# Spring 2025 Convention Issue

# Visual Impairment and Deafblind Education Quarterly

Volume 70, Issue 2

The Voice and Vision of Special Education

Council for Exceptional Children
The voice and vision of special education

Cover photo description: The cover photo is of a completed painting of an eye. In the middle of the painting, there are red Wikki Stix provide an outline of the eye's shape, including the eyelid, eyeball, and pupil. Color is dabbed onto the eye painting, which contains the colors blue, green, yellow, and red.

Photo submitted by: Leslie Walsh, David Ray Gutierrez Miranda, and Jasmine Begeske

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# Getting in Touch with Literacy

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# Message from the Editor

**Kathleen M. Farrand**

Associate Professor, Arizona State University

Kathleen.Farrand@asu.edu

Happy Spring! I am pleased to share some amazing articles highlighting ideas shared at the CEC 2025 Special Education Convention & EXPO from March of 2025. I enjoyed the amazing opportunity to engage and meet with CEC members and members of our Division on Visual Impairments and Deafblindness that attended convention in Baltimore. Thank you to our amazing presenters and authors that have contributed their ideas, strategies, and research with us in the Spring Convention issue.

The first article, by Jason Stark and Cindy Camp, provides valuable information about the Described and Captioned Media Program. Read more to learn about accessible education videos for students, as well innovative methods for captions, audio description, and sign language. Next, read about how you can promote increased independence for students with visual impairments while painting. Leslie Walsh, David Ray Gutierrez Miranda, and Jasmine Begeske share nine recommendations for adapting painting for students and incorporating visual art into your classroom.

The third article, by Amy Query, Beth Brady, Sarah Ivy, and Paige Furbush, provides valuable information about one school's implementation of a standardized tangible symbol set. This article will provide you with valuable recommendations and information for supporting a school-wide system to integrate tangible symbols. The final article, by Anna Tess, suggests strategies for using evidence-based practices for teaching students with sensory impairments from the field of Autism. These articles will remind you of a favorite session at CEC and inspire you as you finish the school year.

Are you working on something in the field of visual impairments and deafblindness that you would like to share with our members. Email me (Kathleen.Farrand@asu.edu) for more information and to submit an article for the Summer Back-to-School issue.

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Dr. Krystle Merry
www.krystlemerry.com
accesstransition@outlook.com
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# President's Message

**Adam Graves,**

VI Program Coordinator, San Francisco State University

adamgraves@sfsu.edu

I am so happy to welcome you all into the latest edition of *Visual Impairment and DeafBlind Education Quarterly* (*VIDBE-Q*). So much has taken place since the publication of our last issue and there is so much to highlight within the Division on Visual Impairment and DeafBlindness (DVIDB). First, I want to send a huge thank you to all our board members who helped put together and host our virtual pre-conference in February. I also want to thank our keynote speakers Dr. Rona Pogrund and Dr. Beth Foster for lending their time and expertise to this

event. In addition, I'd like to thank the American Printing House for the Blind (APH) for hosting and recording the pre-conference webinar and to Allied Instructional Services (AIS) for helping us arrange for participants to obtain continuing education units for attending our pre-conference. Finally, I want to recognize and say thank you to AER International and the Maryland School for the Blind and our many university sponsors for sponsoring both the online pre-conference and the DVIDB social at the CEC convention in Baltimore.

Speaking of the convention, we are so pleased to be able to provide you with some of the ideas from the presentations from that event's DVIDB strand in this issue of *VIDBE-Q*. If you were not able to make it to the convention this year or were unable to attend all the sessions that you wanted to while you were there, we hope this issue will contain valuable information you may have missed and provide you with some ideas of practices that you can include with your own students.

Finally, thanks to CEC's recent "Access for All" membership drive many of you receiving this issue of *VIDBE-Q* will be reading this publication for the first time. For those of you who are new to our division, welcome! And for those of you who are returning to the division after a brief hiatus, we are so glad to have you back! As a long-time member of DVIDB, I am continuously impressed with the quality of the articles that are included in *VIDBE-Q*. Thanks to the skill and expertise of our editor, Dr. Kathleen Farrand, this publication is one of the most

distinctive and important benefits that our division has to offer the members of DVIDB. *VIDBE-Q* is a unique platform for highlighting and sharing the work that practitioners like yourselves are implementing every day to improve access for your students who are blind, visually impaired, and DeafBlind in all manner of instructional environments. It is also a great way to find out about our division's continuing education activities such as our upcoming webinars and the Getting in Touch with Literacy Conference.

I hope that as the school year comes to a close you will be able to find some time over the summer months to read through the work that your fellow practitioners and DVIDB members are sharing and begin making plans to attend the various online or in-person events that will be featured in this issue and future issues of *VIDBE-Q*. We are so proud to have so many dedicated professionals in our division and we look forward to providing you with more opportunities to share your work with each other in the months and years to come.

CATT

CENTER FOR ASSISTIVE TECHNOLOGY TRAINING

# Open the Door to Possibilities: STEM for Students who are Blind or Low Vision Webinar

May 15, 2025, 3:00 PM CST

Please join CATT SE AT Trainers, Dr. Susie Thomas and Jennifer Fuller, for a presentation specially designed for the Division on Visual Impairments and Deafblindness (DVIDB). Learn how to implement various APH STEM products to create meaningful and functional learning opportunities for students.

**Training Objectives:** Participants will be introduced to how to use a Code and Go Mouse, Snap Circuit Rover, and other APH STEM products. Participants will learn how to enable students the opportunity to express and engage themselves by working with STEM products.

**Register here:**

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- ✓ General Core Curriculum
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## Join us August 28, 2025 at 4 PM EST for a new webinar!

### From Surviving to Thriving: The Impact of Family Education and Support Programs

**Members Free** **Nonmembers $20**

Registration Information Coming Soon!

This presentation addresses the critical role of parent support programs in promoting resilience and confidence among families raising children with low vision and blindness. Attendees will gain immediately applicable tools, including evidence-based strategies, program development recommendations, and real-life case examples, that can be directly implemented to enhance family support services in their professional services. The presenter will introduce evidence-based strategies to help practitioners implement peer mentorship, guidance discussions, and structured learning opportunities. Emphasizing inclusivity and cultural responsiveness, the session highlights key approaches such as free participation opportunities, culturally specific community speakers, and multilingual support options to ensure accessibility for diverse families. Attendees will leave with practical tools and a roadmap for creating inclusive parent education programs, ensuring that all families have the resources and support needed to not just survive, but thrive.

**Learning Objectives:**

1. Participants will identify four processes that foster a sense of thriving in families caring for a child with low vision and blindness.
2. Participants will identify three positive outcomes associated with thriving families as related to emotional, physical, and behavioral well-being.
3. Participants will provide four examples of practical strategies used in creating or expanding Family Education and Support programs.

## Speaker: Alissa Eromae, MSW, Foundation for Blind Children

She received her Master of Social Work degree from the University of Washington, focusing on relationship-based interventions. Alissa is endorsed as an Infant Mental Health Specialist and certified to provide reflective consultation to therapists and other early childhood providers. After many years of direct service to families, Alissa discovered the unexpected joy of mentoring professionals, leading teams, and empowering providers of all kinds. As the Director of Early Intervention and Research at the Foundation for Blind Children in Arizona, she is honored to lead an incredible team of specialized vision providers.

## 1 ACVREP Credit Available

# Simplifying Accessibility for Educational Videos: AI Assistance with Captions, Audio Description, & Sign Language

**Jason Stark**, jstark@dcmp.org

**Cindy Camp**, ccamp@dcmp.org

Described and Captioned Media Program

As a teacher, have you ever had one of those days where you were running behind, your lesson plan didn't come together, and you'd like to have the class watch a video so you can have a few minutes to pull yourself together? We've all had those days. What do many teachers do? They pull up a YouTube educational video. They're great, right??? Well, not always.

The majority of YouTube videos are not accessible to students with disabilities. YouTube does have automatic captions, but anyone who has tried to watch a YouTube video with just the captions and no sound knows the captions do not provide full access. There are too many errors (Smith, 2017). In addition, almost none of the videos have audio description for individuals who are blind or have low vision.

It would seem that teachers who have students with disabilities in their classrooms are stuck, right? There is no easy way to show an accessible educational video in the classroom. WRONG! The Described and Captioned Media Program (DCMP) is the go-to for easy access to educational videos on demand that ARE accessible for all students. Best of all, the content is free.

DCMP is funded through the U.S. Department of Education. Its mission is to promote and provide equal access to communication and learning through described and captioned educational media. DCMP provides services designed to support and improve the academic achievements of students who are blind, visually impaired, deaf, hard of hearing, or deaf-blind (DCMP, 2025).

