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Technology Spotlight: Art Adaptations for Students with Physical Disabilities

by Mari Beth Coleman

It is with regret I am announcing that, due to lack of sufficient time to devote to this column, this will be my last *Technology Spotlight*. I have enjoyed writing *Technology Spotlight* since its inception and I appreciate those of you who have read my ramblings for the past two years. I also am announcing that DPHMD needs someone to take over writing this column. If you are interested in writing about assistive or instructional technology for students with physical disabilities, please contact DPHMD's fabulous Newsletter Editor, Linda Thomas.

Since this is my last *Technology Spotlight*, I thought I would write about something fun: assistive technology (AT) for art! I recently have had the opportunity to collaborate with a professor of art education. Through research, we confirmed our suspicion that many art teachers are not knowledgeable about AT for students with physical disabilities. Part of the responsibility for preparing these teachers to work with students with physical disabilities falls on art educator preparation programs; however, special educators must take an active role in training art educators in the use of AT to make sure art experiences are meaningful for their students (Coleman & Cramer, in press).

Unfortunately, many students with physical disabilities have their art projects completed by paraprofessionals or peers instead of receiving appropriate adaptations that allow them to participate to the maximum extent possible. Art is about self-expression. Participating in the process is much more important than having a perfect final product (Cramer, 2012). It is crucial that educators find ways to increase meaningful participation in art activities for students with physical disabilities.

It is beyond the scope and purpose of this article to go into all the ways to adapt instruction and assessment in

art for students with physical and/or multiple disabilities. A few additional resources from recent presentations (e.g., *PowerPoint* presentations, art adaptations checklist) are available on [my website](#). These may be helpful to you, especially if you want a few additional ideas for students with visual impairments or multiple disabilities.

It is essential to keep in mind that all art educators may not be trained in implementing partial participation, creating task analyses, using prompting strategies (e.g., least prompts), and adapting assessments (e.g., individualized rubrics based on specific student capabilities). Good instruction used in other settings should be carried over into the art classroom. For students with physical disabilities who do not have intellectual disabilities, multiple accommodations may be necessary to ensure that all grade-level art education standards are covered despite physical barriers in creating art works. For students with more significant intellectual disabilities, you will need to work closely with the art teacher in your school to discuss how to modify instruction so that each student achieves the most meaningful art standards, or the most meaningful parts of certain standards, for his/her grade level. Below, I will discuss some no tech to high tech solutions for adapting art instruction for students with physical disabilities. For the sake of time and space, I am focusing on physical access and will not discuss adaptations specific to concomitant disabilities (e.g., vision losses) other than discussing a few ideas for students who also have complex communication needs. I hope to give you a few ideas you can use with your students. Better yet, I hope you will share these ideas with the art teacher(s) who work with your students or paraprofessionals who accompany your students to the art classroom.

Levels of Participation

There are numerous possible ways students with physical disabilities can participate successfully in art activities. The idea is to provide the most meaningful experiences possible. This may mean that the student with a physical disability does not complete the activity in the same way or he/she completes an alternative activity from classmates. Examples of levels of participation include:

- Independent completion of projects with accommodations such as more time and adapted tools
- Independent completion of projects with assistance with materials
- Verbal direction given to others on how to assist
- Partial physical assistance (hand-over-hand or hand-under-hand assistance, or partial completion of project such as pre-cutting of complex shapes)
- Alternative activities (if they provide a more meaningful experience through art. For example, student who cannot physically draw may find pictures or clipart online to incorporate into a piece of art.)
- Full physical assistance (hand-over-hand or hand-under-hand assistance for complete activity or activity is completed by another person. This should be a last choice and only done if the student has input.)



Example of two old 3-inch 3-ring binders connected with Velcro to create a slant board. The clipboard attachment was added to secure papers to the surface.

Adapted implements. Students with decreased fine motor skills may require larger or softer writing surfaces that are easier to grasp than typical implements. The following pictures and captions demonstrate just a few possibilities for adapting implements to make drawing, coloring, or painting more accessible.

