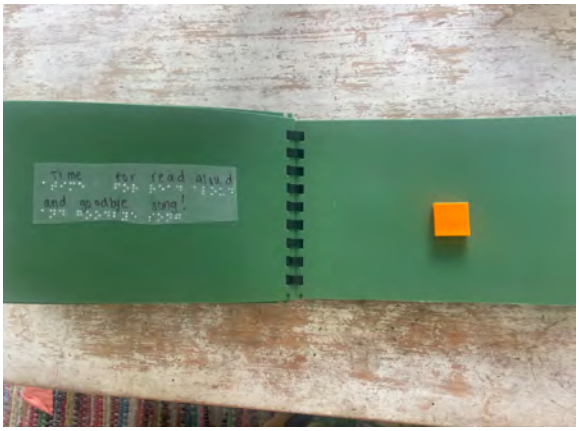
Figure 10

Reading Time Page

Note. Post-it notes stapled together to resemble a storybook, complete with a Braille title, symbolize the joy of shared reading time.

Figure 11

Carpet Time Page



Note. A 3-D orange square, serving as Elijah's seat for carpet time, stands prominently on the page.

Figure 12

Backpack Page

Note. The page showcases a functional zipper that Elijah can open and close, mirroring the one on his backpack.

VIDBE-Q 2024 Convention Issue

The intended purpose of the Spring 2024 convention issue is to provide manuscripts aimed at practitioners about presenter contributions to the CEC 2024 program and work related to the field of visual impairments and deafblindness. This issue will allow those who were unable to attend your session to know more about your work.

Guidelines:

-3-5 pages
-Tables, images, and/or figures should have a text description & title (APA 7th edition)
-References
-APA formatting (7th Edition)
-12 point, Times New Roman or Arial font
-Author information for title: Name, affiliation, highest degree earned, and email address
-Please identify target audience

Email your manuscript submission to Kathleen.Farrand@asu.edu.

Deadline for submission: April 5, 2024

Bridging the Gap Between Communication and Literacy for Students with Low Incidence Disabilities Using the Communication Matrix Intervention Modules

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Communication and literacy: What does that look like for students with complex disabilities, including multiple disabilities, intellectual disabilities, deafblindness, or autism? Students with complex disabilities are often overlooked as candidates for literacy instruction. The Communication Matrix Intervention Modules (CMIM) provide explicit instruction on ways to incorporate literacy and communication instruction into daily interactions for students with low-incidence disabilities.

The Communication Matrix

The Communication Matrix (CM) was created by Dr. Charity Rowland as a tool to evaluate the earliest levels of expressive communication behaviors in

everyday settings. The CM, which has been used by practitioners and researchers for over 30 years, can be used with individuals of any age to measure expressive communication skills as they emerge and progress. Skills referenced in the Matrix are associated with a typical developing language system, 0 to 24 months of age. The CM provides team and family members a clearer way not only to recognize the communication forms of individuals, but also to identify function. For example, if a child is consistently pushing an item away, then pushing as the form, while the function of the communication behavior is recognized as refusal. Other forms of communication such as looking, touching, reaching, grasping, vocalizing, gesturing, sign language, using augmentative communication devices, and using speech are all recognized as forms. When an individual begins connecting words, signs, symbols, braille together to form expressions, that is recognized as the use of language and it is the highest level measured by the CM. Each skill is coded as "emerging", "mastered", or "not used". Additional communication functions include requesting, socializing, asking, and informing. The CM creates a visual graphic to represent the individual's level of communication, mapping the individual's communication forms and functions across seven levels of communication.

Communication Matrix Intervention Modules

Once the Matrix is completed the level of expressive language is established, what's next? The West Virginia Department of Education (WVDE) commissioned five professionals with backgrounds including speech and language, deafness, blindness, technical assistance provision for deaf-blind and college professor, to create modules to guide instruction and progression to advance individuals through the Matrix levels, incorporating basic instructional strategies with literacy skills and communication. This diverse group of individuals sought to develop a road map to guide practitioners to the development of language and literacy for individuals with complex communication needs.

Foundation for Intervention

Prior to implementing instructional levels, reviewing the Foundation for Intervention, is a must before beginning services. The Foundation section provides a way for practitioners to consider the child holistically, outlining what might be positively or negatively impacting their daily functioning. As practitioners complete this section, they gain insight into the child's world they may have missed before. Within this section, a communication funnel is explained as having five components: availability to learn, trusting relationships, incidental learning, concept development, and literacy. All these components must be addressed to

meet the individual with complex communication needs and help them reach the last level of the matrix: language.

A second component of the foundation section, Essential Strategies, incorporates the underlying principles of communication and skills necessary to make progress. In this section, awareness is drawn to a student's availability to learn, motor skills, trust, routines, receptive communication, types of cues, concept development, communication intention, as well as the role literacy plays in instruction throughout the Matrix. Embracing this section is necessary for successful direct instruction for students with complex needs.

