Chapter 7
The TEACCH Approach and Other Visually Based Approaches for Children with Autism

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Introduction

The TEACCH approach as well as other visually based approaches to early intervention for children with ASD considers that the child with ASD has strengths and weaknesses, and that using areas of strength, such as understanding visual information, may help when teaching skills in an area of weakness. For example, Picture Exchange Communication System (PECS; Bondy & Frost, 1998) teaches children to exchange a picture that represents a word with an adult to communicate when that child is not able to verbally express what he or she wants. Below, we review the TEACCH approach for young children as well as other visual approaches used in ASD early intervention.

The TEACCH Approach

The TEACCH Autism Program started studying autism and developing approaches for teaching individuals with ASD in the late 1960s. Structured TEACCHing was the broad approach developed based on research of Dr. Eric Schopler to accomplish two primary goals: (1) to teach a child as many independent skills and routines as possible and (2) to modify the environment to make it more meaningful for a child. Principles that contribute to this approach include understanding the "culture" of

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autism, or the way the individual with ASD sees and interprets his or her world, understanding individual needs of the child, using visual strategies to support learning, and using special interests or talents to promote engagement (Mesibov, Shea, & Schopler, 2005). When this approach was first developed, children with ASD were diagnosed at older ages; thus more recent work has addressed how to apply these principles and Structured TEACCHing strategies to younger children (Ozonoff & Cathcart, 1998; Turner-Brown, Hume, Boyd, & Kainz, 2019; Welterlin, 2009), and, most recently in a manualized parent coaching manual called Family Implemented TEACCH for Toddlers (FITT; Hume, Turner-Brown, & Boyd, 2013). A description of how Structured TEACCHing for young children with ASD and their families follows along with examples of structure that can be used to support the development of receptive and expressive communication, play, and social skills.

Structured TEACCHing Goals for Young Children

To understand Structured TEACCHing with young children, we first review the goals of the approach followed by the specific strategies employed. A primary *goal* of Structured TEACCHing has always been teaching children and older learners with ASD as many independent skills as possible. Independence has proven to be a key skill for optimal outcomes in adulthood. However, for children as young as 12–18 months, independence is not typically a skill area named by caregivers and professionals as a priority. While many young children wish to assert their independence during this period and caregivers can support this desire when possible, toddlerhood is mostly a time to emphasize and build learning and relationships. Thus, the primary goal for Structured TEACCHing when used with young children is to support engagement (Turner-Brown et al., 2019), defined as *being actively and productively involved in activity.*

Structured TEACCHing with young children supports engagement with: (1) people, especially caregivers and family members, to support the development of communication and social interaction skills; (2) toys/objects, to support the development of play skills, which creates opportunities for social interaction and supports many types of learning; and (3) toys/objects and people together, to support the development of "*coordinated or joint attention*," which is the child's ability to share attention between the caregiver and some other object or event in the immediate location.

A second goal of Structured TEACCHing with young children involves modifying the environment to make it understandable and meaningful for the individual with ASD. This goal is identical to goals for older learners. Modifying the environment often entails adding visual cues and supports to help answer six questions that often lead young children with ASD to be confused or frustrated:

1. Where am I supposed to be?
2. What am I supposed to do?

3. How should I do it?
4. How long will I do this or how many should I do?
5. How will I know that I am making progress and when I am finished?
6. What will happen next?

The use of visuals is particularly important with young children, both with and without ASD, because young children are not developmentally ready to process abstract or complicated verbal ideas. Important ideas such as time (e.g., how long activities will last, what it means if we are "leaving in 5 min"), sequencing (such as what activities come "before" and "after"), and sharing (such as offering or giving a toy to others) are abstract. When teaching these concepts to young children with ASD, concrete and visual cues such as an object or picture represent the abstract idea.

Structured TEACCHing Components

Using Structured TEACCHing with young children with ASD and their families requires incorporating common principles of early intervention. First, partnering with caregivers is a key when providing intervention to young children. This is central to the TEACCH philosophy (see Drs. Schopler and Reichler's (1971) then groundbreaking notion of "parents as co-therapists.") Next, it is important to provide services and offer supports in natural environments. These include families' homes, early care and education programs, and other community settings where young children spend the most time. Last, it is essential that skills are taught through participating in everyday activities and routines. Teaching caregivers how to use Structured TEACCHing strategies across daily routines, such as bath time, play time, and meal time, allows the child to have opportunities for intervention every day, throughout the day, without requiring daily visits from an interventionist, specialized equipment, or travel to a medical or clinical setting. The four components or types of structure used with young children and their families are discussed below.