Membership is free to professionals who work with students with disabilities from birth through high school age. If a teacher has just one student in their class with an IEP or 504 plan, they qualify for membership. Families can sign up and stream DCMP videos at home as well. The process is easy. Individuals fill out a short online form and then validate their emails. DCMP staff will process applications in less than two business days. Teachers can expedite the process by using their school email address. Once a teacher or parent has set up their account, they can create account(s) for their student(s). This allows the adult to monitor what the student has access to.

DCMP maintains an online video library of thousands of educational videos that can be streamed on demand. There are videos for students from pre-K through high school. They cover all academic topics, such as math, science, history, language arts, and more. But there are also videos on social-emotional learning, mental health, sex education, self-advocacy, independent living skills, and even the expanded core curriculum. DCMP videos cover almost any topic a teacher or parent would want to teach their student about.

In addition, the videos are correlated with the Common Core and state standards. Teachers who live in a state that follows the Common Core Standards can search the database for a video that teaches a specific standard. They can also search by their own state's standards. Teachers who live in states that do not follow the Common Core Standards can still search by their state's standards. This makes it easy for teachers to find videos to teach a specific standard. Or, if they see a video they like, they can document the standards it follows and find additional videos that teach those standards.

The DCMP website is also fully accessible. The video player allows users to turn on or off various accessibility features and customize them to meet the needs of individual students. For example, if a student has both vision and hearing loss, users can turn on both the audio description and captions. The captions can be customized to meet that student's needs by enlarging the font, changing the color

and style of the font, and changing the background color. There is also a transcript feature that allows teachers to download the transcript of the captions and/or the audio description, which makes the videos accessible to students who are both deaf and blind. The transcripts can be read through refreshable or print braille.

Teachers can set up accounts for their K-12 students and then assign usernames and passwords to each student. The teacher sets permissions for the account and assigns media. This allows the teacher to monitor the students' activity. It also allows teachers full access to the Clips and Lessons feature. This feature assists teachers in pulling clips from one or multiple videos in the DCMP library and creating a complete lesson with them. The system allows teachers to insert video clips, questions, and external resources into an online platform to develop comprehensive lessons that can be shared with students. These can be used for homework, remote, or in-class activities.

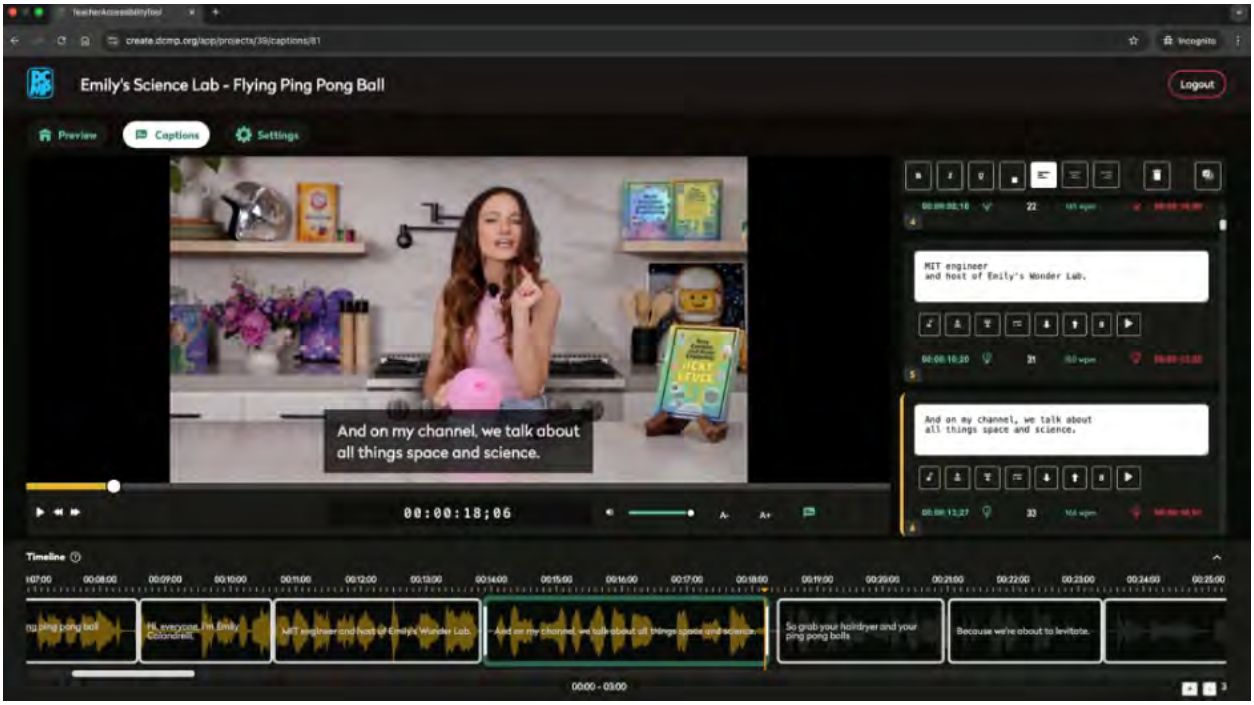
User feedback suggested that Clips and Lessons needed a way for teachers to include their own videos in lessons as a customized teaching tool. Enabling video uploads was relatively simple, but those teacher-created videos also needed to be accessible. From this user and developer feedback, the media accessibility tool was born. DCMP started building a fully accessible tool that would allow teachers to upload their own videos, then add captions, audio description, and

American Sign Language (ASL) interpretation. Currently, the media accessibility tool is in the beta testing phase.

The AI-assisted system allows users to upload a video and then choose which accessibility feature they would like to start with. It is recommended to begin with captions. Having captions that are known to be accurate helps in the creation of audio description and ASL later on. Users can choose either English or Spanish as the source language, then the system creates a "first pass" of the captions using AI models and natural language processing. This takes only a few seconds to a few minutes, depending on the length of the video. Typically, the caption text has been surprisingly accurate if the original audio is very clear. However, it is strongly recommended that the captions be reviewed and edited before final approval. Also, it must be noted that speaker identification and sound effects are not yet automatic. For now, they must be added manually. Another unique feature is that the DCMP Captioning Key guidelines for line breaks and caption segmentation are implemented automatically. This is a crucial aspect of readability that no other automatic captioning system includes. The system also allows the user to choose the intended grade level of the user, and this sets the presentation rate of the captions. If there are areas where the captions are too fast, this will be displayed in red to warn the user that an adjustment is necessary. Exports currently include .vtt and .srt; other file types can be added upon request.

**Figure 1**

*Teacher Accessibility Tool: Captioning Screen*

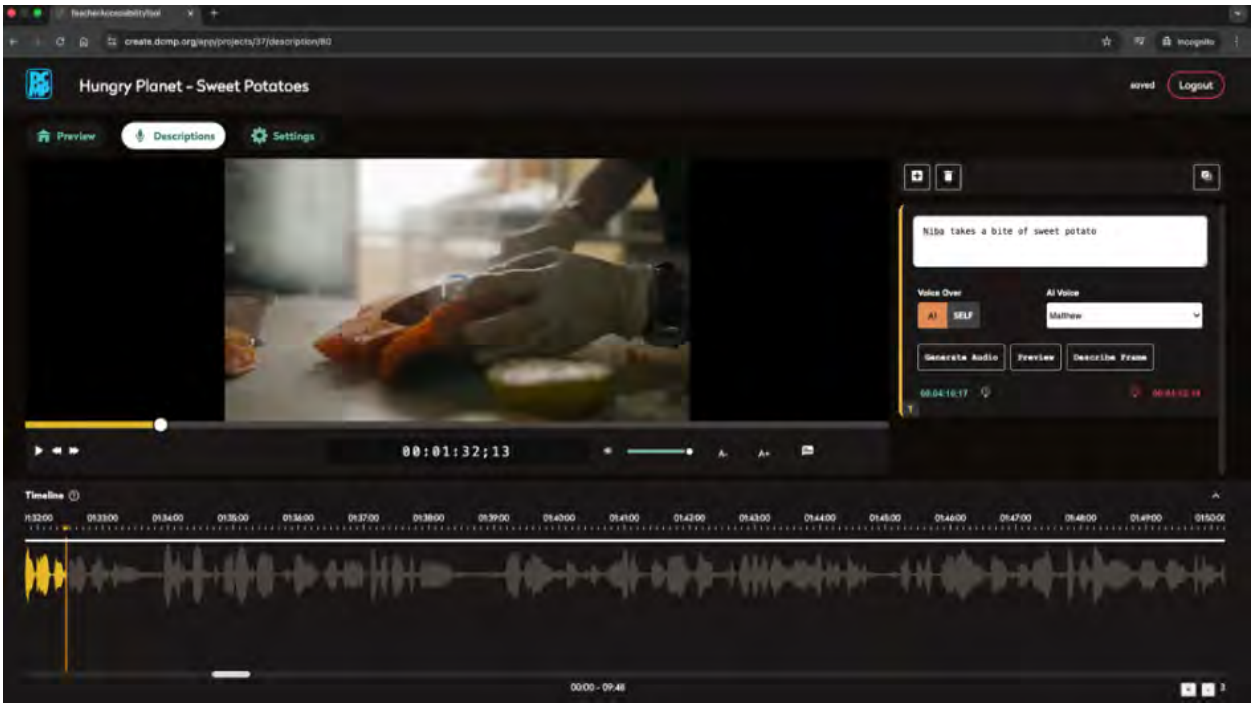



Next, the media accessibility tool supports a unique approach to audio description. Users can choose to write and record their own audio description segments or use AI to help with parts of the process. For voicing, users can record using their own microphone or select from several neural (AI) voice options. If a user is unfamiliar with an object on screen or needs inspiration for an audio description segment, the tool allows users to pause on a frame and click “describe frame.” This will generate an AI description of the video frame, enhanced by other information that is known about that portion of the video. Things like the video