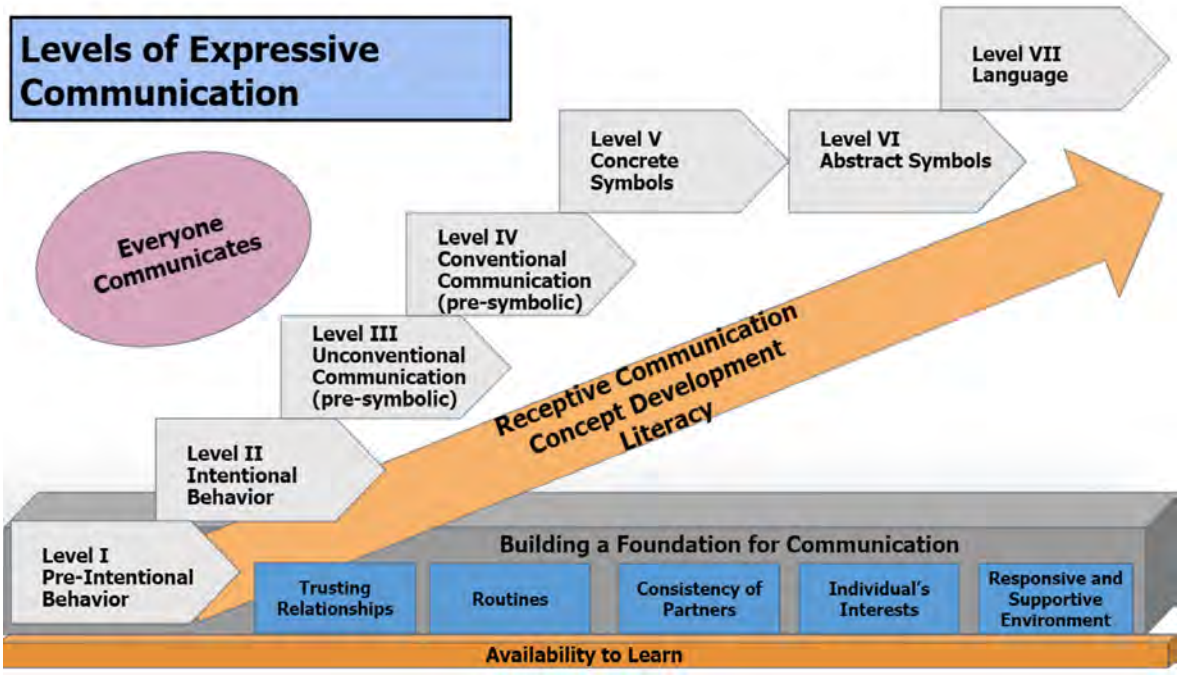
The graphic below represents the CM and the CMIM as interconnected tools to support a continuum of communication and literacy instruction based on each student's needs. (See Figure 1 below)

The information summarized within this graphic brings together the goal of the CMIM (see Figure 1). The bottom depicts the foundation of interactions and communication, while the staircase gradually progresses through the levels of the CM, incorporating concept development, literacy, and how they both increase, while receptive communication increases. The seven levels within the CM are depicted as a continuum that progresses in conjunction with receptive communication, concept development and literacy. The CMIM breaks down

instruction at each level into detailed and incremental steps specific to the individual's needs, while always considering the foundation for communication.

Figure 1

Levels of Expressive Communication



Embedding Goals

Embedding goals into the student's daily routine is another strategy that breaks down the day into manageable parts. While as teachers we all embed goals into a student's daily activities, it is important to develop schedules that specifically address each child's communicative goals. Such an approach also helps us shape the forms of communication behaviors into more recognizable messages. Below is an example of a daily routine and opportunities to teach the student different communication forms that achieve their goals (see Table 1). Each

communication schedule would be created for an individual with information specific to them and their daily routine by the team. This is a great process to use to ensure all team members understand the student's goals throughout the day. The example below is related to a student at a Level II: Intentional Behavior on the CM.

Table 1

Routine, Goal, and Communication Form

Routine	Goal	Communication Form Examples
Arrival	Request Attention	*Squeal *Bounce
Morning Circle	Makes Choices	*Slaps away object they don't want *Looks longer at a desired object
Center/Class	Request new action	*Movement toward desired object or space
Snack/Recess	Refuses, rejects	*Push off table *Throw *Pull back *Stiffen *Laugh *Rock *Continue a movement *Move toward place where desired object is located
Specials (Art, PE, Music)	Requests new object	*Look at an object and vocalize

Signal and Communication Dictionaries

When you have created the communication schedule, teams can interpret what the student's behaviors mean. The CMIM provides guidance for creating signal and communication dictionaries. This has been critical with students with complex needs to ensure the entire team understands what pre-intentional, intentional, and pre-symbolic forms of communicative intents are meant to convey.

Here is an example with the layout that is provided in the modules (see Figure 2). It can easily be adapted for what works for the team. As students transition to different schools and teams, such tools help the student's communication to be recognized by faculty and staff. The student's new team can begin the year with a basic understanding of what communication looks like and can develop trust by responding to the student's communication effectively.

Figure 2

Sample Signal and Communication Dictionary

Each time I *DO* this.....	**It will be interpreted to *MEAN* this.....**	**My partner will *DO* this....**	**My partner will *SAY* this....**	**How my partner will *SHAPE* my behavior to a more CONVENTIONAL form**
Pull at my trach	I want attention	Come to me	"Do you want something?"	Vocalization or call switch
Fully extend my body	I am done with this activity	Stop the activity	"You are finished."	Shape to push away the object in the activity.

In order to ensure the team is able to implement and maximize the student's learning experience, the *Communication Matrix Planning Tool* was developed. This tool includes activities for a team to complete to outline the student's sensory involvement, foundational knowledge, mastered and emerging skills, communicative intents, goal setting, outlining the intervention plan, embedding goals into daily routines, and finally how to put everything into practice for the

student's team. This tool is a formal way to ensure the team can incorporate communication and literacy into all aspects of the student's life.

Experience Books

Exactly how are literacy skills taught and incorporated into instruction for our students with extremely complex needs? The CMIM provides a link to the *All Children Can Read: Literacy Skills Checklist* created for use with the Literacy for Children with Combined Vision and Hearing Loss website. This resource can be found within the National Center on Deaf-Blindness website (National Center on Deaf-Blindness, 2012).

This resource outlines the incremental steps to Building a Foundation to literacy, Early Emerging Literacy, Emergent Literacy, and Expanding Literacy instruction to include writing, vocabulary development, comprehension, and increasing fluency. The information within this source is directly related to the CMIM strategies and supports. Additional resources for literacy are also provided on the WVDE CMIM website (WVDE, 2022).

Experience books can be used for a wide variety of reasons. They are forms of literacy exposure for students with traditional literacy involvement. The example below is of a tactile experience book that was made for a student after being away from school during the pandemic (See Figure 3). He became unable to tolerate riding on a bus to participate in class community based instructional trips.