Low Technology Solutions

There are several commercially-available low-technology art solutions. With a little creativity (we are talking about art, after all), a visit to a hardware or crafts store can yield tons of ideas for cheap low-tech devices that can be used as AT devices for your students with physical disabilities. Here are a few commercially available and cheap, homemade ideas:

Surface adaptations. As with writing, it is important that surfaces are adapted to ensure maximum access for students with physical disabilities. This includes making sure that the table or desk is at the right height to meet the student's needs. It also includes securing paper or other media to the surface with tape or non-slip rubber. Slant boards often are used for students with limited range of motion and can be beneficial in the art classroom. One consideration in the art room is to use an easel (either floor-standing or desktop easel on a wheelchair tray) for activities other than, and including, painting. Slanted surfaces can be created with Velcroed-together 3-ring binders. At office supply stores, you can purchase a clipboard attachment that can be added to a binder for a cheap, multipurpose slant board.



Drawing adaptations: Pencils. Larger, softer, or weighted pencils for drawing. From left to right: small paint roller handle with a pencil secured inside with Silly Putty; Bip Grip, a commercially available pencil holder that is slightly weighted; pencil adapted with a Styrofoam ball; commercially available weighted pencil holder that would be used to decrease tremors or athetoid movements while drawing; mechanical pencil with commercially available pencil grip; pencil shortened for increased control and covered with a curler sponge.



Drawing adaptations: Markers. On the left, a T-shaped piece of PVC pipe was adapted with a Velcro strap for students with very limited ability to grip. On the right, a piece of a gallon milk jug was cut out to create a handle for students who cannot grasp the marker.



Painting adaptations. Commercially-available adapted paintbrushes.



Painting adaptations. Dish scrubbers can be filled with paint or dipped in paint for painting large surfaces.



Coloring adaptations. The yellow, multi-color crayon at the bottom left and the orange fingertip crayon at the bottom right are commercially available. The red, orange, and blue egg-carton crayons were created by melting old, broken crayons. These fit nicely in the palm of the student's hand without requiring a lot of fine gripping. The middle two were created by attaching crayons to balls purchased at a dollar store.



Painting adaptations. Commercially-available mouthsticks can be used for students who cannot use implements with their hands or feet.

Other painting adaptations. There are numerous other adaptations that can be used to make art accessible. I do not have a picture of them, but there are commercially-available Blow Pens that may be useful for some students with poor fine motor skills. I bought a few sets for my last classroom – a self-contained class for elementary students with significant physical disabilities and learning difficulties. Most of my students, however, did not have the respiratory capacity needed to blow the paint out of the pens. These may work for some students, but I caution you that they may not work well for all.

Other low technology solutions. Several other solutions may be needed to make art accessible for students with physical disabilities.

Adapted cutting. There are several types of adapted scissors to make cutting more accessible. For students with very limited fine motor abilities, platform scissors (spring-open scissors mounted on a piece of plastic or wood) can allow partial participation. For the sake of time, partially pre-cut shapes may make completion of an activity more feasible while still allowing the student to participate in the cutting aspect.

Clay adaptations. For working with clay, students may partially participate by using tools (e.g., pizza cutter, chip clip) instead of their fingers to shape the clay.

Wikki Stix. Wikki Stix are wax-covered strings that can be used to create a variety of art projects. They also can be used as art AT. For students with poor control of art implements, Wikki Stix can be used as borders to help the students “stay in the lines.” Often, creating a work of art does not have to mean maintaining the implement within certain borders; however, this adaptation could be used when the student wants to create a more standard-appearing piece of art. The student can guide a peer or adult verbally or with gestures on how to place the Wikki Stix on the paper (e.g., “Create a curved line for the bottom of the vase.”) Then, he or she will be able to draw, color, or paint within the raised lines.

Stamps or stickers. Stamps or stickers may be used in lieu of drawing to decorate some pieces of art. This would depend on the purpose of the project and the student’s individual choice to use these instead of drawing or coloring with physical assistance.

Middle and High Technology Solutions

When students are not able to use drawing, coloring, or painting implements, middle or high technology solutions might provide access to participation in art activities. These solutions may be more meaningful than having someone else draw or paint for the student or even more meaningful than receiving hand-over-hand or hand-under-hand assistance. (Side note: hand-under-hand assistance may be more appropriate for some students as it can be less threatening and more supportive than hand-over-hand assistance). The decision to use alternative activities involving AT should be up to the student and should be used only if it makes the student more independent or able to participate more fully, thus making the activity more meaningful.

