Using Visual Supports With Young Children With Autism Spectrum Disorder

Hedda Meadan
Michaelene M. Ostrosky
Brooke Triplett
Amanda Michna
Angel Fettig

Isaac is learning ways to complete his nightly bedtime routine; Omar is following cues to control his disruptive and impulsive behavior; Peter is becoming more independent with library routines; and Adriana has benefited from visual support with learning hand-washing and toileting routines.

Most of us use visual supports to navigate our days (calendars, maps, watches, to-do lists—even high-tech versions of these supports), so why not provide similar supports to young children? We must particularly be sensitive to the needs of children who can benefit greatly from them: young children with autism spectrum disorder. There are many helpful kinds of visual supports teachers can use in the classroom every day, modifying and enhancing them as children become more and more independent. Indeed, both parents and teachers have used many of these tools successfully with children.
Autism spectrum disorder (ASD) is made up of a group of developmental disabilities characterized by atypical development in socialization, communication, and behavior (American Psychiatric Association, 2000). A recent study published in *Pediatrics* estimates the prevalence of ASD of children ages 3 to 17 years in the United States to be about 1 in every 91 children, a significant increase from the previous 2003 estimate of 1 in 150 (Kogan et al., 2009). Because of rapid increases in the number of young children with ASD, researchers are investigating different intervention strategies to support the development and learning of young children with ASD (see box, “What Does the Literature Tell Us About ASD?”). This article describes important characteristics of visual supports and considerations to reflect on when designing visual supports for young children with ASD.

### Types of Visual Representations

Several different types of visual representations are frequently used in homes and early childhood settings with young children with ASD. Parents, teachers, and other professionals should assess the child and then decide which type of visual representation would be the best for the target child.

#### Real Objects

Tangible representations of activities can convey messages to children regarding what activity will occur next or what choices are available. You can select these objects with the children or by observing the children in their natural environment. For example, you might observe the child on the playground and select an object (e.g., sandbox shovel or ball) that may have relevance for the child in this specific environment.

This selection can help children feel more in control and help solidify the connection between the tangible object and the activity. When reviewing the daily schedule with a young child with ASD, you might show the child the shovel as you describe how outdoor free-choice time will occur after story time. Though objects are the most concrete form of representation for young children, they can be cumbersome for adults to organize, transport from place to place, and maintain. Additionally, as children get older, concrete representations may cause children to stand out from their peers, thus hindering social acceptance.

#### Photographs

Digital photographs, clip art, or pictures retrieved from the Internet can be used to represent activities and routines. A digital camera is an ideal way to create visual schedules, but other photographs (e.g., from magazines) or computer-generated pictures can be just as useful to convey a message.

You can individualize photos for children, although this can be time consuming in terms of taking photographs, downloading pictures, selecting pictures, printing photographs, and preparing materials. Nevertheless, pictures or photographs are a concrete method to use when designing visual schedules for most children.

#### Line Drawings

Computer programs can produce line-drawn images that are suitable for use
on visual schedules, or pictures can be drawn freehand. A few programs are commercially available (e.g., Boardmaker™) for creating line drawings. Computer programs for creating visual supports are extremely comprehensive; they are designed with this purpose in mind. These programs, however, can be expensive. Romski and Sevcik (2005) note that “the choice of symbol set may be complicated by what families perceive as appropriate” for their child (p. 181).

**Words**

Words as visual supports can be used alone, or paired with photographs, drawings, or objects to facilitate print awareness and beginning reading skills. By pairing words with other visual representations, you can help ease the transition from object and photograph schedules to word-only schedules. A print-only schedule may look like a foreign language to a young child, but pairing print with pictures or objects helps bridge the gap for later learning. Moreover, having words attached to photographs, line drawings, or objects can support parents or other caregivers in using similar language during instruction.

**Static, Dynamic, and Interactive Visual Supports**

When designing visual supports, in addition to the type of representation to be used (e.g., photographs, line drawings), consider the mode or form of the visual supports. Visual supports could be as follows:

- **Static and include only print or object-based supports.**
- **Dynamic and include a variety of multimedia sources in addition to visual input (e.g., sounds).**
- **Interactive and include multimedia input that requires child involvement.**

You can find a variety of technologies to use when developing static visuals (e.g., Boardmaker™, PixWriter, ToonDoo), dynamic visuals (e.g., Boardmaker™ Plus, Clicker 5, IntelliTools), and interactive visuals (e.g., Uditu, Boardmaker™ Speaking Dynamically Pro, PowerPoint).

Factors to consider when selecting visual supports include cost, time needed to prepare the materials, personnel to teach the child and adults how to use the visual support, and the comfort level of staff and family members with using the tools that will provide the visual supports. Each of these factors influences the form of visual support selected for use.