In this book, an old bus seat was found, and a piece of a seat was used to represent the texture of the seats and the smell. A rectangular picture frame was used to represent the shape of the windows. Sometimes real objects are difficult to put into a book. For example, to replicate the texture of the bus floor, we used dollar store flip flops, cut them, and glued them upside down on his book. This texture was similar to a bus floor. The last picture can be changed to help understand "where" the trip will take him. In this last picture, horsehair was included for his trips to therapeutic horseback riding. Using this book, he can feel each item, turn the pages, and have exposure to the basic literacy experience while gaining his understanding of the bus experience. This student is exposed to the staff reading and discussing the events related to the bus trip. After using this book, and reading several times, he was able to again tolerate a school bus ride.

Figure 3

Tactile Experience Book

Other experience stories have covered personal hygiene, doctor's visits, surgery, and vacations. Below, we have included pictures of a second student's vacation to Disney. We first made a book to help understand where they were going, the long car ride involved, a hotel stay, and the different events they would participate in. Once she returned, her parents sent pictures of her trip, and we created another book, which she helped write and assemble. Allowing the student to participate in the creation of the book from beginning to end ensured she understood and instilled pride in her work. The pictures show her assembling and reading the book about her trip (See Figure 4). She was extremely proud of herself and her book.

Figure 4

Book Creation

In order to ensure the progress of student's communication and literacy skills throughout the day, the CMIM offers a template to track the student by using the *Communication Opportunities Across Environments Data Sheet*. This template

allows the team to plan opportunities for communication and how the student will communicate in different environments.

Team Planning

Using the resources within the CMIM, the team can now plan the student's communication and literacy curriculum. Team planning time is critical to the success of all students. One way we have implemented planning sessions is virtually. This has saved us significant time when we have therapists, classroom teachers, and support staff all in different locations. We plan weekly/bi-weekly virtual meetings for 30 minutes or less to ensure we are all on the same page. We can use the templates and share strategies quickly and efficiently. Recently, we began starting the year for our more complex communicators, with team meetings before school started, and included the parents/guardians. Including parents is a critical part of the team and has transformed our staff's perspective on not only the student but how the student is or is not successful in the home setting. We have used this time to provide mutual support and grow respect for each other.

As you can see, literacy instruction is possible and easily achieved using the Communication Matrix Intervention Modules. If you or your team are interested in additional information, support, or on-site training, please feel free to contact us.

References

National Center on Deaf-Blindness. (2012). *Literacy for Children with Combined Vision and Hearing Loss.* https://www.nationaldb.org/products/literacy-for-children-combined-vision-hearing-loss/

West Virginia Department of Education. (Nov. 2022). *WVDE Communication Matrix Intervention Modules.* https://wvde.us/special-education/resources-sp-page/speech-language-impairment/communication-matrix-intervention-modules/

VIDBE-Q Summer Issue

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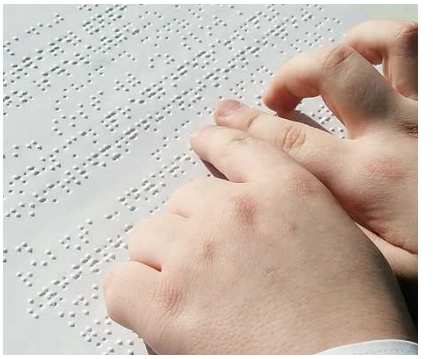

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Back to School Issue

Visual Impairment and Deafblind Education Quarterly

Email your manuscripts to Kathleen Farrand, editor

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Adapting Read Naturally for Students with Low Vision: Implications from a Pilot Study

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Learning how to read is essential and includes five major components, identified by the National Reading Panel, which individuals must learn in order to become an effective reader. These include: 1) phonemic awareness, 2) phonics, 3) fluency, 4) vocabulary, and 5) comprehension (1997). Of these, fluency holds particular importance for children with visual impairments. Kamei-Hannan and Ricci (2015) note that children with low vision must learn additional skills for reading: using their residual vision efficiently and using optical devices and/or technology to access print. Further, "reading fluency requires an extraordinary level of visual efficiency. A visual impairment may cause students with low vision to read slower and sometimes laboriously, depending on their visual efficiency

skills. [Thus,] students with low vision may benefit from a variety of accommodations" (p. 169).

Teachers of students with visual impairments (TVIs) must develop teaching strategies that will enhance the development of students' literacy skills and should also be integral parts of daily instruction (Layton & Koenig, 1998). To access literacy, students with low vision may use magnification devices and software, text to speech, digital media, or large print. The use of these devices and electronic options must be taught, and students and teachers must learn which devices fit which literary contexts. When teachers use evidence-based practices to further develop such strategies, it allows for improved teaching practices and opportunities for students with visual impairments to improve their performance in reading fluency and comprehension (Ferrell et al., 2014).

Read Naturally is one supplementary reading program that aims to improve reading fluency, accuracy, and comprehension and has been determined to have moderate to large effects in improving both reading fluency and comprehension. While *Read Naturally* has been extensively utilized and researched with students who have been diagnosed with a specific learning disability (e.g., Arvans, 2010; Christ & Davie, 2009; Hancock, 2002; Kemp, 2006), it has not been researched with students who have visual impairments. Therefore, it is imperative that an evidence base for the use (with appropriate adaptations) of *Read Naturally* with

this population be established. Further, teachers who work with students with visual impairments need to know how to effectively and efficiently utilize instructional strategies to collect better data and further individualize the specific accommodations on student individual education programs (IEPs). For example, the implementation of evidence-based adaptations for reading fluency can support practitioners in better understanding the true reading rates of students with visual impairments and help IEP teams decide appropriate extended time accommodations students with visual impairments may require.

Read Naturally

Read Naturally uses leveled non-fiction, short passages, not novels. *Read Naturally* is designed for at least "three 30 minute or more" sessions on one passage (see *Read Naturally* Master's Edition Manual, 2021, p. 12). *Read Naturally* also suggests setting their WCPM goals as 30 words better than on their initial reading. There is a paper-pencil version of the program, called *Read Naturally Encore*, and a web version, called *Read Naturally Liv*e. The teacher modeling is done by cassette tape, CD, or digital recording of the text depending on the version of *Read Naturally* that is being used. This, in particular, is not feasible for students with visual impairments because of the difficulties inherent in keeping up with a recording while reading from a magnified copy of the passage.