title and captions are used to better inform the AI model. Users can then decide what information is most relevant and essential to describe in the time allowed, but the AI-generated image description can be an invaluable starting point. Users can reference the DCMP Description Key for assistance in this area. The controls easily allow the user to duck the original audio as needed to enable the description to be heard clearly. Mixing and exporting are handled automatically, and the fully mixed audio can be downloaded after completion.

**Figure 2**

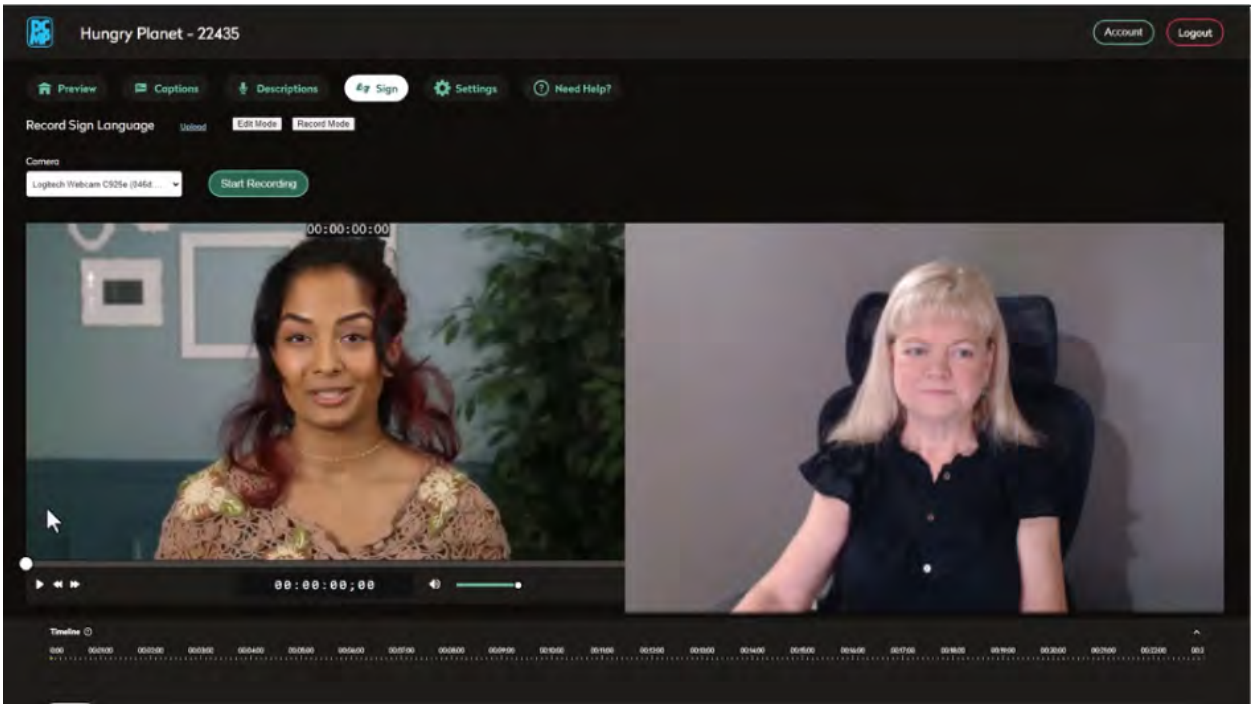
*Teacher Accessibility Tool: Audio Description Screen*



Finally, the tool enables users to add ASL interpretation to their video. This feature does not include any AI assistance. Users can film their interpreter or signer using a webcam while viewing the video on screen with enlarged captions for reference. This synchronized recording approach simplifies the process over many traditional methods. Users can stop and restart as needed, select the best takes, and leave blank spaces where interpretation is not required. Export options include picture-in-picture, or ASL only – additionally, exports will precisely match the duration and framerate of the source video.

**Figure 3**

*Teacher Accessibility Tool: Sign Language Screen*



Currently, accessibility files can be downloaded for use on any platform that supports accessible media. However, in the near future, DCMP will offer a hosting option to members. This will allow members to upload their videos, add accessibility, and then either generate a link or embed code that will enable students to view them on the DCMP accessible platform. User feedback is greatly appreciated, especially during this beta testing phase. DCMP plans to offer this tool free of charge for DCMP members and at a reasonable price for school districts, universities, non-profits, and other individuals and organizations.

Those who would like to become beta testers are encouraged to sign up. DCMP is striving to make the platform accessible to all users and invites feedback from users on how we can improve the system's functionality and user-friendliness.

DCMP has many other resources that benefit both educators and families, which can be found on the eLearning Resources page. There is a crash course for general education teachers who are new to working with students who are blind or have low vision, Access: Working with Students Who are Blind or Have Low Vision. It is a good overview of various types of vision loss, what accommodations different students may need, and so much more. It can also serve as a refresher for teachers who may have forgotten some of the details their local TSVI shared with them.

The Sight-Reading Braille modules offer an excellent way for everyone to learn to read Braille. The modules are designed for students who are in 4th grade or older. This way, peers in the classroom can learn to sight-read Braille along with students who are blind or have low vision. It is also a fun way for families to learn Braille and support their child with vision loss. The modules are enjoyable and engaging. They begin by teaching uncontracted or Grade I Braille. Currently, the first few contracted, or Grade II, Braille modules are available, and the full Grade II modules will be online in 2025. Teachers can even earn CEUs by taking a comprehensive evaluation at the end of the Grade I and Grade II modules. Students can earn a certificate of completion.

For older students, there is a transition module called: Getting a Job! for Students Who Are Blind and Visually Impaired. It is designed for students who are blind and visually impaired and the professionals who work with them. The module focuses on the transition from school to work.

Access: Description Module (Student Edition) and Access: Description Module (Teacher/Parent Edition) were developed to educate students and adults about audio description. The modules review guidelines for description, discuss laws pertaining to description, and explain the unique requirements for educational description. The student version is designed for those in 4th grade and up. It can be used to educate the entire class about the importance of audio description. This

then allows the teacher to show described videos for the whole class without the need for a student who is blind or has low vision to watch a separate version of the video.

DCMP offers many exciting, engaging, and, best of all, free resources to teachers and families. Teachers can easily select accessible educational videos to teach almost any subject to any grade level. They can incorporate the media into a comprehensive online lesson to share with the class live or remotely. And now they will be able to create their own accessible videos to add to the lessons. Join DCMP in the exciting journey of making learning fun and accessible to all students.

## References

DCMP. (2025). *About DCMP*. About the Described and Captioned Media Program. https://dcmp.org/about-dcmp

Smith, C., Allman, T., & Crocker, S. (2017). Reading between the lines: Accessing information via" Youtube's" automatic captioning. *Online Learning*, *21*(1), 115-131. https://files.eric.ed.gov/fulltext/EJ1140247.pdf

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# Antecedent Adaptations of Materials for Increased Independence of Students with Visual Impairments While Painting

**Leslie Walsh**, Indiana School for the Blind and Visually Impaired, LWalsh@isbvik12.org

**David Ray Gutierrez Miranda**, Purdue University, dgmirand@purdue.edu

**Jasmine Begeske**, Purdue University, begeske@purdue.edu

Engaging students with visual impairments (SVI) in two-dimensional art processes such as painting can be intimidating for some classroom teachers. The visual arts are important for all students to experience. SVI can and should be included in the art curriculum and art-based activities (Begeske, et al 2023). The arts can empower SVI and be a creative outlet that can improve their self-esteem, tactile skills, and fine motor skills (Potočnik et al., 2025; Wittenstein & Sovin, 2024). However, teachers may lack knowledge of how to support SVI in their classrooms during painting activities, especially when independence is prioritized. As a result, the purpose of this article is to outline some antecedent-based

strategies that teachers can implement to promote independence for SVI when engaging in traditional painting activities. Broadly defined, antecedent-based strategies for SVI are proactive changes to the environment or materials to create a more accessible environment. We emphasize the importance of promoting independence as it has been correlated with higher feelings of self-autonomy and confidence for SVI (Papadopoulos, 2014).

