Learning Through Seeing and Doing

Visual Supports for Children With Autism

Shaila M. Rao • Brenda Gagie

Autism is a life-long, complex developmental disorder that causes impairment in the way individuals process information. Autism belongs to heterogeneous categories of developmental disabilities where neurological disorders lead to deficits in a child's ability to communicate, understand language, play, develop social skills, and relate to others. According to the National Information Center for Children and Youth with Disabilities (NICHCY; 2004) autism and pervasive developmental disorder–NOS (not otherwise specified) are developmental disabilities that share many of the same characteristics. The Centers for Disease Control (2005) reported that although an exact count is not available in the United States, up to 500,000 individuals between the ages of 0 to 21 have an autistic spectrum disorder (ASD). According to Greenspan (2006), children with autism face challenges such as using language, using words creatively, using imagination, and, later, thinking abstractly. These challenges significantly affect understanding and using language for communication.

Because of increasing awareness of the number of cases of ASD there is a push to obtain information about how to help children with autism. The individual nature of successful programs and strategies for children with autism was a concluding theme in Hamlin (2005) who stated that although there is a specific criterion that defines autism, the individual manifestation is as complicated and multidimensional as the human being itself. There is no one best teaching/learning method for all! In 1996 Janzen posited that it takes many years, sometimes decades or centuries to research a subject, get the findings published, and have those findings either verified or discredited. Simpson (2005), after almost a decade, contended that in spite of crucial and meaningful gains in information about ASD and procedures and intervention strategies that benefit individuals with ASD, persons with autism-related disorders remain an enigmatic group. Simpson stated "professionals and parents require access to straightforward information about the efficacy of various methods, as well as supplementary information that will assist them in determining a method's suitability with individual students" (p. 143).

Although there is no one best program or one best way of helping children with autism, the importance of using supports based on concrete and visual teaching aids is largely upheld. Visual supports can be provided in different ways in all settings: school, home, work, and community. Kluth and Darmody-Latham (2003) suggested using visuals such as graphic organizers, flow charts, and Venn diagrams in addition to verbal instruction with students with autism. Temple Grandin, author of the book *Thinking in Pictures and Other Reports From My Life With Autism* promoted use of visual supports when she explained how she processed information. Grandin (1995) stated "Spatial words such as over and under had no meaning for me until I had a visual image to fix them in my memory" (p. 30). Janzen (1996) emphasized the importance of providing visual support that is essential so that the student with autism can process the whole message.

Why Use Visual Supports?

- They are part of everyone's communication system.
- They can attract and hold a student's attention.
- They enable the student to focus on the message and reduce anxiety.
- They make abstract concepts more concrete for the student.
- They help the student express his or her thoughts.

Cohen (1998) stated that children with autism are visual rather than hearing/auditory learners and prefer alternative

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modes of communication, such as pictures, rather than written words. Hodgdon (2000) posited that educators can give more and more verbal directions, but that does not mean that the student understands. According to Hodgdon, when used correctly, visual supports allow the student with autism the freedom to engage in life, regardless of his or her impairment in communication. Although there is widescale use of visual strategies by educators, only a minimal number of studies on using visual strategies with students with autism have been published (Dettmer, Simpson, Myles, & Gantz, 2000). Because the research is relatively new and limited, some educators and parents are not aware that providing visual supports will help the student with autism in a variety of activities, including social or academic activities. Visual supports have been successfully used to teach children with autism literacy skills (Broun, 2004; Kluth & Darmody-Latham, 2003), to cook (Orth, 2003), to encourage positive behavior (Crozier & Sileo, 2005), to provide activity schedules using computers and video (Kimball, Kinney, Taylor, & Stromer, 2003, Kimball, Kinney, Taylor, & Stromer, 2004), and for signaling activity change and transitions (Dettmer et al., 2000; Schmit, Alper, Raschke, & Ryndak, 2000).