Read Naturally provides a set of adapted materials in braille for students with visual impairments who use that medium, but there is no provision for large print readers. In addition, there is a document providing minimal guidelines for teachers using the program. However, there are no adaptations of the placement strategy or procedures beyond these minimal guidelines. The document provided includes a section called Note to Teachers About Large Print, which states the following:

> If a student requires a font size of 24 pt. or larger, very few words can be placed on each line…When a student reads very few words on each line and must move frequently from line to line, the student's fluency is not efficient." This note continues to say that "We find that enlarging the font beyond 24 points defeats the purpose of our program. Rather than enlarging beyond the recommendations, it should be determined whether the student could benefit from the program by accessing the materials through the use of a magnification device (CCTV), software (Zoomtext), or possibly learn braille. These decisions should be made after consultation with a teacher of students with visual impairments. (Read Naturally, 2021, p. 2)

The point is well made that guidance from a TVI is necessary for any successful adaptation of a reading intervention for students with low vision. However, this document may discourage educators from using this intervention with students with low vision, not only because of the lack of guidance on appropriate adaptations, but by stating that enlarged font sizes "defeat the purpose" of the program. However, Layton and Koenig (1998), Patillo et. al. (2004), and Saviano and Hatton (2013) found that interventions based on repeated readings

were beneficial for this population, which would indicate that this evidence-based practice for promoting fluency holds promise. Further, Corn and Koenig (2002) noted that specific reading issues for low vision include reading speed and stamina, which indicates the need for interventions that address reading fluency.

To explore the possibilities of adapting *Read Naturally* for use with students with visual impairments, a pilot study was conducted. Given the statement that utilizing fonts larger than 24 size would negate the effects of the program, the pilot study focused on the implementation of *Read Naturally Encore* with students whose learning media exceeded this size. This pilot study was approved through the Institutional Research Board of Texas A&M University-Commerce. The results of this pilot study inform the literature regarding methods for adapting *Read Naturally* and the program's effectiveness for improving reading fluency rates with students who have low vision.

The Pilot Study

Participants

Two students, whose names were changed for anonymity, with identified reading media of higher than 24-point print participated in the pilot study. Laura, age 9 years, had hereditary optic atrophy with a near acuity of 20/100 when using both eyes with best correction. According to her current Learning Media Assessment, her recommended reading medium was large print, on paper, at 26

point Arial font. Teagan, age 13 years, also had hereditary optic atrophy. His acuity with best correction was 20/400, and his recommended reading medium was digital, with the ability to use a video magnifier or magnification software to adjust magnification to preference as needed. To read the passages in this study, Teagan used a video magnifier at 6X power with an inverted white on black color display.

Procedures

Individual baselines were established by comparing participant results on both the *Read Naturally* placement packet and the Basic Reading Inventory (BRI) assessment (Johns, 2016). The BRI includes graded passages and word lists and procedures for determining reading level and fluency. In an evaluation of psychometric evidence, Bieber et al. (2015) found that the BRI provides an adequate measure of reading fluency and can provide support for decisions about reading fluency placement for interventions.

The BRI word lists and passages were used to estimate baseline reading levels. The *Read Naturally* placement packet was used to compare and confirm the proposed placement level. The researchers allowed for accuracy (Correct Words Per Passage) to guide instructional level placement instead of fluency per minute. This was a purposeful decision to prevent initial placement at a lower grade level than appropriate due to the potential impact of large print media and/or magnification devices on reading speed. Once initial placement was made, both

accuracy and fluency were measured moving forward. Data was taken for a timed reading of the entire passage instead of a one-minute sample, and the correct words per minute of the passage were calculated by dividing the total time to read the passage by the number of words correct.

Laura's instructional level on the BRI was Grade 2, and the Read Naturally Placement Packet was Level 2.0. Her baseline accuracy was 97% and her fluency was measured as 36 correct words per minute across passage (CWPMP). Teagan's instructional reading level on the BRI was Grade 7 and Level 7.0 on the *Read Naturally* Placement Packet. His baseline accuracy was 97.5% and his fluency was 36 mean correct words per minute across passage (CWPMP).

After determining baseline levels, each participant went through the *Read Naturally* process for three stories at their identified level. The *Read Naturally* steps for each story were followed with adaptations for students with visual impairments (see Table 1). Sessions were conducted using the Zoom video conferencing platform by a certified TVI. Students were given the reading media (font size, use of technology, etc.) specified by their current Learning Media Assessments for cold and hot reads. Rather than timing only one minute, the entire passage was timed. Correct Words Per Passage were graphed electronically and shared with the participants. Participants used the *VoiceDream Reader* application (https://www.voicedream.com/) for their repeated readings and audio support at

their preferred speed, font, and print size. Fluency goals for advancement to the next story were set based on percentage fluency improvement per passage calculated on the hot timing after the story had been practiced three times (mean correct words per minute across a passage). Laura's percentage fluency goal to advance to the next story was set at 15% improvement, while Teagan's percentage fluency goal was set to 30% increase.

Data were taken on each cold and hot read, using guidelines set forth by *Read Naturally*. Errors were counted for mispronunciations, words out of sequence, omissions, and substitutions. Self-corrections or repetition of correct words were not counted as errors. Cold and hot reads were recorded using Zoom video conferencing software for review to determine inter-rater reliability (achieved at 98-99%) by a second researcher. Before reviewing recordings, the research team met to practice rating video examples using the *Read Naturally* criteria until agreement reached a level of 97% on the practice sessions.