Through these nine low-tech strategies, teachers can make small classroom changes when engaged in visual arts activities that promote independence. We primarily describe support for painting, but these strategies may also be applicable to other art media outside of painting. For organizational purposes, the nine strategies will be discussed through the following three categories: (a) providing prompts for student artwork, (b) providing prompts for identifying materials, and (c) decreasing tactile defensiveness.

## Nine Ways to Adapt Painting for BLV Students

### Providing Prompts for Student Artwork

#### *Strategy 1: Adapting Contrast*

Some SVI benefit from adapting the contrast of materials used when painting. Teachers can incorporate bright colors or high contrast materials to help students with residual sight to identify the canvas borders and colors. An easy way teachers can do this is by placing sheet of paper that is a bright color or higher

contrast color such as black paper behind a bright yellow canvas. Color and contrast choices should be based on individual student needs and strengths. Teachers could also apply a bright colored tape along the edge of a canvas to reinforce visually were the canvas edge ends. Teachers may increase the contrast on the painting surface by adding a backlight to support visual attention. Some students may benefit from choosing a high-contrast (colors with a significant difference such as dark blue and bright yellow) or bright color (such as florescent colors) palette for painting. This may allow the student to be more independent in color selection. By enhancing contrast, students can be more independent at identifying where they are painting within the intended area of a canvas, the colors they are choosing, and the supports may create greater spatial awareness on the canvas for mark-making.

***Strategy 2: Trays or Tape Borders***

Another way to support independence during painting is to provide tools that help students to identify the borders of their painting surface. A painting substrate such as a paper or a canvas can be placed in a tray to easily indicate a tactile border for the student. Trays can help make sure that student's artworks remain in a contained space while working, which can ensure the student's canvas does not get lost and contains any mess that may occur. When painting on paper, teachers may choose to tape the edges of the paper to the table before beginning a lesson. The

slightly raised edge created by the tape creates a tactile border while painting and keeps the painting from moving. These two strategies create an elevated and/or textured border that the students can feel to know where the canvas borders are and build spatial awareness. Figure 1 shows a photo of a female SVI using a tray while painting.

**Figure 1**

*Painting Within a Tray*

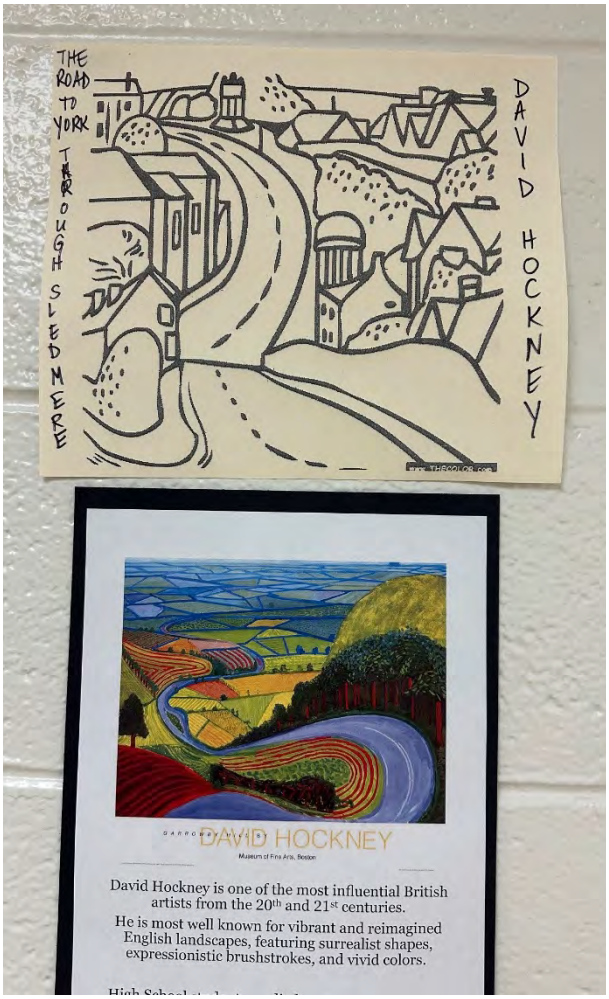
## Providing Prompts for Student Artwork

### *Strategy 3: 3-D models or Tactile Graphics*

Artists may reference what they see or observe to create their artwork. To support SVI, teachers can provide 3-D models or tactile graphics, which can provide a haptic reference for the student before they begin to make their own artwork. A 3-D model is a representation of a physical object while a tactile graphic s a representation of a 2-D image with raised lines or surfaces (Mukhiddinov & Kim, 2021). Tactile graphics can be created through special printers such as the Picture in a Flash (PIAF), thermoforming, and embossers (Mukhiddinov & Kim, 2021). To provide a 3-D model, teachers can let the students have an actual item or provide 3-D printed replicas of items that would be impractical or impossible to bring into the classroom. For example, a teacher might provide a 3-D printed version of the Notre-Dame cathedral for students to explore and a simplified tactile graphic of a stained-glass window from the cathedral before engaging in a project inspired by the intricate stained glass rose windows found in the architecture. Engaging in object exploration prior to artmaking can help students to ground the experience. Figure 2 shows an example of a tactile graphic of David Hockney's *The Road to New York Through Sledmere.*

**Figure 2**

*Tactile Graphic of The Road to York Through Sledmere*




### *Strategy 4: Wider Outlines and Tactile Shape Outlining*

To help students paint within certain shapes in an artwork, teachers may make the outlines of certain shapes more noticeable. Depending on the student's visual strengths and needs, teachers can choose to make the shape outlines wider or incorporate a tactile element into the shape outline. An easy way teachers can

make wider shape outlines is by tracing the outline with a wide-tip marker. To create tactile shape outlines, teachers can place Wikki Stix on the outline or trace the outline with a hot glue gun. Once the hot glue is dried and set, students can feel where each shape outline is within a painting and can more independently paint within the shapes. Wikki Stix can be used as a temporary shape outline within a painting, or they can be left within the painting and incorporated as part of the finished piece. Teachers can continue to add tactile shape outlines to assist a student throughout the painting process as needed. Figures 3 and 4 show SVI using Wikki Stix to help guide where they are painting. Figures 5 and 6 depict examples of completed painting that contain Wikki Stix as painting outlines.

**Figure 3**

*Student Who is Fully Blind Using Wikki Stix to Feel the Painting Areas*

**Figure 4**

*Girl Painting in Tray Using Wikki Stix*

**Figure 5**

*Wikki Stix Outlines an Eye*

**Figure 6**

*Landscape Painting with Glue on Outlines*

***Strategy 5: Audio Description***

SVI may use audio description when painting. Audio descriptions are spoken descriptions of key visual elements in a video, still image, or captured through a camera phone. These can be used to narrate and explore a work of art,

color palette, or object that one is trying to paint. Artificial intelligence (AI) apps such as “Seeing AI” and “Be My Eyes” can be used to view artwork in progress and narrate what is shown. These AI apps can produce precise and specified narration of the key elements of a work of art such as the objects shown, colors, and even the subject of the painting. These tools can be useful for understanding both completed works and works still in progress. Both “Seeing AI” and “Be My Eyes” are available across platforms in both the Google and Apple app stores. Figure 7 demonstrates how SVI can use the “Seeing AI” app to get an audio description of their painting while Figure 8 displays the written description from the “Seeing AI” app.