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Visual supports help bring in structure, routine, and sequence that many children with autism need to be able to carry on their daily activities. Dalryaple (1989) posited that along with impaired communication, individuals with autism have problems understanding social communication cues such as gestures, facial expression, body language, and voice tone and therefore "as a rule of thumb, the more people with autism can be provided with visual cues, the better they will understand what they are supposed to do" (p. 5). Maguire (2005) stated "Traditional verbal prompts such as 'Time to clean up and go outside,' often are not as effective with children with autism. However, creating a visual schedule helps children with autism make the transition from one activity to another" (p. 34; see box "What Do Some Researchers Say About Visual Supports for Children With Autism?").

Treatment and Education of Autistic and Related-Communication-Handicapped Children (TEACCH), Picture Exchange Communication System (PECS) and Social Stories developed by Carol Gray are some of the visual approaches available to help children with autism achieve their potential in every aspect of life. (See Boxes 1, 2, & 3.)

The following offers practical ideas for teachers and parents based on combinations of the previously mentioned visual approaches. Visual supports developed from simple and inexpensive everyday materials to inexpensive games are used successfully to enhance processing ability and teach social skills, play skills, academic skills, and communication skills to children with autism in elementary grades.

What Do Some Other Researchers Say About Visual Supports for Children With Autism?

"Oelwein's methodology quickly proved itself to be extraordinarily successful in helping many of my students with ASD develop reading skills, including several students whose needs were more difficult to serve and who did not come easily to the learning situation. One student in particular, a passive, nonverbal boy in second grade, became engaged in the reading process and was able to demonstrate word and sentence recognition and comprehension by placing them on appropriate pictures" (Broun, 2004, p. 37).

"Abstract concepts and language are challenging for many students with autism. Teachers may want to use visuals to teach any lesson, but especially to introduce or use jokes, figurative language, or words with multiple meanings. We had one redheaded student who could not tolerate being teased about his 'carrot-top.' He often retorted, "but I don't have leaves!" When his friend drew him a picture illustrating the comparison between his hair and the color of the carrot, he was able to accept and smile at the teasing" (Kluth & Darmody-Latham, 2003, p. 534).

"Unlike children without autism, these children frequently become enraged and engage in high rates of tantrum behavior when they are required to transition from one activity to another. Because children with autism have been known to emit higher rates of appropriate responding when presented with visual stimuli in contrast to auditory stimuli one could speculate that cueing systems emphasizing visual signals to elicit a behavior during transition periods would be superior to cueing systems emphasizing only auditory signals" (Hart, Wing, & Volkmar as cited in Schmit, et al., 2000, p. 132).

"When Visual Recipes was completed, I sent it off to some of the top professionals in the field of autism hoping for some feedback. Not only did they wish to be connected with my work by writing recommendations for the back cover, they spoke of the difference my work was about to have on thousands of people's lives. Temple Grandin Ph.D., the most famous and successful person known to have autism, called me and said, 'Every person with autism will love your book!' She was, as always, quite literally correct!" (Orth, 2003, p. 34).

How to Develop and Provide Visual Supports

Individuals with autism require environmental and instructional support

Box 1: What Is TEACCH?

"Developed in the early 1970s by founder, Eric Schopler, the TEACCH approach includes a focus on the person with autism and the development of a program around this person's skills, interests, and needs."

Available at: http://www.teacch.com/

Box 2: What is PECS?

"The Picture Exchange Communication System (PECS) is an augmentative communication system developed to help individuals quickly acquire a functional means of communication (Bondy & Frost, 1994). PECS is appropriate for individuals who do not use speech or who may speak with limited effectiveness: those who have articulation or motor planning difficulties, limited communicative partners, lack of initiative in communication, etc."

(Wallin, 2004). Available at: http://www.polyxo.com/visualsupport/pecs.html

Box 3: What are Social Stories?

"A social story is a story written according to specific guidelines to describe a situation in terms of relevant cues and common responses. The underlying philosophy stresses the importance of 'abandoning all assumptions'—to seek to understand the student's perspective, to ensure a student has the social information he/she needs, and to present information so it is accessible and easily understood. Social stories are often written for individual students, reflecting an understanding of a student's unique perception of a situation. Sometimes, considering the social/communication impairment in autism, determining a student's perspective can be difficult. Illustrating a conversation, like a comic strip, is often helpful."