Physical Organization of the Environment

The first component of Structured TEACCHing is physical organization of the environment. An organized environment with carefully arranged intervention spaces may support children who become distracted easily or have difficulty in processing information. Organizing the physical environment also supports active engagement.

There are two primary strategies for physically organizing the home environment to maximize engagement. The first is to use physical and visual boundaries to better define space and expectations for young children. Clarifying spaces in the home helps young children better understand what activities will occur in each different area in the home (e.g., this is where we eat, this is where you play, this is where you

get dressed). These boundaries are not meant to contain a child rather to serve as a concrete reminder of where to be and what the expectations are in each space. The FITT manualized approach coaches parents to establish two areas for different types of play with young children—an area for *table-based play* (e.g., puzzles, ring stackers, shape sorters, paints, or markers) and an area for *floor-based play* (such as balls, trucks and cars, bubbles). The table-based play area serves as a location to introduce new play activities or teach new skills. A designated location for teaching new skills helps in creating positive routines around learning, which helps young children accept new activities and materials. Other spaces are created based on what routines or skill areas caregivers would most like to target. For example, if caregivers identify sitting at the table during dinner as a priority skill to target, then creating a physically organized space at the table would be recommended. Similarly, if caregivers would like support during bath time, bedtime, book time, or potty time, those spaces would be organized to help clarify expectations.

The second step is to determine where the spaces should be established and what physical and visual boundaries may be needed to help the child better understand the space. This process involves parent–therapist brainstorming to determine what is necessary. Consider Ryan, a 2-year-old with ASD who always stops when he walks past the entertainment center to stare at his reflection. Parents might consider a physical boundary in his play area that prevents him from walking past this reflective glass during play time. Or, consider Jane, whose older siblings often watch TV in the afternoons in a family room. Jane's parents might choose to set up an area in a different room to play with her because distractions are fewer. See below for examples of physically organized spaces (Fig. 7.1).

Physical and visual boundaries can be used in other areas of the home to clarify spaces and expectations. For example, if a family would like the child to sit at the table during meal time rather than run out of the room, caregivers may choose to

Table based play area.

A parent or therapist sits against the wall. The child sits in his chair and sees the activities he will do to his left. He completes the activities at the table, then places them in a finished basket to the right.

Floor based play area.

A blanket and toys provide visual cues to the child to let her know where she will play with her caregiver.

Book area.

Books are at eye level and accessible with a carpet area for reading

Fig. 7.1 Physical organization of the home

tuck the child's seat closest to the wall rather than out in the middle of the kitchen. The wall may serve as physical boundary reminding the child of the expectation to stay at the table.

A second strategy of physical organization is to minimize distractions. Limiting distractions encourages the child to increase attention to the other person and play materials rather than attending to other sights and sounds in the environment. This could involve limiting the number of toys visible or available to young children when playing together. For example, while a father and his son are building with blocks, covering, or putting away other play materials, such as balls or trucks, may increase the child's attention to the blocks. Minimizing distractions may also include turning off screens (such as computers, tablets, smart phones, televisions) for periods of the day in the home, using visual boundaries such as shelves, or placing covers over items that are not currently in use.

Schedules

The second major component of Structured TEACCHing is the use of a schedule. Providing visual information for children about where to go and when to go there is an important strategy for supporting the child's understanding of communication and expectations. Visual information can attract and hold a child's attention, provide a concrete form of representation of important ideas, and support strengths in visual processing. Schedules also support children with limited receptive language skills.

There are several considerations for using schedules with young children with ASD. First, young children are not likely able to understand a schedule that uses abstract representations such as line drawings, words, or even photographs. The most appropriate schedule form for young children is the use of objects—either functional objects that will be used in the scheduled activity, such as a sippy cup to use at meal time, or representational objects that represent where the child is going, such as a set of toy keys that represents transitioning to the car.

Next, young children are not ready to process long sequences of schedule information; instead, they best understand one piece of information at a time. This information is communicated through a transition object—a concrete way to show the child where he is going next. Each activity or location is represented by a specific object. For example, if a child has difficulty transitioning to the changing table during diaper changes, caregivers may select a diaper as a transition object. When it is time to transition for a diaper change the caregiver will give the diaper to the child and say, "Time for diaper change" and help the child get to the correct location. In time, with the consistent use of transition objects, young children will learn what the transition object means, and transition difficulties will decrease as understanding improves.