**Figure 7**

*Girl Using Audio Description Device to Understand What Colors Are on the Canvas*

**Figure 8**

*Description of Photo Provided by Seeing AI App*

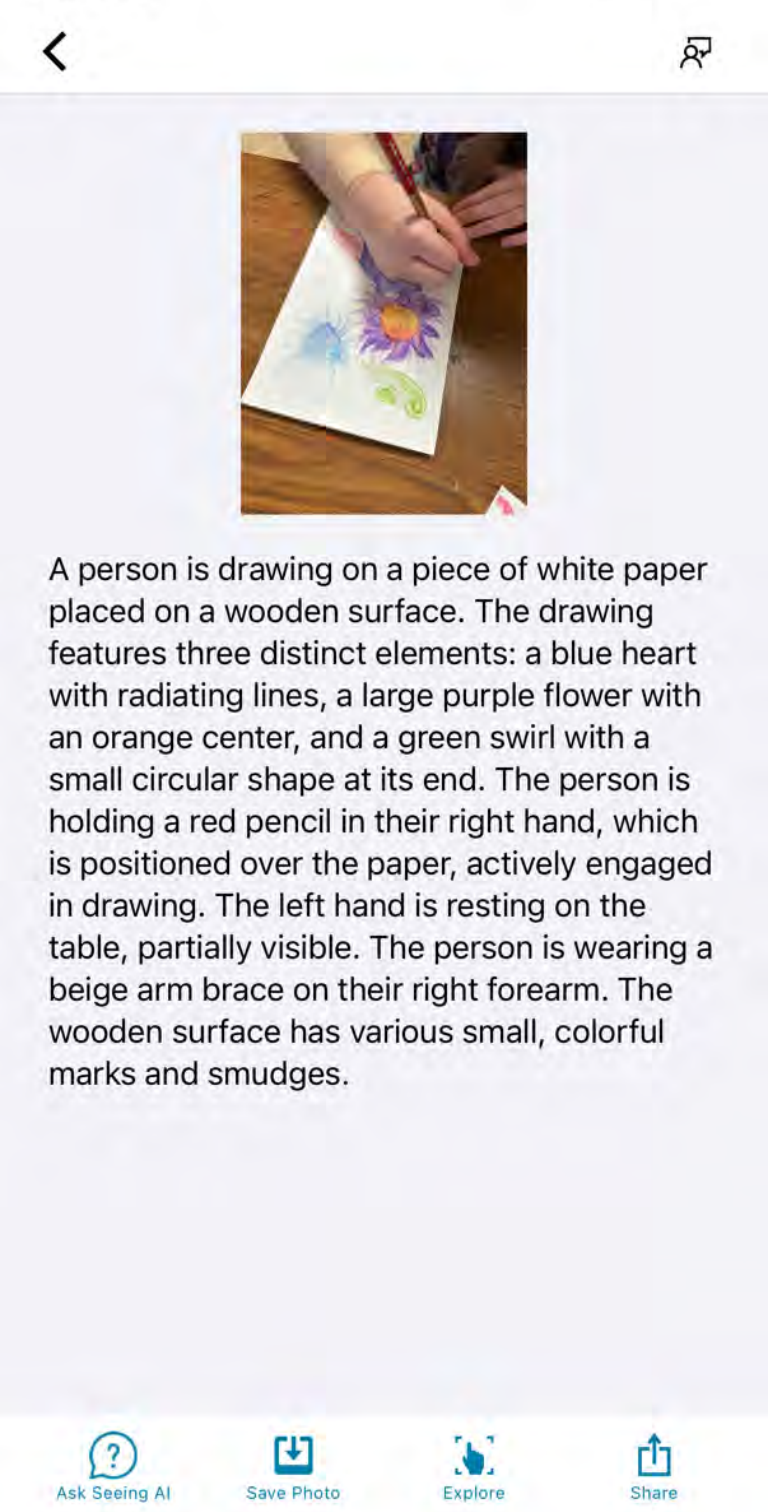


**Figure 9**

*Braille Labels Next to Paint Colors*


## Providing Prompts for Identifying Materials

### *Strategy 6: Large Print or Braille Labels*

Labeling tools and materials in an art class is a common practice to help students learn art vocabulary as well as retrieving and putting away items used for artmaking. Depending on students' literacy, communication, and visual strengths and needs, a teachers can use large font labels, braille labels, visual supports, or any combination of these to meet student needs. Braille strips can be placed

directly on to tools, near materials, or over existing labels. 3-D printed braille sleeves typically made for crayons, can be put on to a paint brush for color identification. Many art classrooms have labels to mark where tools and materials are located so students can independently retrieve and store the materials at the start and end of art class. Clear braille labels and visual supports such as a picture of the item can easily be added to existing labeling systems for increase accessibility and independence for SVI students. Figures 9, 10, and 11 show examples of different art materials that have braille labels. Figure 12 displays an example of large font labels for locations where art materials are stored.

**Figure 10**

*Clear Braille Labels Over Existing Paint Color Labels*

**Figure 11**

*Removable 3-D Printed Braille Sleeve on a Paint Brush*

**Figure 12**

*Clear Braille Labels Over Existing Classroom Materials Labels*

### *Strategy 7: Scents*

Teachers may also help students independently identify different colors by providing paints that incorporate scents. To help students best distinguish the different colors, each scent should be distinct and associated with a single color (Platt & Janeczko, 1991). For example, orange paint can be orange-scented, yellow paint can be lemon-scented, and red paint can be cherry scented. Teachers can easily create their own scented watercolors, tempera, or acrylic paints by mixing in essential oils, imitation flavoring, or Kool-Aid into their paint. Alternatively, some commercially available products include Crayola Silly scents, Crafty Dab Scented paint markers, Scentos scented paint dabbers, and CraZart scented CraZgels kids' paints.

### *Strategy 8: Tactile Paints*

Alternatively, teachers could provide students with art materials that associates each color with a different tactile element. For example, Kandalam and colleagues (2019) used six textured crayons that had a specific textual quality associated (i.e., rough, sticky, hard, smooth, slippery, and soft) with each color. When working with paints, teachers could mix-in small items that have unique textures with each color or allow students to incorporate textures into their own paint colors. Items that can be incorporated into tempera or acrylic paint to create textured paints include sand, grains, and tiny foam balls. Teachers could also

incorporate paints with a tactile quality into the painting process such as puff paint, heavy bodied paints, or paint additives that change the textural quality such as acrylic mediums, modeling paste, texture paste, or coarse pumice gel. An economical alternative to paint additives, dry wall mud can also be added to acrylic paints to change the textural quality of the paint and painting. Paintings created with textured paints give the finished artwork a more interesting and understandable area for SVI to feel, explore, and share. Figure 13 shows a female SVI using various materials to add texture to her fingerpainting.

**Figure 13**

*Girl Fingerpainting with Small Balls, Sand and Grains to Add Texture to Painting*

## Decreasing Tactile Defensiveness

### *Strategy 9: Materials that Reduce Tactile Contact with Art Materials*

Sometimes SVI may not want to participate in art activities because they do not like the way different materials feel on their skin or hands. To combat this, teachers may allow students to use tools that make it unlikely for students to touch the paint. For example, teachers may allow students to wear gloves or use long handled paint brushes to avoid contact with paint. Or they may choose to use alternative paint materials such as tempera Kwik Stix or paint dabbers. If students do not want to participate in painting using traditional, adapted, or alternative materials, teachers may make painting more engaging, active, and familiar by allowing SVI to use toys to create their artwork. Toy cars, like Hot Wheels, are a readily available toy that can be used for a painting activity. Toy cars can easily move across a canvas or paper through paint. Toy cars can be pushed with a paint brush if a student prefers to be further from the sensation of touching paint. They can also be placed within a tray and tipped to move the car through the paint. Painting with toys, like cars can be helpful when painting with students with limited fine motor skills, motor control, or other complex needs. Remote control cars can also be driven through paint to engage reluctant painters. Figures 14 demonstrates how SVI can use toy cars during painting.

**Figure 14**

*Boys Painting Using Toy Cars*

## Conclusion

Learning with and through the visual arts is an opportunity that should be offered to all students including SVI (Begeske et al., 2023) and engaging in the visual arts can have positive benefits for SVI (Potočnik et al., 2025; Wittenstein &

Sovin, 2024). In this article, we provide nine antecedent-based strategies that teachers can use to support SVI with traditional painting activities. By incorporating these strategies, teachers can provide greater access and independence for SVI when participating in the arts.

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# Reflections on a School's Implementation of a Standardized Tangible Symbol Set

**Amy Query**, University of Utah
amy.query@utah.edu

**Beth Brady**, Hunter College CUNY
LBrady@hunter.cuny.edu

**Sarah Ivy**, University of Utah
Sarah.ivy@utah.edu

**Paige Furbush**, University of Utah
Paige.furbush@utah.edu

In our presentation at this year's Council for Exceptional Children Conference in Baltimore, we described lessons learned from our support and engagement with a private, urban school during their first year adopting a school-wide standardized tangible symbol system. The school serves students with intensive support needs, including many who use mobility devices and have visual impairment, including deafblindness. A unique aspect of the school is that each student is supported by a one-to-one paraprofessional. Students were served by large multidisciplinary teams that included educators, speech-language pathologists, occupational and physical therapists, and specialists in sensory supports, such as teachers of the visually impaired and/or hearing educators. The

school connected with Adaptive Design Association, a small New York City-based non-profit, to manufacture a tangible symbol set. The standardized symbols were chosen by leaders in the school for their durability and relevancy to their students' schedules. Every classroom had a full set of 39 symbols and some of the students had a few individualized tangible symbols from before. See Figure 1 for an example tangible symbol set.