(Kirby, 2005). Available at: http://www.udel.edu/bkirby/asperger/socialcarolgray.html

that will help them overcome various challenges posed by deficits in their ability to communicate, understand language, play, develop social skills, and relate to others. Helping children with autism manage their behavior, while following through daily routing, is often a difficult task. Students with autism experience tremendous difficulty in processing language, but processing and understanding visual supports is easier for them. As such, providing visual supports is an absolute necessity. However, before any support is successfully provided, it is imperative that we understand the unique nature of the needs of individuals who require such supports. Understanding preferred learning styles (taking in information, processing information, and expressing understanding) will ensure success in helping individuals with autism.

Photo 1: Start and Finished Folders

According to Simpson (2005), successful identification and implementation of effective practices will best be made at the local level by groups of professionals and parents who possess the most knowledge and information about individual students. Greenspan (2006) suggested using the Developmental, Individual Difference, and Relationship based (DIR) model to understand the unique needs of children with autism to help plan supports. Prelock, Beatson, Bitner, Broder, & Ducker (2003) described family-centered care, cultural competence, and a strengths perspective to assess needs, plan, and evaluate effective supports. Both models ensure that the information that is gathered to plan and develop supports, to choose the instructional format, and to use to determine effective rewards is based on individual needs and ability, is responsive to family and cultural needs, and results in generalizable outcomes. Information can be gathered through standardized instruments; informal teacher observation; teacher-made checklists; caregiver, family and student interviews; and work samples.

Once it is decided to change a target behavior and the visual supports to provide (icons, photographs, picture schedules, drawings, graphic organizers, social stories), the next steps include deciding which instructional format will guide and teach students with autism to use the visual supports and how to evaluate the effectiveness of the supports and instructional format in changing the behavior. We recommend the following:

- Trial training that involves breaking the desired task/behavior into discrete steps (task analysis)
- Deciding an appropriate visual support for each step.
- Using individual, explicit instructional sessions.
- Prompting and fading procedures as needed to guide and teach students with autism to use the visual supports.
- Using effective reinforcers as rewards for successful use of the supports according to criterion.

Effective prompting procedures (Snell & Brown, 2006) include least-to-most prompting (verbal-model-physical) or most-to-least prompting (physical-model-verbal). Some practical

ideas for visual supports that teachers and parents can use to enhance play skills, fine-motor skills, receptive-expressive language, self-care and social skills are offered, and explained with the help of a goal and an example objective from an individualized education program (IEP; see Table 1, Objective 2). Table 2 provides a sample template for gathering data on student's IEP objective for use of visual supports. From Table 1:

> *Short-Term Objective 2: Using a schedule and a start and finished folder (Photo 1), Mark will complete independent work with minimal help from an adult.*

Based on TEACCH and PECS method, the student is calm when completing his work because his schedule and work system provide all of the necessary information such as

- What work is expected? (Can see it in start folder.)
- How much work? (Reads the work listed on index card on his desk.)
- How do I know I am progressing through the work? (Crosses out on index card.)
- How do I know I am finished? (Put in finished folder.)
- What do I do after I finish my work? (Reads the index card/the activity that follows the work. See Photo 1.)

Most important, all of the students should have some type of visual schedule that tells them when preferred activities like snack, trampoline, or computer will occur. We have found that the amount of stress, anxiety, and behavioral outbursts is greatly reduced when the schedule is implemented. Similar folders and support can be prepared for activities such as calendar group, snack group, leisure time, language group, and home–school communication.

> *Short-Term Objective 3: During any transitions that involve walking in the hall, Mark will line up and follow the basic rules of quiet voice, hands to self, walk in halls with minimal physical assistance from an adult.*

Table 1. Sample Page From Individualized Education Program

Area of Need: Self Care **Person Responsible for Goal:** _____

Present Level of Performance: At the beginning of the year Mark needed icons to get off the bus, go to his locker, etc. Now he knows what to do and is simply accompanied by an adult to oversee him to his locker, etc.

Goal Statement: Mark will continue to improve independent self-care skills while using a visual schedule or physical assistance from an adult as necessary.