Table 1

Summary of Procedural Adaptations

Component	Read Naturally Procedures	Adaptations for Students with Low Vision	Rationale in Literature
Initial Placement	Placement table has specific CWPM criteria; students cannot be placed at a higher level unless they can meet those criteria (30-60 words per minute can only be placed at 1.0-3.0)	Determine an individual baseline for comparison rather than using the Read Naturally placement table Use Basic Reading Inventory (BRI) to estimate levels and compare to accuracy of placement packet levels to determine starting level	Saviano and Hatton (2013) used Qualitative Reading Inventory when establishing pre-baseline reading levels and selecting appropriate materials. Kamei-Hannan and Ricci (2015) recommended use of informal reading inventories (such as the BRI) to "match students with appropriate reading materials at their instructional levels" (p. 66).
	Use 1 minute timing to calculate fluency	Allow students to read the entire passage and record time Calculate mean fluency per passage rather than fluency per minute	Kamei-Hannan and Ricci (2015) gave passage formula • Subtract the incorrect words from the total words in the passage • Multiply by 60 • Divide by the seconds taken to read the passage
Cold/Hot Timings	Timings are conducted via paper/pencil or students reading the computer screen	Cold/Hot use media recommended by their learning media assessment	Lusk, Lawson, and McCarthy (2013) stated that Learning Media Assessments should be used to inform assessment and instruction
	Student reads for one minute only	Allow students to read the entire passage and record time	Kamei-Hannan and Ricci (2015) passage formula
Repeated Readings	Student practices reading the passage three times with a recording (cassette tape, CD, or using web version)	Practice readings could be customized to preference (VoiceDream Reader, etc.)	McLaughlin and Kamei-Hannan (2018) found students' reading fluency was higher when using an electronic tablet.

Progress Monitoring	Students graph their cold/hot scores in blue and red on a paper graph provided by *Read Naturally*	Teachers provide individualized accommodations for progress monitoring based on visual needs, including a range of adapted graphing options (e.g. paper, digital, manipulatives)	Lusk, Lawson, and McCarthy (2013) stated that Learning Media Assessments should be used to inform assessment and instruction.
	Teacher calculates WCPM for hot timing using one minute timeframe	Allow students to read the entire passage and record time Measure mean correct words per minute across passage (CWPMP) rather than one minute timing	Kamei-Hannan and Ricci (2015) passage formula "Students with low vision need more time than students with typical sight to complete tasks at a word level and when reading longer sentences of paragraphs." (p. 31)
	Students pass the story when their WCPM score improves by 30 WCPM.	Use alternate, individualized measures of progress to determine passage of story, such as a percentage improvement from baseline	Percentage improvement inspired by Layton and Koenig's (1998) description of decision making process for selecting criteria based on percentage improvement from baseline for phases in their changing criterion design. They used a percentage improvement from baseline, but were willing to alter it based on conversations with students to address motivational needs. As noted in Alberto and Troutman (2006) and Klein et al. (2015), criteria for phase changes should be chosen based on one of four ways: 1. mean of baseline 2. halving the mean of baseline 3. using high and low points to set a range 4. using an estimate from a professional acquainted with the student and the subject matter

Results

Both Laura and Teagan demonstrated progress in their reading fluency going through the steps of the *Read Naturally* process with adaptations. Laura met her 15% fluency improvement goal from baseline in the first two of the three stories. On the third story, she reached a 14% increase. Although the percentage for improvement for story two came out to 41%, this needs to be interpreted with caution. During story two, Laura repeated a line during her cold read. While the repetition was not counted as an error, it added to the length of time it took to read the passage, which affected her initial fluency score. This impacted her percentage improvement calculation with her hot read. Teagan met his 30% fluency improvement goal from baseline in the three stories. For story three, Teagan's fluency improvement jumped to 41%. While the data from this initial pilot study did not extend across more than three repetitions of the *Read Naturally* process, it provides a starting point from which future studies could use the same adaptations for students with visual impairments to compare percentage improvement in fluency across a longer period of intervention and when compared to fluency measured on materials other than *Read Naturally*. Table 2 displays the percent improvement in reading fluency for both participants over the three passages.

Table 2

Improvement in Mean Fluency by Passage

	Laura	Teagan
Story 1	16%	31%
Story 2	41%	30%
Story 3	14%	41%

Discussion

Given the unique needs of students with visual impairments which require additional consideration, particularly in the area of reading instruction (Kamei-Hannan & Ricci, 2015), it follows that there are necessary adaptations when utilizing materials and programs which have not been studied with this population. This became more and more apparent as the authors worked through the fine details of this pilot study. As all authors had previous experience with the program, the difficulties of figuring out exactly how to implement it with these two students was surprisingly challenging. The procedures implemented were a result of much conversation and literature review to inform best practice. The resulting key

considerations for utilizing *Read Naturally* with students who are visually impaired include: (a) determine the student's individual baselines instead of placing students according to fluency guidelines for students without visual impairments, (b) for students with visual impairments particularly, fluency should be measured as a percent improvement relative to the student's own baseline, not compared to others, (c) use mean correct words per minute across a passage (CWPMP) and percent improvement in fluency as metrics, rather than one minute timings, and (d) technology can be used in conjunction with this program to provide an avenue for the repeated reading practice. Specifically, the use of the BRI to inform student placement provided a valuable starting point for determining a baseline for accuracy and fluency that could be compared to the *Read Naturally* Placement Packet. What is more, although the authors only planned to use the technology for the repeated readings, Laura expressed a preference for using an iPad Pro (12.9-inch size) with the VoiceDream Reader application that allowed her to customize font size, color contrast, voice, and speed for the entire process (including timings).

Conclusion

The results of the pilot study suggest that, with adaptations, the *Read Naturally* program can be an impactful reading fluency intervention for students with visual impairments. The present findings seem to be in contrast to the aforementioned assertions on the *Read Naturally* website that the program should

not be used for students with visual impairments if the font is being enlarged to a size exceeding 24. This is consistent with the findings of McLoughlin and Kamei-Hannan (2018) that students had higher fluency when reading on an electronic tablet compared to paper. Instead of discarding the program's use with this population altogether, it seems that the present findings support the claims of Layton and Koenig (1998) that TSVIs must develop teaching strategies to enhance the development of the students' literacy skills and are a vital part of daily instruction. Future research should replicate the use of these adaptations with other students with visual impairments.