**Figure 1**

*Classroom Display of Standardized Tangible Symbol Set*

Our engagement with the school included an introductory presentation to all school staff on tangible symbol implementation, observations and discussions with educational teams to support specific students, and ongoing engagement with directors of the school to provide insight, feedback, and resources. We created one specific resource – a task analysis of a routine for school staff to implement tangible symbols in the context of an anticipation calendar. In this article, which is intended to provide initial general reflections from an ongoing research study, we provide a brief introduction to tangible symbols, the resource we created for professionals to implement an anticipation calendar routine, lessons learned from our experience, and some specific recommendations that professionals might consider as part of implementing a school-wide tangible symbol system.

**Introduction to Tangible Symbols**

Tangible symbols are physical representations of objects, people, places, and ideas that individuals communicate about. Historically, they have been used with students who have multiple disabilities, sensory impairments, or who are nonverbal and communicate at a presymbolic level. However, some professionals have expressed that tangible symbols may benefit a wider population than traditionally assumed. This aligns with Rowland & Schweigert (2000), who suggested that tangible symbols may support communication for children with autism spectrum disorders. They also found that learners who already use gestures or vocalizations,

demonstrating intentional presymbolic communication, tend to acquire tangible symbol use more readily than those without such foundational skills.

Tangible symbols are typically made from real, partial, or textured objects that can be touched, explored, and manipulated (Trief, 2007). As a form of augmentative and alternative communication (AAC), they support a range of functions, within both receptive and expressive communication. Such as making choices and sequencing activities, helping to support routines, facilitate the expression of preferences, support requests, and promote shared participation in learning. Rowland and Schweigert (2000) observed that tangible symbols can serve as a bridge to more abstract forms of communication, such as speech or manual sign language. They can complement other modes of communication such as gestures, body language, early verbalizations, signs, and voice output devices.

Tangible symbols typically share perceptual features (to the extent possible)—such as shape, texture, and consistency—with the concept or referent they represent. This tactile connection enhances the learners to derive meaning from the symbols (Werner & Kaplan, 1988). These symbols are referred to in the literature by various terms, including object cues, objects of reference, anticipation cues, tactile symbols, and tangible cues. They place fewer demands on memory and abstract representation, making them cognitively accessible for individuals with visual and additional impairments (Rowland & Schweigert, 2000). Their use

also supports emotional regulation, often reducing frustration among individuals with limited symbolic language.

**Individualized versus Standardized Tangible Symbols**

Tangible symbols may be individualized or standardized, each offering distinct advantages. Individualized symbols are constructed from materials that are personally meaningful to the student, helping to build stronger connections between the symbol and its intended concept. These are primarily handmade by educational staff.

In contrast, standardized tangible symbols are uniform across multiple students and therefore can be made commercially available thereby reducing the time and effort required to create individualized symbols. A significant concern with individualized symbol sets is the inconsistency that may be experienced by students as they move between classrooms or schools. In transition, different educators may select different objects to represent the same concept, creating confusion and setbacks for a student (American Printing House for the Blind, 2024). To address these challenges, a standardized set offers a consistent approach that supports communication continuity across settings wherein the same standardized symbol set is adopted.

**Figure 2**

*Task Analysis of Anticipation Calendar Routine (Start of Activity)*

**Fidelity Checklist for Transition to Activity/Destination**

(For Students Using Anticipation Calendar)

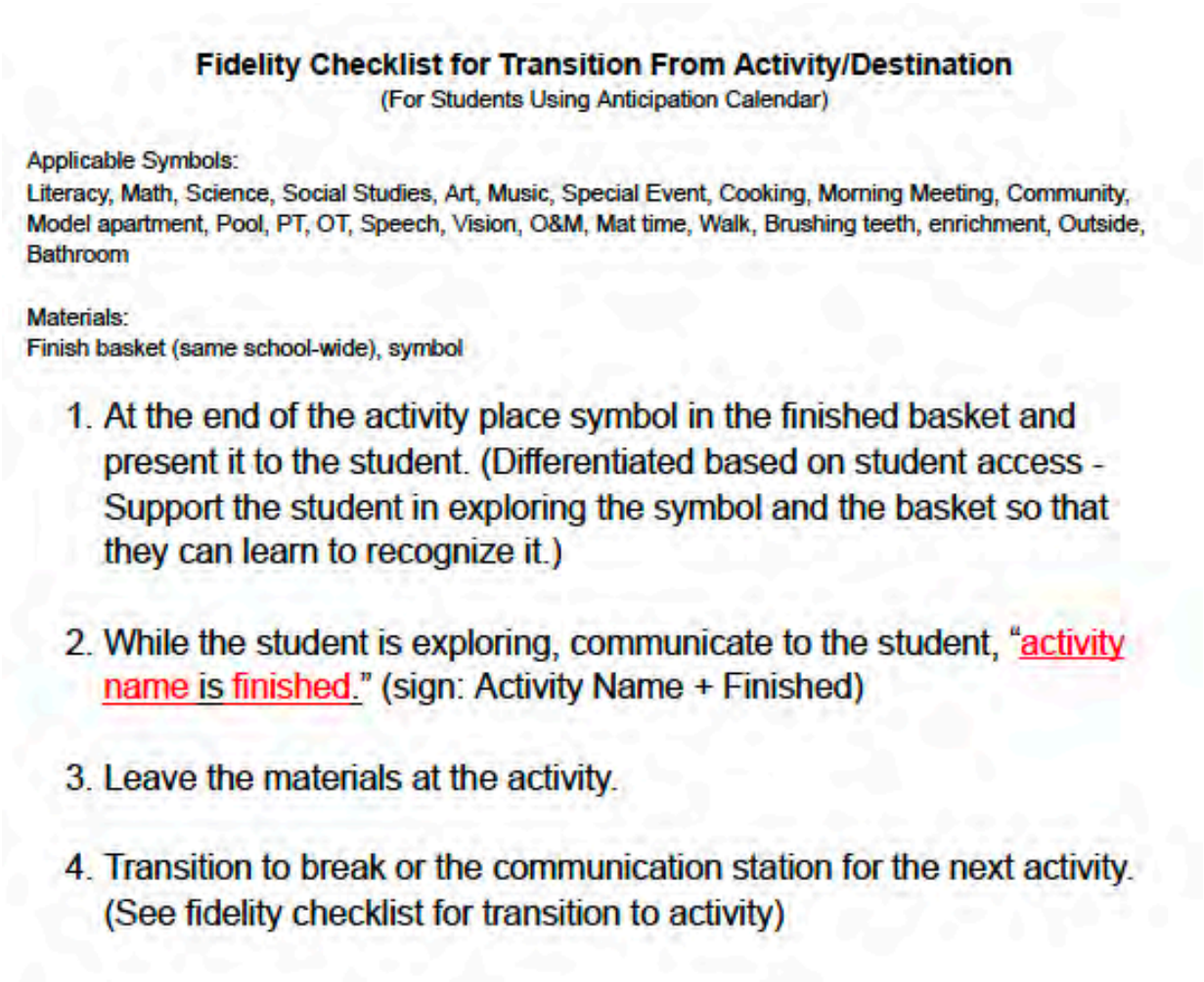
Applicable Symbols (not comprehensive list):
Literacy, Math, Science, Social Studies, Art, Music, Special Event, Cooking, Morning Meeting, Community, Model apartment, Pool, PT, OT, Speech, Vision, O&M, Mat time, Walk, Brushing teeth, enrichment, Outside, Bathroom (Use related service symbols if pull-out services)

Materials: Future basket (same school-wide), symbol

1. Communicate to the student, "its time to go to the communication station." (sign: COMMUNICATION + AREA + GO)
2. When you arrive at the station, communicate to the student, "now we are at the communication station." (sign: ARRIVED + COMMUNICATION + AREA)
3. Place symbol on display and present to the student. (Differentiated based on student access - Support the student in exploring the symbol and the basket so that they can learn to recognize it.)
4. While the student is exploring, communicate to the student, "it's time to go to activity name." (sign: ACTIVITY NAME + GO). Have a "conversation" about the activity with the student to support their understanding.
5. Look for signs of symbol understanding from the student and record data on progress monitoring form.
6. Leave the materials and transition to the activity.
7. At arrival/start of activity show the symbol and communicate to the student, "now time for activity name." (sign: ACTIVITY NAME + NOW)
8. Immediately start the activity.