Short-Term Objectives	Evaluation Criteria		
1. Mark will get off the bus to meet the staff and continue with locker, backpack, and enter classroom with the presence of an adult and a visual schedule as needed.	D	4 out of 5 days	M
2. Using a schedule and a start and finish folder, Mark will complete independent work with minimal help from an adult.	D	4 out of 5 days	W
3. During any transitions that involve walking in the hall, Mark will line up and follow the basic rules of quiet voice, hands to self, walk in halls with minimal physical assistance from an adult.	D	4 out of 5 days	M
4. When the situation naturally occurs, Mark will open the door for himself in a variety of settings.	D	2 times per day	M

Date	Status Objective #1	Status Objective #2	Status Objective #3	Status Objective #4	Initials

D: Documented Observation
M/W: Monthly/Weekly Schedule

Using a Social Story

Social stories are tools for teaching social skills to children with autism and related disabilities.

Social stories provide an individual with accurate information about situations that he may find difficult or confusing. Simple steps to write a social story are (see Photos 2 through 6):

- Analyze the task.
- Supply a visual support at each step so the child can understand the step.
- Describe each step with the visual support.
- "Our classroom has lines marked with the tape on floor . . ."
- "To be able to line up first we need to stand with our feet on the line . . ."
- "When all of us stand with our feet on the line one behind the other we form a straight line"

In the general education classroom and/or in other settings in absence of the masking tape, pictorial visual support prompts students to line up one behind the other quietly.

Table 2. Data on Student's Use of Visual Supports/IEP Objectives

Name: _____ School: _____

Grade: _____ Teacher: _____

Target Skill/Behavior: _____

KEY
1. Independent
2. With verbal prompts
3. Modeling
4. With physical prompts
5. Other (specify)

STEPS/SKILLS	Date & Level of Achievement (see key above)												Comments
1.													
2.													
3.													
4.													
5.													
6.													

OTHER REMARKS (if any at different steps/sessions)

Other Visual Supports

For the student with autism, playing in any capacity does not occur naturally . It is often said that play is actually work for students with autism. If the student does show interest in playing, it is usually focused on one area such as the swings and the student will insist on repetitive routines for every recess. A visual schedule will help the student explore and expand his knowledge and experience while on the playground. Initially, the playground schedule was filled for the student with order of equipment and amount of time spent on each item. Now the student understands the concept of recess and he fills out his own schedule (Photo 7).

A visual organizer (Photo 8) presents leisure activities available to the student and gives him choices. The student chooses the icon that represents the activity that he would like to participate

Photo 2: Marking the Floor With Masking Tape

Photo 3: The Spot for Students to Line Up

Photo 4: Students Lining up on Masking Tape Marks

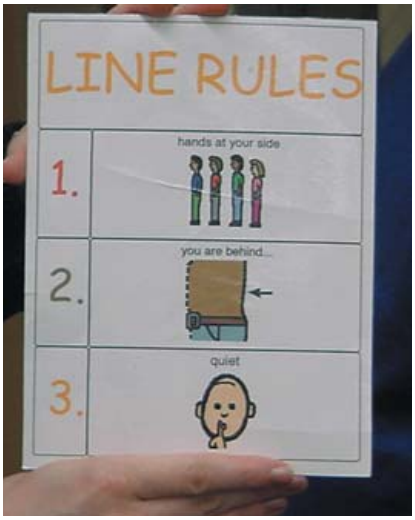

Photo 5: Clearly Defined Rules for Generalization to Other Settings

in and places it at the top. When he wants to change activities, he changes icons. Without this organizer, many students would simply engage in a number of self-stimulating behaviors, rather than participating in any kind of leisure activity.

For the students who experience obsession with a color, such as blue, using color as a visual tool has been helpful. It provides a visual picture of the finished product, which incorporates many colors. It is also helpful for the student who experiences difficulty with fine-motor activities. The visual picture clearly shows the student where to color, what color to use, and to some degree how much pressure to use to obtain the desired color (Photo 9).

Photo 7: Visual Schedule for Play

Color-coding a commercially available game such as BINGO is a very effective way to organize a game that may otherwise appear too stimulating for a student with autism. Like a key to a map, it helps clarify categories (Photo 10).