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Supporting Literacy Development Through Orientation and Mobility Instruction

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When we think about orientation and mobility (O&M) and literacy, the connection between the two may not be obvious at first glance. How does learning how to move about in one's environment as independently and safely as possible tie in with what we commonly perceive as the ability to read and write? Definitions of the term "literacy" are wide-ranging, but two stand out when pondering the term's relationship with O&M: (1) "the ability to read, write, speak and listen in a way that lets us communicate effectively and make sense of the world" (National Literacy Trust, 2017); and (2) "competence or knowledge in a particular area" (Oxford University Press, 2023). As I look at these two definitions through the lens of an O&M specialist, I see various ways in which O&M and literacy are intertwined, and how O&M instruction can support literacy development in students with visual impairment.

The first definition of literacy encompasses many skills and concepts that are taught and practiced during O&M instruction with learners with visual impairment. For example, gathering information about what is in one's environment to establish and maintain one's place in that space is extremely important in being able to plan and travel a route to move from point A to point B. Methods of information gathering, such as listening for environmental clues, speaking with others to solicit information, reading signs, and writing down directions, are all based within literacy. The second definition of literacy embodies the primary goal of O&M training, which is to help learners with visual impairment be confident, safe travelers, regardless of their age, ability level, and level of visual functioning. The hope is, by the time students are finished with their O&M training, they will be secure in their knowledge and application of O&M concepts and skills to help them move about in the world during their routine (e.g., day-to-day) and not-so-routine (e.g., vacations) travel.

As you think more about how O&M and literacy are linked, think about opportunity. Opportunity is key in supporting students in their learning, and how students experience what they are learning can be a powerful thing for students themselves, their families, and their teachers in terms of significance, memorability, reinforcement, and affirmation. Developing environmental literacy, creating and reviewing O&M experience books, reading and using signage and

maps, and going on community outings are some ways in which we can provide students with visual impairment opportunities to interact with, build, and reinforce literacy skills through O&M instruction.

Environmental Literacy

Remember the second definition of literacy? Environmental literacy fits nicely into the definition of "competence or knowledge in a particular area" (Oxford University Press, 2023), as it literally means to be competent or knowledgeable about a particular area. Being literate about an area means one knows the characteristics of it; what the objects in it look like, what they are named or labeled, and what their functions are; and how it may fit into the "larger" picture of other areas and/or the world. For example, what comes to your mind when you think about a residential area in a suburban city in the United States? If houses, driveways, mailboxes, lawns, sidewalks, fire hydrants, streets with low vehicular traffic, and smaller part of a big city came to mind, you have the beginnings of environmental literacy. Knowing and understanding that people live in houses; cars move in / out and park in driveways; mail is delivered and stored in mailboxes; sidewalks separate front lawns from parking strips / streets; cars drive on the street; pedestrians are supposed to walk on sidewalks to be safe; and so on would be the next level of building environmental literacy. Time needs to be on the learner's side when it comes to developing environmentally literacy – it takes a lot of time to

explore and learn about the many things that make up this world of ours and to ensure the learner feels safe doing it. Figure 1 provides some examples of activities to help learners develop environmental literacy in various areas of exploration.

Figure 1

Examples of Activities for Helping Learners Develop Environmental Literacy

Learner	Environmental Literacy Activity
Infant	*Narration during daily routines around the house*: Encourage the infant's caregiver to hold the infant (cradled in arms or up against the chest) and walk around the house, providing description-rich narration about what each room looks like, what items and/or people are in each room, where sound sources are coming from, etc. Provide adult-assisted opportunities to safely explore and learn through touch, smell, sound, sight, etc.
Young Child	*Stroll around the neighborhood:* Take a stroll around the neighborhood with the child (by foot or stroller). Provide description-rich narration about what is being encountered and provide opportunities to explore and learn through touch, smell, sound, sight, etc., with adult or family member assistance as needed.
Teenager	*Destination research*: Encourage the learner to think about a place they would like to visit or learn more about and explore it with them using a map application, such as Google Maps. Provide opportunities for description-rich discussions and make comparisons with what the learner knows.
Learner with Multiple Impairments	*Stroll around the neighborhood*: Take a stroll around the neighborhood in the learner's wheelchair or stroller. Provide description-rich narration about what is being encountered and provide opportunities to explore and learn through touch, smell, sound, sight, etc., with adult or family member assistance as needed.

Figure 2

Examples of O&M Books

Type of O&M Book	Purpose	Things to Remember
Experience Book	• Record and tell about an activity or event, in which the learner participated in, using real objects or artifacts from the actual activity or event.	• Remember that the objects or artifacts should be selected by the learner, as this will make the book more meaningful for them as they read about and recall their experiences. • The story line corresponding to each object / artifact can be written in print, brailled, or both.
Route Journal	• Help students remember routes they travel regularly or seldomly, depending on the student and their travel needs.	• Remember that students should play a significant role in selecting content (e.g., landmarks, how directions are worded, etc.) for their journals. What we think would be useful or helpful for us, may not be useful, helpful, or meaningful for the student. • Route journals can take on many forms, such as on paper in a notebook format or electronically in files saved on a braille notetaker or tablet computer.
O&M Progress Book	• Document and show progress as students learn, practice, and master O&M skills and concepts. • Boost learner confidence in their own ability to learn and apply O&M concepts and skills. • Show caregivers, educators, and others what students are working on during O&M lessons and the progress they have made during certain time periods.	• Remember that students should be active participants in creating their progress book. Involving them helps them to think about and reflect on their strengths and areas that need to be strengthened. • Progress books can take on many forms, such as on paper in a notebook or photobook format or electronically in electronic versions of notebooks or photo/videobooks. • Remember to make content (e.g., photographs, videos, and narratives) accessible to everyone who might be reading this book. For example, descriptions of pictures or videos; tactile graphics or objects; and text in braille, print, or both may be needed for some readers to access and enjoy the book.