**Figure 3**

*Task Analysis of Anticipation Calendar Routine (End of Activity)*



**Fidelity Checklist for Transition From Activity/Destination**

(For Students Using Anticipation Calendar)

Applicable Symbols:
Literacy, Math, Science, Social Studies, Art, Music, Special Event, Cooking, Morning Meeting, Community, Model apartment, Pool, PT, OT, Speech, Vision, O&M, Mat time, Walk, Brushing teeth, enrichment, Outside, Bathroom

Materials:
Finish basket (same school-wide), symbol

1. At the end of the activity place symbol in the finished basket and present it to the student. (Differentiated based on student access - Support the student in exploring the symbol and the basket so that they can learn to recognize it.)
2. While the student is exploring, communicate to the student, "activity name is finished." (sign: Activity Name + Finished)
3. Leave the materials at the activity.
4. Transition to break or the communication station for the next activity. (See fidelity checklist for transition to activity)

## Anticipation Calendar

At the start of implementation, staff requested support in conceptualizing how to use tangible symbols within anticipation routines to promote consistency and shared understanding. In response, our team developed a fidelity checklist to guide the initial use of tangible symbols as part of anticipation calendars. These

procedures were intended to help students understand transitions both to and from activities or destinations, while also serving as a practical learning tool for staff. The checklist was not meant to override individual student needs but rather to provide a foundational approach for implementation. The following steps were introduced as part of this effort (see Figure 2).

**Lessons Learned**

In our work with this school, we learned how implementing tangible symbols at a school-wide level aligned with and challenged aspects of the school's existing culture and values. Some of those values remained under discussion, while others shifted during the process. Many staff members shared that they came to see tangible symbols as beneficial not only for students with visual impairments, but for all students across the school.

Team collaboration emerged as a critical component of successful implementation. Staff members contributed diverse perspectives that influenced symbol selection, placement, and usage. Through ongoing conversations, team members developed a stronger understanding of how vision impacts communication, which informed their selection of materials that met individual sensory needs. These discussions occurred throughout the school year and required educators to remain open to input from colleagues across disciplines. By combining their unique expertise, teams brainstormed strategies that were best able

to support individual student needs as well as school-wide needs and aligned them with the values of their school.

Intentional planning and clear communication can support effective implementation. Teams discussed whether to introduce the system school-wide or start with a small group, enabling flexibility based on readiness. Instead of limiting symbol use to a specific classroom or program, teams embedded the system across grade levels and learning environments.

Challenges included staff and student turnover, which affected continuity of use. Questions arose about how to personalize symbols for instructional content beyond daily routines and how to coordinate implementation across departments with limited scheduling overlap.

The implementation process highlighted the ongoing nature of learning and adaptation required for school-wide use of tangible symbols. While challenges such as staff turnover and scheduling barriers impacted consistency, the team remained committed to reflection and collaboration. Questions about personalizing symbols for a broader range of instructional contexts sparked valuable dialogue. This experience demonstrated that the integration of tactile systems is not static but continues to evolve in response to student needs and team growth. The lessons learned through this process informed not only the school's current practices but

also offer guidance for others considering similar school-wide tangible symbol systems.

**Recommendations**

- Include all relevant team members in symbol development before rollout, ensure consistency, and shared ownership.
- Establish shared goals around use of symbols within the school. Consider phased implementation with timeline for implementing specific goals through the rollout of a school wide system.
- Plan for sustainability and ongoing changes within the school (i.e., staffing, materials).
- Create an onsite workspace for symbol adaption**.**
- Label and organize symbols throughout the school ensuring access for everyone.
- Create structures to answer questions during ongoing implementation.
- Use data and reflective practices to guide adjustments and improve outcomes.
- Include effective teaming strategies related to implementing AAC and tangible symbols in pre-service and in-service professional development**.**
- Collaborate across disciplines to integrate tangible symbols with other forms of AAC (low or high tech).

## Conclusion

In conclusion, rolling out a school-wide system of any sort requires advanced planning, coordination, and collaboration. Many professionals have valuable knowledge to contribute to the planning and implementation of tangible symbols, including speech language pathologists, teachers of students with visual impairments and/or deafblindness, occupational therapists, assistive technology specialists, and teachers. Families also are critical members of the educational team. Having a structured plan with input from a multi-disciplinary team that includes specific objectives, strategies, and effective support will enhance buy-in and consistency. Make sure to build in ample opportunities to collaborate, problem solve, and create new objectives as progress is made. Ultimately, a robust tangible symbol system will need to evolve over time and therefore requires a system for expanding vocabulary and symbols. As a final note, understand that standardization does not eliminate the possibility for individualization and tangible symbols are often only one mode within a total communication system – providing the necessary supports that will lead to individual student success is always of the utmost importance.

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# Teaching Students with Sensory Impairments Using Evidence-Based Strategies from the Field of Autism

**Anna Tess**, Foundation for Hearing and Speech Resources,
atess@fhsr.org

Hearing loss and vision loss are low-incidence sensory disabilities, and there is an even lower incidence of children with hearing loss, vision loss, and a comorbid disability. However, the number of students who are Deaf with Disabilities (DWD) and vision loss with an additional disability continues to rise in classrooms across the country. According to the Gallaudet Research Institute (GRI, 2011), 40% of students with hearing loss have an additional condition, such as low vision, legal blindness, developmental delay, learning disabilities, orthopedic impairment, attention-deficit/hyperactivity disorder (ADHD), traumatic brain injury, cognitive delays, emotional disturbance, autism spectrum disorder (ASD), Usher syndrome, or other health impairments. Kancherla et al. (2013) found up to 70% of children born with vision loss also have ASD.

ASD is one of the most commonly occurring comorbid disabilities, and studies have shown that the incidence of ASD is more prevalent in students with hearing loss and students with vision loss than their typically hearing or seeing peers. Szymanski et al. (2012) found that an average of 1 in every 59 students with hearing loss also had ASD. According to the Center for Disease Control (CDC) (2012), the ratio of students who had typical hearing with ASD alone that same year was 1 in 68, though by 2018, this had increased to 1 in 59 (CDC, 2018). It can be easily assumed that if the prevalence of ASD has increased for typically hearing students, the prevalence has also increased for students with hearing loss. However, no updated report for children with hearing loss and ASD has been published, and the number of children with hearing loss and ASD may be underestimated due to less valid and less reliable assessments for students with hearing loss (Scott & Hansen, 2018). The co-occurrence of ASD and vision loss and hearing loss is higher than the occurrence of ASD in children with typical vision. (Kancherla et al. 2013).

This paper will primarily focus on students who have a hearing loss, vision loss, and ASD, while including information and strategies that will prove useful in the education of any student with a sensory loss. It will also articulate the deep need for more research into the effectiveness of evidence-based practices for teaching students with a hearing loss, vision loss, and additional disabilities.

It can be difficult to determine whether a student's language and academic deficits are due to ASD, hearing loss, vision loss, or a combination of both. These students demonstrate a wide range of skills and abilities, and Teachers of the Deaf (ToDs)/Teachers of the Visually Impaired (TSVI) often express frustration at their lack of knowledge in teaching students with additional disabilities. There are currently no evidence-based strategies specifically for students with hearing loss, vision loss, and additional disabilities. Vision loss and hearing loss are both sensory-impacting disabilities and can cause an array of communication and functional abilities. Every child with a vision loss or hearing loss is unique in their ability to hear, see, and manipulate the environment.

An additional disability such as ASD can contribute to a wide range of cognitive, behavioral, and functional difficulties. Students with additional disabilities tend to show deficits in language and communication (Guardino & Cannon, 2016). Students with hearing loss and intellectual disabilities can experience developmental delays that affect all learning areas (Bruce & Borders, 2015). Hearing loss is a language-impacting disability, as is ASD, meaning that if a child has both hearing loss and ASD, they face two language-impacting disabilities. Students who are DWD have varied receptive and expressive language outcomes depending on the type of disability (Cupples et al., 2013; 2016). Variability in language levels can make diagnosing an additional disability

difficult, and some students are diagnosed with a comorbid disability later due to the challenges in diagnosis (Wiley & Meinzen-Derr, 2012).

Hearing loss alone can significantly impact a student's language, social development, and reading skills (Scott & Dostal, 2019). Children with vision loss may have more aberrant behaviors in new environments (Jacko, 2023). Many of these students need additional support in their educational settings, such as close proximity to the teacher, visuals, braille, interpreters, modifications to the curriculum, interpreters, and amplification. Amplification devices such as cochlear implants, hearing aids, and Bone Anchored Hearing Aids (BAHAs) can help children hear and communicate, but students with hearing loss still tend to miss many essential language cues. Language skills in children with hearing loss can vary due to many factors, such as amplification, language input, and more.