Sample Transition Objects

- *Favorite bath toy or washcloth*: Bath
- *Diaper*: Diaper change/Bathroom
- *Puzzle piece*: Table-based play
- *Toothbrush*: Brushing teeth
- *Favorite toy*: Floor-based play
- *Book*: Reading time/book area
- *Placemat*: Mealtime
- *Pillow/stuffed animal*: Bedtime
- *Special toy or CD*: Going for a ride in the car
- *DVD case*: TV time
- *Sand shovel*: Going out to the playground
- *Soap container*: Washing hands

For some young children, a very short sequence of two objects or photos, called a "*first/then schedule*" may be used to help them understand when a favorite activity is going to return. For example, if a child has difficulty transitioning away from a favorite DVD to come play on the floor with a caregiver, two objects may be presented. First, the transition object used for floor-play is presented and next to it is the DVD cover, indicating that first the child will play, and then he can return to the DVD (Fig. 7.2).

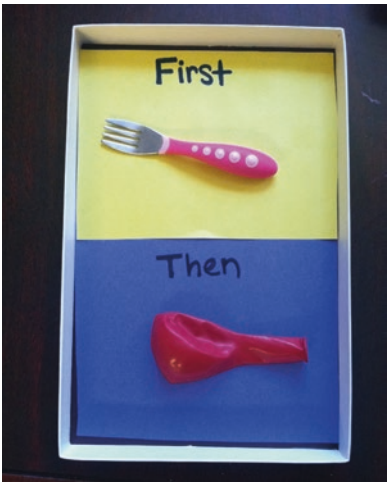

Fig. 7.2 First-then object schedule. This schedule shows the child what is coming first and next. First, he will eat lunch, then he will play balloons with his mom

Activity Systems

The third component of Structured TEACCHing is an activity system. An activity system helps children better understand what to do once they arrive at a designated space or location, such as the table-based play space or the bathroom. The activity system shows the child what activities will be completed, how long the activities will take, how he will know that the activities are finished, and what will happen next. These systems are sometimes termed "*work systems*" (Hume, Plavnick, & Odom, 2012), but "*activity systems*" were coined when the approach was used with young children to reduce the connotation that children were "working" and emphasize the wide range of activities that could benefit from this organizational system.

Activity systems are used during table-based play routine by placing the activities that the caregiver and child will do together on the child's left and a "*finished*" basket on the child's right (a left-to-right activity system, see image 1 above). The finished basket is a designated location where children put their activities when they are finished with them. Caregivers and interventionists teach the system to the child by emphasizing that activities are taken from the child's left, completed together at the table, then put in the finished basket on the right. This allows the child to see how many activities will be completed and what the activities are. Also, they can see that activities are finished when they are in the finished basket. Children also learn that a transition object after the structured activities will direct them to the "what's next" activity, typically playing on the floor or moving to a caregiver-selected routine like snack or outside play.

Activity systems are also used during other routines in the home, to support engagement in daily routines such as dressing, tooth brushing, and taking a bath. For example, a 3-year-old boy, Louis, with ASD cries every day when his mother tries to get him dressed. An activity system would clarify for Louis what he is supposed to do, how long it will last, how he knows he is finished, and what activity is coming next. Specifically, laying the clothes out in a left-to-right fashion allows Louis to see how many steps are required, and as each piece of clothing is put on, he can see that progress is being made. A transition object such as a favorite book at the end of the line of clothes helps Ryan know what preferred activity is coming next (Fig. 7.3).

Visually Structuring Activities and Cues

Finally, the last component of Structured TEACCHing is visually structuring activities and cues**.** With older children, this component often entails making "tasks" that promote independence. For young children, the focus is on using visual structure to support learning across developmental domains (e.g., early learning, imitation, play, etc.). Activities typically have a clear beginning and end, include a sensory component like preferred sounds or textures, are highly motiving, and build on the child's strengths.