**Types of Visual Supports**

Several types of visual supports have proven effective and are typically available to young children with ASD. On any given day, in numerous early childhood programs and home settings, these types of visual supports are part of the daily curriculum and children’s routines. These visual supports are often seen in daily schedules, scripts, or various types of task analyses.

**Visual Schedules**

Visual schedules (e.g., daily schedule, minischedule) can help children with disabilities anticipate the order of events and activities, and increase independence (Cohen & Sloan, 2007). Here are several ways you can use visual schedules:

- To illustrate what activity is taking place.
- To specify what activity will occur next.
- To indicate when an activity is finished.
- To identify any changes that might occur in the regular schedule.

Visual schedules use the first/then approach in which the child is cued to follow a set routine by accomplishing one task before moving on to the task that follows. See Figure 1 for an example of a visual schedule.

**Visuals to Structure the Environment**

Using visuals to structure the environment can help children with ASD function more independently in the natural environment. You can use images and symbols to visually organize the environment and to represent the specific places where items belong. For example, you can place laminated photographs of different-size blocks on the shelves to organize the block center during cleanup and enable children...
to independently put the blocks away in the correct location. As well, parents can place picture labels on shelves and drawers in the playroom to help a child clean up at night by putting each toy in its place before bedtime. Also, visual images can help identify tasks that are completed in specific locations, such as the following:

- A basket for notes to the teacher might have a photograph of the teacher attached to it.
- Children’s cubbies for items to be placed in the child’s backpack might be labeled with names and digital pictures.
- A sign-in sheet might contain the children’s photographs and a space to mark off attendance.

Hodgdon (1995) proposed four reasons for using visuals within home, school, and community environments: (a) visuals increase children’s reliability (they are more likely to know what to do and then to do this repeatedly), (b) visuals encourage children to be more independent, (c) visuals provide children with structure and predictability, and (d) visuals create orderliness in the environment that then provides children with a sense of stability. Figure 2 shows a few visuals that were created using Boardmaker™ to help provide some structure to an early childhood environment.

**Visual Scripts**

Visual scripts refer to written scenarios, skits, or examples that children can use to initiate conversations and
Sometimes I see something I want

But someone else is playing with it

I ask "Can I have a turn?"

If they give it to me . . .

Then it is MY turn


interactions with others. Visual scripts are especially useful in promoting social skills with children who display social avoidance, social indifference, or social awkwardness (Gray & Garand, 1993). One specific type of visual script is the Social Story™ (Gray, 1994). You can use Social Stories to clarify social topics a child may not fully understand or may interpret inappropriately (Cohen & Sloan, 2007). Social Stories often focus on demonstrating appropriate social behavior (e.g., sharing toys with peers, taking turns) or decreasing an inappropriate behavior (e.g., whining or yelling during large group time). Other commonly used types of visual scripts are social scripts (i.e., scripts that tell children how to respond in a social situation) and comic strip conversations (i.e., scripts that illustrate ongoing communication between two or more people; Gray, 1994). Visual scripts can be used to assist children in understanding social situations, solving problems, and preparing for conversations (Cohen & Sloan, 2007; Ganz & Flores, 2010). See http://www.vanderbilt.edu/csef/strategies.html#scriptedstories for sample scripted stories for social situations. Figure 3 shows an example of a visual script.

**Rule Reminder Cards**

Rule reminder cards are another type of visual support that can be used to visually present expectations for behavior in a variety of settings. Visually representing classroom expectations (e.g., on a poster board with photographs or line drawings and words) can help children learn what behavior is acceptable, what behavior is unacceptable, and what consequences are likely to result from engaging in desirable and undesirable behavior (Hodgdon, 1999). Visual rule reminders can include one picture or symbol, such as a STOP sign, or they can include several pictures or symbols, such as the rules to follow when using the restroom (Hodgdon, 1999). Taking photographs of children in the classroom "following the rules" is a great way for children to model classroom expectations for all to see. Figure 4 shows two examples of Rule Reminder Cards.

**Visual Task Analysis**

You can use a visual task analysis as a step-by-step support to facilitate a child’s independence in completing tasks. These tasks can be simple, everyday activities (e.g., putting clothes in the laundry basket) or more complex tasks that are composed of
By providing children with an accessible, visual reference guide, you can enhance children's independence and decrease or eliminate adult prompting.