Hearing loss and vision loss can compromise language and communication, which are essential to a child's overall development. If the communication and language input a child is exposed to is not meaningful, the child may show deficits in syntax, phonology, semantics, morphology, or pragmatics and experience gaps in language development. Children with hearing loss often need increased exposure to language compared to typically developing children. Students who are DWD tend to have limited communication and language and thus may display

more challenging behaviors (Bruce & Borders, 2015). The combination of ASD and hearing loss can exacerbate these challenges (Szymanski, 2012), as can the presence of a learning disability.

Students communicate in the classroom in a variety of modes, including signed language, spoken language, braille, eye gaze, behavior, or augmentative and alternative communication (AAC). For students to follow routines and understand schedules, they need to have some level of communication, but receptive and expressive communication can be significant challenges for students with hearing loss and vision loss. With limited language and communication, students may become frustrated and exhibit disruptive behaviors. Various factors can impact language growth and communication for students with sensory impairments, such as amplification use, communication modes, or an additional disability. Students with sensory impairments are diverse, and it can be challenging to assess any individual student's potential and plan for appropriate instruction (Meinzen-Derr et al., 2009; 2011). Children with ASD, cerebral palsy, and developmental delays have been found to achieve lower receptive and expressive language outcomes compared to children with other disabilities (Cupples et al., 2013). To close this gap between these groups of students, students with sensory impairments need interventions and supports that can help them increase their language and communication.

## Educational Settings

Students who have sensory impairments are placed in a variety of settings, and receive a variety of additional services, as do students with hearing loss alone (Luckner et al., 2016). Some students who are DWD are placed in classrooms for hearing loss, while others are in classrooms for ASD. This may be entirely appropriate. Borders et al. (2015) stated, "the student's [individual] needs should be the force behind Individualized Education Program (IEPs) and educational placements" (p. 216). These students need multiple providers to collaborate to create the most appropriate program placement and setting to maximize learning (Luckner et al., 2016). Additionally, the placement of students in one classroom may be influenced by the availability of a ToDs and TSVIs.

Students who have sensory disabilities frequently need services from multiple providers, both within and outside the educational field (Borders et al., 2015; Jackson et al., 2015). Szymanski et al. (2012) noted that a school for the deaf may specialize in visual and language supports for students with hearing loss but may lack the expertise needed to teach students with both hearing loss and ASD. According to Borders et al. (2015), students who require the most services often receive the least, and the IEP goals and services depend on the student's educational label. The support these students receive largely depends on how well professionals collaborate and the availability of services in their area.

Unfortunately, there is limited research on evidence-based strategies or interventions for teaching students who are DWD (Guardino & Cannon, 2015) and students with vision loss. Most studies have excluded students with additional disabilities to create more homogeneous groups, which makes it difficult to generalize their findings to students who are DWD (Meinzen-Derr et al., 2009). Current research tends to focus on specific groups, such as students with cochlear implants or those with cortical vision impairments.

## Evidence-Based Practices

While there is no cure for ASD, a long list of Evidence-Based Practices (EBPs) has been shown to help with language, communication, and behaviors (Syzmanski, 2012). For students with ASD, these EBPs have led to positive outcomes in social skills, communication, challenging behaviors, joint attention, play, cognitive skills, school readiness, pre-academic skills, motor skills, self-help skills, vocational skills, and mental health (Wong et al., 2013). However, little research has been conducted on EBPs for students with hearing loss and vision loss. ToDs and TSVIs, and professionals working with these students, need EBPs to provide the best education possible and help these students achieve on par with their typically-developing peers.

Common EBPs for students with ASD include reinforcement, prompting,

time delay, modeling, functional behavior assessments, structured playgroups, visual supports, and naturalistic intervention. Many of these EBPs, while developed for ASD, could potentially be used with students who have hearing loss and vision loss, although there is limited research on their effectiveness. Some of the EBPs for ASD may need modifications to meet the needs of students with sensory impairments, and some modifications may overlap with those used for students with ASD. Some EBPs that have been found effective with many students with varying disabilities have been adapting the physical environment to decrease distractions and including physical structures, visual schedules, and visual structures.

The physical structure is the environment the child is in and how it is set up. A child needs to be able to trust their environment, and a structured physical environment helps children recognize familiar places and understand that different places or classroom spaces have unique purposes (Hume, 2011). When the classroom environment has clearly defined areas, these visual cues can increase meaning and understanding for children (TEACCH Autism Program, n.d.). With clear physical structure and boundaries, a student can understand tasks and expectations with little language. This may include a reading area, snack area, play area, and more. These areas may have physical boundaries with tape, tables, and curtains. The more the physical environment changes, the less predictable the

space is. Teachers also should be mindful of how much is on their walls and in the room.

Schedules are a part of every person's life, whether it is a calendar, planner, or phone schedule. A schedule tells us where to be and when to be there, reduces anxiety, and teaches flexibility (Hume, 2011). Typically, when a teacher teaches, they may state the directions or the tasks quickly, which can be hard for a child with hearing loss to comprehend. In contrast, a visual schedule builds on a student's receptive language and reduces the need for language. A visual schedule may use photographs, full objects, partial objects, icons, and words to communicate a list of activities. The type and length of the visual schedule is different for every student and depends on their skills. Some schedules can include one class while other schedules can include the entire day. These schedules should be explicitly taught to the students to ensure that they understand their day and expectations. Once the visual schedule is taught, a student should learn how to manipulate the schedule, environment, and increase their independence. As the student gains independence, the dependence on adult prompting will decrease (Hume, 2011).

Visual organization, tactile cues, and structure help students understand expectations and independent task completion. Visuals and tactile cues can help

give context to what is being said or how the task at hand is to be completed (Hume, 2011). This allows the learner to access the instructions or the directions of a task without the teacher's auditory input or asking the teacher for repetition. Visual structure is essential for many reasons: It increases both meaning and understanding without using language, and it allows students to refer to the directions independently when needed. Since students with sensory disabilities tend to struggle with language, visual structure can provide a clear visual understanding of expectations. By delivering the directions visually, teachers can reduce the number of verbal directions or prompting. For students with visual impairments, this can include using materials with high contrast, auditory text, magnified materials, large print, tactile graphics, full objects, braille, and cues. For students with hearing loss, these visuals can include full objects, pictures, and written words, depending on the learner's needs. For all learners, these visuals can be simple to complex, such as a first, then directions, or more complex written directions that the child reads independently, then completes. These visual directions or structures allow the students to reference the steps of a task without relying on their auditory memory. With our students with sensory impairments, we want to be aware of where we are putting these visuals. These visuals should be in a place that is easily accessible with good lighting and can be understood by the learner.

## Modifications

As stated above, some of these EBPs will need to be adapted to better serve children with hearing loss and vision loss depending on the student and their needs. Modifications may include the use of assistive devices like AAC, braille, hearing aids, cochlear implants, and FM systems. Students with sensory impairments may benefit from additional interventions such as explicit instruction, pre-teaching, modified activities, touch cues, and labels (Luckner et al., 2016). Interventions for students with sensory impairments may also need to be adapted to include signed language, communication boards, captions, enhanced contrast or size of materials, visuals for noise-making objects, and communication partners who are familiar with sign language or braille.

Szymanski (2012) recommends using modifications such as simple language, consistency with phrases, individualized schedules, visuals, and a structured classroom. As Zane et al. (2014) stated, functional and effective communication must be taught and utilized for students who are DWD. More research is needed to determine the most effective modifications and accommodations for this group of students.

## Conclusions

There is currently a lack of empirical data to define a theoretical framework

or provide specific EBPs for students who have sensory disabilities. Despite the growing number of students who have a vision loss, hearing loss and additional disability, this population is often overlooked in educational research. While the population's small size and heterogeneity make it difficult to confirm the efficacy of any particular strategy, there is a vital need to support these students and provide more support to teachers to address their diverse needs.

Researchers tend to rely on frameworks from other fields, such as ASD or learning disabilities (Guardino & Cannon, 2015), and Bruce and Borders (2015) recommend adapting established EBPs from other fields to meet the needs of students with a hearing loss, vision loss, and an additional disability. Still, research investigating how these strategies impact language, communication, and behaviors would greatly benefit students who sensory disabilities and their educators. With more insight into how these students learn best, and a larger array of EBPs available to them, teachers can create or adapt strategies such as physical structure, visual and visual structures to help their students succeed.

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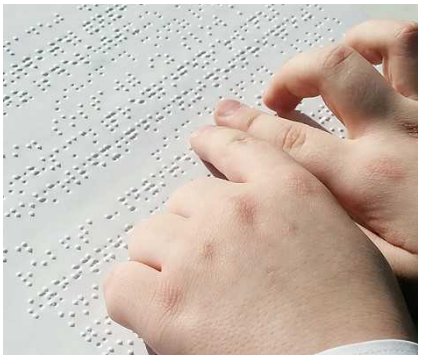

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