A personal folder with visual supports can ease and enhance communication between home, school, and student. Such schedules can be used to communicate activities done in school and at home, planned activities in school or at home, activities over the weekend, and so forth. The visuals make this a three-way communication, which is very meaningful to the student (Photo 11).

Everyday inexpensive materials add a colorful, tactile, and visual touch to sorting, grouping, classifying, and sequencing activities that help develop and enhance visual perception (Photo 12).

Concluding Thoughts

Visual supports can attract and hold attention, thus enabling the student to focus on the message, reduce anxiety, make abstract concepts more concrete, help prompt the student, and help the student to express his or her thoughts. We all use visual supports in our daily lives. Think about the last time you used a road map, an organizer, or even a recipe. These are natural visual supports that we use throughout our daily lives. Students with autism require more visual supports than individuals without autism, however, not all students with autism require the same level of visual support. Some students may require a picture schedule and work system, whereas others may require a written schedule. Quite often students with autism do not receive the visual support they need and as a result are referred to an autism specialist because they are not experiencing success in the special education setting. The problem isn't that the teacher refused to use the visual supports, but rather that the teacher simply did not know to provide those visual supports in the first place. Simpson (2005) concludes,

Photo 6: A Social Story for Students to Understand Going Home Routine

> There is an unmistakable need for objectively verifiable effective methods that can serve as the underpinning for every student's program. This process will be complicated and at times tedious, and it will likely never result in

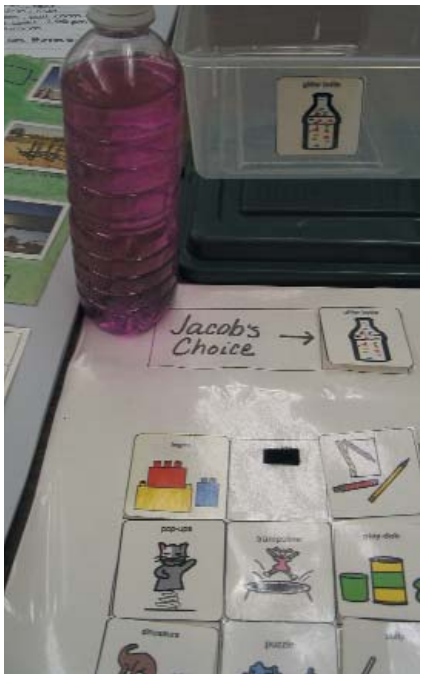

Photo 8: Visual Organizer for Play

Photo 9: Using a Visual Picture

Photo 10: Using Color as a Visual

total consensus. Yet, the need to identify effective methods is so important that the field will not be able to move forward without significant progress in this area. (p. 147)

Simpson posited that the onus for making responsible methodology decisions for individual students with ASD falls with the team of professionals and the parents. Although there is limited formal research on using visual supports, there is a wealth of evidence in favor of them. Just as autism is a disability that varies in degree from student to student, the program that best meets the needs of students with autism should vary from student to student. Continued research of visual supports will help to educate and confirm to teachers, parents, and caregivers that these are crucial tools in the daily life of a person with autism.

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Photo 11: Personal Folder With Visual Supports

Photo 12: Adding Colorful, Visual, and Tactile Touch

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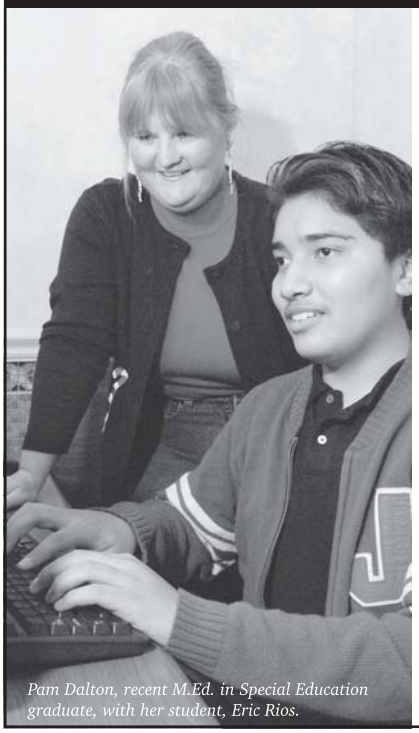

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