Experience Books and Other O&M Books

Books and reading books are what usually comes to mind when we think of literacy. In the spirit of books, creating them with learners during O&M lessons / outings and then reading them later are fun ways to support literacy during O&M instruction and beyond. O&M books can be particularly helpful in assisting students to remember their experiences, routines, and routes or even document their progress as they learn, practice, and master skills and concepts – the possibilities for O&M-related topics are endless! As students create and read their O&M books (either on their own or with others), literacy skills are supported by turning and exploring pages; reading, recalling, and discussing; writing; and interacting with others. Figure 2 provides some examples of O&M books and their descriptions. Resources for more information about what these books look like and how to create them are listed at the conclusion of this article.

Signs and Maps

Signs and maps are main staples of O&M instruction. Students learn how to look for them, read them, use them, and even create them. Support literacy by having students look for and read signs and maps (tactually, visually, or both) while out and about on O&M lessons or during outings with family and friends. Games, such as sign Bingo, and scavenger hunts are engaging ways to help students work on both literacy and O&M skills. Figure 3 provides some examples

of how scavenger hunts can be modified for learners with different levels of literacy proficiency.

Figure 3

Examples of Scavenger Hunts for Learners with Different Levels of Literacy Proficiency

Level of Literacy Proficiency	Scavenger Hunt Activity
Emergent: able to recognize symbols and match them	Find signs around the classroom, school, and/or residential neighborhood (naturally placed or instructor placed) by matching them to their picture or tactile symbol.
Intermediate: able to read and write with occasional support	Follow written instructions or a map to locate signs, specific items, and/or destinations in various settings (e.g., familiar indoor / outdoor areas; unfamiliar indoor / outdoor areas).
Proficient: able to read and write proficiently independently	Follow written instructions or a map to locate signs, specific items, and/or destinations in various settings (e.g., familiar indoor / outdoor areas; unfamiliar indoor / outdoor areas).

Community Outings

Through movement and exploration, people (children and adults alike) learn about and make sense of the world around them; and, this is no different for individuals with visual impairment. Community outings provide students with real-life experiences in which they can apply what they have learned during instruction and encounter situations that spur curiosity, exploration, and problem-solving. O&M outings, whether with an O&M specialist during instructional time or with family and friends during personal time, can be especially supportive of literacy

development from start to finish. Think about all the aspects of planning and participating in a community outing that involve literacy. Figure 4 provides an example of literacy activities involved in an outing to the local library.

Figure 4

Examples of Literacy Activities Involved in a Community Outing to the Local Library

Phase of Outing	O&M Area and Related Literacy Activities
Planning	• Information gathering: looking up the address and hours of the library, looking up bus routes and schedules to/from the library • Information recording: writing down the information gathered, writing down procedures (e.g., steps for bus travel) – for students who are not reading proficiently, information recording can be done with pictures or audio recordings • Orienting and familiarizing: looking at pictures of libraries and how they are laid out (i.e., environmental literacy!), reading and/or creating maps
Outing	• Traveling: following recorded information to get from the starting point to the library and back • Establishing and maintaining orientation: reading and following maps; finding and reading signs along the route • Exploration: moving about the library and its surrounding areas to see what it has to offer
Reflecting	• Debriefing: journaling, discussing experiences • Remembering: creating and reading O&M experience books

Remember what I said in the beginning about the connection between O&M and literacy: the link may not be obvious at first glance, but O&M instruction can support literacy development in learners with visual impairment, regardless of their age, ability level, or level of visual functioning. Opportunity is key in supporting

students in their learning; we just have to help create those opportunities and involve students (and their families and members of their educational teams) in every step of the process to make it meaningful for them.

Resources

- Articles on how to practice literacy skills during O&M lessons: https://www.pathstoliteracy.org/learning-center/orientation-mobility/
- Information about experience books: https://www.pathstoliteracy.org/experience-books/
- Information about how to make experience books: https://www.pathstoliteracy.org/creating-experience-books-children-who-are-blind/
- Information about O&M route journals: https://www.pathstoliteracy.org/o-m-literacy-routes-journals/

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A Community Approach to Promoting Technology Access and Information Literacy

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As with other forms of literacy development, missed opportunities for incidental and early learning with technology can have a pervasive impact on conceptual development and future engagement with information. Like other types of literacy instruction, learning to use technology for the purpose of improving one's information literacy requires more than just the provision of equipment. Effective instruction must also include considerations for personnel training and community-building. Without a holistic approach to improve access to appropriate technology and preparedness for community membership, students are not empowered to live the life they want.

Problems of Practice

Long standing challenges with obtaining consistent access to, and instruction with technology on behalf of blind and low vision students have been documented

across several decades of research literature. Historically, shortcomings in blind and low vision students' adoption of assistive technology (AT) were attributed to a lack of resources for purchasing technology, lack of parent involvement, and inadequate training in teacher preparation programs (Parker, 1990; Edwards & Lewis, 1998; Abner & Lahm, 2002; Kapperman et al., 2002; Smith et al., 2009; Kelly, 2011; Zhou et el., 2011). Challenges specific to developing technology proficiency among Teachers of Students with Visual Impairments (TSVIs) include a missing link to engagement with communities of practice that can help develop one's technology knowledge and sustain professional development (Morash & Siu, 2016).

With the addition of AT to the American Printing House for the Blind (APH)'s product catalog, it has become much easier to obtain assistive technology for a blind or low vision student. AT from APH can be purchased for students using federal quota funds, while district funds can be used for purchasing ancillary or supplemental technology as needed. In some cases, AT from APH functions as an easy starting point to trial and learn how to use different types of technology for blind or low vision accessibility; in other cases, AT from APH might carry a student through their school career. When technology outside of what is available from APH is needed, initial use cases with APH AT can provide the justification needed to purchase an alternate device or program.

With the provision of AT made available by APH through the federal quota program, initial challenges with obtaining funding for AT have been mitigated. However, gaps remain regarding the training needs of parents and teachers, and community spaces remain lacking in access points to accessible technology and media. Teachers and parents often support or learn AT alongside a student, yet typically do not have access to a device for their own learning. Community spaces such as libraries, makerspace, and coding clubs are also integral to supporting equitable access and engagement with information, yet are not often privy to accessible technology, media, and related resources for blind and low vision accessibility.