Battery-operated art solutions. Battery-operated art devices such as a SpinArt machine or a Doodle Doug Scribbler (see below) can be switch-adapted with a battery interrupter to provide a student with the ability to activate a switch control over creating art. These adaptations may be more appropriate for younger students or students with significant intellectual disabilities. For older students without intellectual disabilities, these devices can allow the creation of unique artwork which can be incorporated into an art project in lieu of drawings. For example, a piece created with a SpinArt might be cut apart and incorporated onto a mobile for the student with a physical disability whereas students without disabilities are drawing pictures on their mobiles. This type of solution may afford the student increased independent control over at least a portion of the project.



Doodle Doug scribbling device adapted with a battery interrupter so it can be controlled with a switch. The student may need assistance with the cord as it may get tangled when Doug spins.

Computerized solutions. In some situations, using a computer may provide meaningful access or increased independence in art.

Drawing or painting programs. Computerized drawing or painting programs can provide a way to create drawings that can be used alone or incorporated into larger pieces of art. These can be used by students who can use a mouse or an adaptive input device such as a joystick, trackball, or head- or eye-controlled input device. While simple programs, such as Microsoft Paint, may suffice, there are a few free options that have additional fun features. One open source program I particularly like is called [Tux Paint](#).



Screenshot of Tux Paint.

Tux Paint has a variety of tools including “stamps” and “magic” effects which include cool things like bricks, raindrops, rainbows, Picasso effects, and more. This program allows any student who can access a direct select input device (it will not work with switch scanning) to create really interesting drawings. Although the student would not have the opportunity to interact with the same art materials as peers, the independence this would allow might make computerized drawing a more meaningful solution for some art projects.

Images. Another solution for students who cannot draw might be to incorporate images from kid-friendly graphics or clipart websites into art projects. Again, this would be used only if it gave the student more control of the project’s outcome.

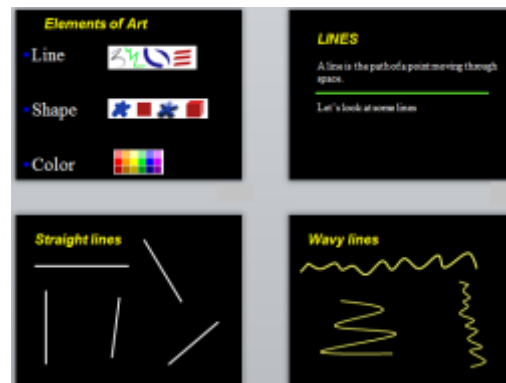
Switch options. For students who cannot control other input devices and use switches, there are a few ways to make art accessible. There are some commercially-available switch scanning paint programs (e.g., Scan and

Paint). These programs allow students to click a switch to move through pictures and colors to “paint” on the canvas. This is a good activity for younger children with physical disabilities who are learning colors or for students with severe intellectual disabilities who are working on the concept of cause and effect. If the student wanted a copy of the artwork he/she created, another person could push the *Print Screen* button when the completed picture appears onscreen (*Prnt Scrn* on the upper right side of a Windows keyboard. I am not sure how to achieve it on a Mac).



Screenshot of Scan and Paint 2.0.

Another possibility that allows interaction with art concepts is through *PowerPoint* software. *PowerPoint* presentations can be created with art concepts such as art elements or art history (e.g., works of a famous artist).



Example of Art Elements PowerPoint for extra practice meeting art standards.

These activities might be used outside of art class to provide extra practice toward achieving art standards or they might be used by a student with a significant intellectual disability in lieu of an art activity in which he/she can participate very little.



Example of PowerPoint slides with the works of Monet accompanied by narration of the piece and music. This could be used for addressing cause and effect or art history depending on the student's cognitive level.