**Final Thoughts**

For young children with ASD, visual supports are a fairly nonintrusive intervention strategy that can be individualized easily to provide assistance in the areas of social and behavioral learning. Most adults use visual supports to navigate their days (calendars, maps, watches, to-do lists), yet many young children are not provided with similar types of visual supports. The time to start providing such supports more intentionally is now.
Guidelines for Developing Visual Supports for Young Children With ASD: A Look Into the Classroom

Identify the purpose for using visual supports. First, identify your goal for using the visual supports. For instance, the visuals might help children anticipate what is coming next (i.e., visual schedules), anticipate the steps within a specific routine (i.e., visual task analysis), understand the available choices and the arrangement of the environment (i.e., visuals to structure the environment), learn the expectations within a setting (i.e., visual rule reminder cards), and understand behavioral expectations (i.e., visual scripts). Parents, teachers, and other professionals need to identify the target behavior (e.g., following classroom/home rules, increasing social initiations, decreasing challenging behavior) and then select a visual support that matches this behavior. By setting individual or group goals for using a visual schedule, you can evaluate progress and modify the visual schedule system as needed. For example, given Isaac’s constant struggles with his nightly bedtime routine, his parents decide to try using some form of visual support as a vehicle for improving independence (and decreasing challenging behavior) during his bedtime routine.

Identify the type of visual support. After deciding on the goal for using a visual support, parents decide which type of visual support (e.g., visual schedule, visual task analysis, visual rule reminder cards) is most appropriate for that target behavior. For example, as a result of using a visual schedule, Omar may demonstrate increased independence, decreased rates of challenging behavior, and decreased instances of impulsivity. As a result of using a visual task analysis, Peter may show an increase in independence and control throughout his class’s library routine.

Assess the type of visual representation. The visual supports you choose may include real objects, photographs, line drawings, words, or combinations of these visual representations. The type of representation selected will be based on group or individual needs and interests. Using words alone may be more appropriate for older students, whereas photographs or photograph-word combinations may be a better choice for preschoolers. You may need to experiment with the type of visual representation to assess what will work best for an individual child or group of children.

Create the visual support. You can make visual supports from a variety of materials. For example, an individual child’s schedule might consist of a strip of Velcro on a manila file folder with numerous laminated pictures of daily activities (kept in an envelope attached to the manila folder). When creating visual supports, consider the child’s needs for durability and portability. You can find helpful tips and ideas for making visual supports on the web site for the Center on the Social and Emotional Foundations for Early Learning (http://www.vanderbilt.edu/cesfel/modules/module3b/handout2.pdf).

Teach the child how to use the visual support. After you make a visual support, don’t forget to show children how to use it, rather than assuming that it will be learned incidentally. For example, a parent might carry a newly developed picture schedule from the child’s bedroom to the bathroom and back to the bedroom as the nightly routine is accomplished (putting on pajamas, brushing teeth, using the toilet, reading books, listening to music). Direct teaching of how to use visual supports provides children with opportunities to practice making connections between images and routines, and manipulating the actual visual support materials. It is essential that children have a chance to use visual supports with assistance from adults until they fully understand them.

Assess and adjust the visual support. To assess the effectiveness of visual supports, be sure to collect data and evaluate changes in the child’s behavior. If the visual support does not appear to be working, you can easily make adjustments and modifications. For example, Isaac may continue to struggle and have meltdowns at bedtime, even after the consistent implementation of a visual support system by his parents for 2 weeks. Gathering data on Isaac’s behavior during this targeted routine may alert Isaac’s parents and his teachers to the fact that there are too many steps for Isaac to follow—or some other issue. Remember that the child’s individual needs and development should always guide decision making. Whenever you make changes in the visual supports, make the children aware of them. If possible, the children should be encouraged to be a part of the decision making process. For example, if the classroom schedule needs to be altered because of the weather, and outdoor playtime is discontinued for a time, children might help decide what photograph or symbol to use to represent a change to indoor recess.

Once a child consistently uses the newly developed visual support and you have evaluated its effectiveness, focus on generalization, or helping the child use the supports in other daily routines or situations. Assessing whether children would benefit from using visual supports in another area of their day also is important. For example, a task analysis could be created to initially assist Adriana in hand-washing and toileting routines. Additional visual supports may require a different format, but also could prove beneficial in other contexts within Adriana’s life.

Maintaining the effective use of visual supports is important. It may seem that some children wean themselves from the system, as behavior issues resolve themselves or the children become more independent. For example, Isaac may no longer look to the schedule to see what comes next in his nightly bedtime routine. Instead of removing the visual support entirely, Isaac’s parents might consider modifying it to become as conventional as possible. This change may mean moving from a picture schedule to a written schedule. In Isaac’s case it may mean helping him see on a digital clock when he has 5, 3, and 1 minute until he needs to begin his bedtime routine. Through the use of visual supports, young children will gain a fundamental understanding of this essential organizational element, potentially resolving some behavioral problems as expectations and routines become clearer and independence is strengthened.