Finally, many teachers of students with visual impairments (TVIs) work in an itinerant capacity where students are served in their community school; this often results in a caseload that spans across a school district or county office of education. As a result, TSVIs do not typically share physical spaces with one another, resulting in a dispersed practice with limited opportunities for informal connection. These ad hoc moments for connection are key to building community around technology and sustaining one's technology proficiency (Morash & Siu, 2016). Instead, dedicated efforts must be made to meet in person while virtual spaces such as listservs and social media can provide missing connection points

and function as critical complements to knowing where and how to access resources for training and information (Siu, 2015).

Overcoming the Remaining Problems of Practice

The Technology and Training Gap: Overview of the Center for Assistive Technology Training (CATT)

As funded through the Alabama Institute for the Deaf and Blind (AIDB) and supported by the APH, the Center for Assistive Technology Training (CATT) originated at AIDB in 2019. The mission of the CATT program is to provide assistive technology training to teachers of blind/low vision children, utilizing a "train the trainer" model, while also providing support and training for other professionals working with blind or low vision children as well as parents/caregivers of a child who is blind or has low vision, including those with additional disabilities. Whereas funding for the CATT program is secured in the federal congressional budget via AIDB, all assistive technology options are provided by APH. It is important to note that the CATT program is meant to support professionals and parents/caregivers in the United States (U.S.) and territories; it is distinctly separate from the existing federal quota system (hosted by APH), which provides funding for APH products including technology to blind and low vision students. At the time of publication, the CATT program covers the provision and training of 23 assistive technology products from APH, including

devices, software, and the book *Access Technology for Blind and Low Vision Accessibility* (Siu, 2020).

In addition to providing AT from APH at no cost to the community, regional CATT programs provide related AT training as needed. At the time of publishing, there are three regional CATT programs; each CATT program mirrors the region defined by the APH Outreach program. For areas of the U.S. that do not currently have a CATT program, the APH Outreach program and Outreach Specialists remain available to support.

Southeast CATT (CATT-SE). As mentioned, the first CATT program launched in 2019 at the AIDB in Talladega, Alabama. CATT-SE serves an eleven state/territory region including Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, U.S. Virgin Islands and Puerto Rico.

Southwest CATT (CATT-SW). The second CATT program launched in 2022 at the Foundation for Blind Children (FBC) in Phoenix, Arizona. CATT-SW serves a six-state region including Arizona, California, Colorado, Nevada, New Mexico, and Utah.

Northwest CATT (CATT-NW). The third CATT program launched in 2023 at the Washington State School for the Blind (WSSB) in Vancouver, WA. CATT-NW serves a ten state/territory region including Washington, Oregon,

Idaho, Montana, Wyoming, Alaska, Hawaii, Guam, Northern Mariana Islands and American Samoa.

Figure 1

Map of APH Outreach Regions

Each regional CATT program is led by a coordinator and team of tech trainers and is administered independently to provide customized training that meet the needs within each region. Trainings can be on a 1:1 basis, group format, in-person, and/or online. Regardless of the individualized implementation of each regional CATT program, all programs share the same mission and are coordinated to develop free resources for broader community access regardless of location.

Amplify Online Resources and Training Media

To facilitate the adoption of technology in the field, the CATT program is responsible for developing online resources and training media in a number of ways. Contributions to existing repositories such as the APH Access Academy and APH Hive provide anyone free access to training in online and asynchronous formats. A new CATT YouTube channel is under development and will offer a range of device-specific videos such as unboxing videos, getting started tips, and highlight short videos from the field that capture how AT are used in different ways. The purpose of the YouTube videos is to inspire ideas for lesson planning and provide support for learning AT. The CATT program will also collaborate with APH to develop training resources for new and emerging AT and strategize how to integrate these resources within existing APH catalog product pages. For example, the CATT program includes a focus on amplifying APH's efforts to support accessible coding products and instruction, with each regional program offering coding activities to support APH's annual Day of Code.

Build Communities of Practice with a Train-the-Trainer Approach

Besides the provision of AT, at no cost to educators, guardians, and community partners (which is already exciting!), the CATT program is committed to offering professional development opportunities for teachers of students who are blind and low vision, parents, and related professionals who support students who

are blind and low vision. CATT trainers work directly with people within the region by offering a variety of intensive training sessions and conference workshops. Ancillary support for professional development includes the provision of continuing education units and sponsorship of regional events and national conferences. To meet the mission of deploying a train-the-trainer model, the CATT also supports others to develop their own training resources and host local training activities.

Because of the regional focus of each CATT program, there is great potential in how the CATT program can encourage broader development of communities of practice (COPs) (Wenger, 2000) around assistive technology and accessible information. For example, CATT regional programs outreach to local chapters of professional organizations such as the Association of the Education and Rehabilitation of the Blind and Visually Impaired (AERBVI) and carry out community-building efforts that are specific to the resources within each region. Efforts may differ depending on varying cultural contexts. Here are examples of how each regional CATT program supports COPs around technology:

- CATT-SE: Partnership with university programs to host summer coding and cybersecurity camps for blind and low vision students; regional professional development opportunities for teachers of blind and low vision students that are focused on a particular device or coding activity; and coordination with state-wide conferences across the region.
- CATT-SW: Sponsorship of significant events; connecting with key figures such as those within the Department of Education, State Schools for the Deaf and Blind, and the federally funded Technology Access Program
- CATT-NW: Facilitation of "Techie TVI Meetups" that are led by TVIs who have received training from CATT; community-based trainings with partners outside of the education community (ex., local libraries, robotics clubs, athletic associations, and guide dog schools); a Slack workspace to support Q&A and same-day tech support.

Towards Sustainable and Justice-Oriented Systems of Practice

In most contexts, access to information is what separates those who hold power from those who do not. For any individual who relies on technology for their information literacy, it is therefore critical that technology and related supports are provided liberally with ubiquitous access points across community spaces. It is with a sense of optimism that the CATT program may offer a winning combination providing necessary tools and training at no cost and leveraging the

strengths of many communities to promote broader access to information. By offering a means to overcome longstanding problems of practice, the various levels of support may ultimately give rise to sustainable systems of practice that empower every individual regardless of disability.

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