The decision point for determining which activity would be most meaningful for a student is based on the level of independence and purpose of the activity for the individual student. Teachers may collaborate, for example, to consider, "What is more meaningful - an art project completed by a paraprofessional without student input or the student learning a critical concept (e.g., cause and effect) or working toward art standards (e.g., learning art elements) through a computerized art-related experience?" It might be that a combination of the two appropriate based on the student's needs and learning objectives in the art classroom. The bottom line is thinking beyond having students sit in an art classroom without being able to engage in art experiences with any level of independence. Collaborating with the IEP team including the art teacher is the only way to determine exactly which adaptations are appropriate for an individual student.

Communication Solutions

The art classroom often is a wonderful place to encourage social communication. Although this deviates from physical access, communication is so important that I want to at least mention incorporating augmentative and alternative communication (AAC) devices into the art classroom for students with physical disabilities and complex communication needs. As I mentioned earlier, I recently have collaborated with an art education professor. I created an art communication board similar to a board I once created for one of my students on his AAC device. Through this collaboration, I realized I had incorporated social concepts like questions and comments, but omitted some of the important art concepts. She said she would have incorporated the art concepts, but would not have

thought about incorporating the ability for the student to ask questions. I am sharing this experience to point out how crucial it is for special education teachers and art teachers to collaborate about adaptations – especially for students who use AAC.

Art is a great time to incorporate low-tech and middle-tech devices into instruction (and high-tech devices as long as they can be kept safely away from paint, water, etc.) Collaborate with the art educator in your school to come up with ways to include AAC devices in the art classroom. For students who use multi-message AAC devices, several boards should be created to address the specific vocabulary needed for different types of art activities (e.g., one board for painting, one for clay activities, one for print-making, etc.) These could be made with Boardmaker (or other AAC) software or developed using internet images or photographs depending on the needs of the student(s) who will use the boards. The important thing is to make sure that the number and types of messages fit the needs of the student. For students who are capable of accessing multiple messages, make sure that the boards contain a way to engage in social interactions within the art classroom.

Depending on student needs, AAC use in the art classroom may be used to work on one communication phrase (e.g., "I need more paint.") with a mid-tech device such as a BigMACK communicator. It might be for another student to use a multiple message device to make color choices when painting (e.g., deciding between eight colors on a CheapTalk 8). For more advanced students, it might be to comment on or ask questions about the artwork of peers (e.g., "What are you doing?" "Tell me about that." "That's cool!")



Example of an AAC board made for painting.

Conclusion

As I said earlier, this article was not meant to be exhaustive, but to provide some basic ideas of how to make art more meaningful for students with physical disabilities. Although not always considered a critical subject area, art can serve as an important means of communicating thoughts and feelings. For students who have limited physical abilities, art may prove to be an outlet for self-expression not found through other means. Finding ways to make art activities as meaningful as possible for students with physical disabilities can be a challenge. I hope this article was helpful in providing you with at least one new idea to enhance art experiences for your students with physical disabilities.

If you have read any of my previous columns, you may realize that I am passionate about assistive technology. I have seen the power of technology for breaking down barriers and increasing access and participation for students with physical disabilities. Even cheap, low-tech AT devices can increase an activity's meaningfulness for students who otherwise would not be able to participate. This goes for art, academics, and life skills. Stumbo, Martin, and Hedrick (2009) stated, for individuals with physical disabilities, "appropriately chosen and implemented assistive technology" (p.108) is crucial for increasing the level of participation in education, employment, and independent living to levels similar to peers without disabilities." You do not have to be a computer expert to become an expert in AT. The benefits of AT for students with disabilities –

especially physical disabilities – are worth the time and effort to learn and implement AT in your classroom.

So, in closing my final *Technology Spotlight*, I will leave you with a final slogan (inspired by Nike's slogan from a few years back):

AT - JUST USE IT!!

Cramer, E. S. (2012). Making art accessible for students with physical, visual, severe and multiple disabilities (lecture to Art Ed 300 class, March 14, 2012).

Coleman, M. B., & Cramer, E. S. (in press). Creating meaningful art experiences with assistive technology for students with physical, visual, severe, and multiple disabilities. *Journal of Art Education*.

Stumbo, N. J., Martin, J. K., & Hedrick, B. N. (2009). Assistive technology: Impact on education, employment, and independence of individuals with physical disabilities. *Journal of Vocational Rehabilitation*, 30, 99-110.

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