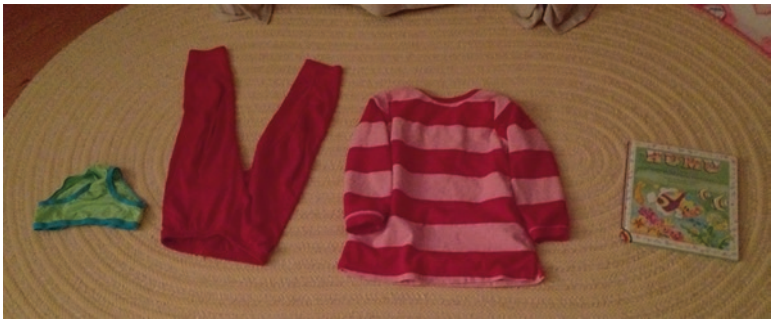

Fig. 7.3 Daily routine activity system. Organizing each item of clothing provides visual cues to a child about how much she needs to do, and what she will do when she finishes getting dressed

These activities incorporate elements of visual instructions, visual organization, and visual clarity. See images below for examples of these elements of visual structure.

Visual instructions such as a series of photos may be used to teach a multistep play activity. For example, when teaching a child with ASD a play routine with a baby doll, interventionists or caregivers may take a series of photos of activities to do with a doll (such as put baby in tub, wash baby, dry baby). Single photos may also be used to provide support for young children as they are learning functional and symbolic play routines (e.g., a farm animal completes an action, such as the pig jumps, the horse sleeps).

Visually organizing the activities can include stabilizing them on a tray, providing containers for extra parts and pieces, and reducing the number of parts and pieces.

Visual clarity of toys and activities means providing cues or highlighting within a play activity to emphasize its most important parts and pieces.

In addition to these principles, activities often *incorporate the child's interests*, a key Structured TEACCHing principle. Adapting play materials to incorporate individual interests can be an important first step to help young children with ASD to engage with new materials or play in new ways. For example, if a child does not typically engage with Duplos®/Legos® but is interested in characters from Sesame Street®, adding pictures of favorite characters to the blocks can increase his interest and motivation to learn to play with them (Fig. 7.4).

Blending Structured TEACCHing with Other Approaches

To summarize, therapists and parents use structure to develop table, floor, and daily living routines that promote active engagement in the child with ASD. Visual approaches support the child's understanding of these routines and his ability to transition between activities. Next, therapists and parents develop goals that target areas of development most affected by ASD. Imitation skills are an example of skills taught in Family Implemented TEACCH for Toddlers (Hume et al., 2013;

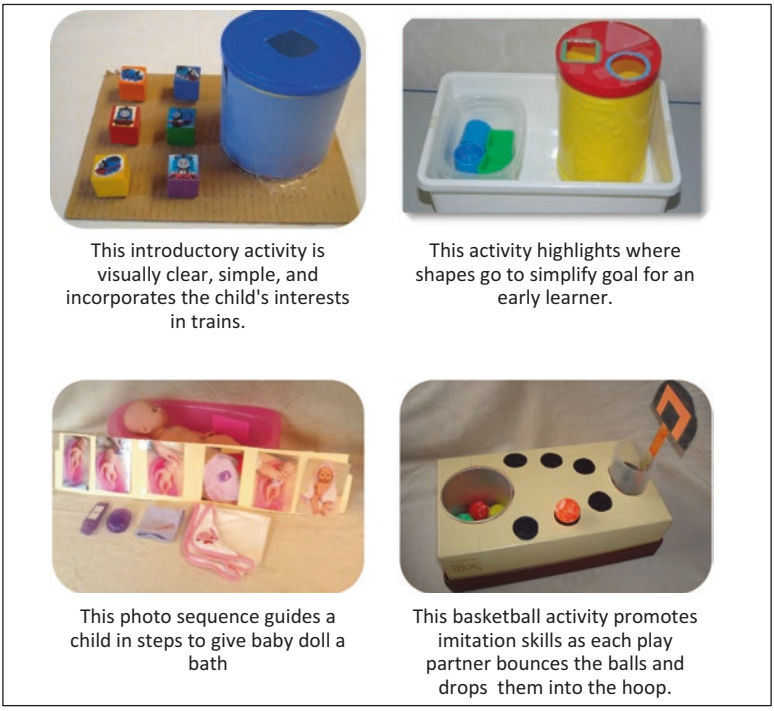

Fig. 7.4 Visually structured activities

Turner-Brown et al., 2019). Therapists and parents begin by conducting informal assessments to determine what interests the child, where she might show emerging skills. Treatment goals can develop from this assessment and may be targeted using highly structured activities if necessary but will also incorporate naturalistic activities and strategies, such as Reciprocal Imitation Training (Ingersoll, 2010) to ensure skills generalize beyond a structured activity.

TEACCH Summary

Providing support for young children with ASD and their families is crucial because children are receiving diagnoses at younger ages, and effective early intervention is proven to improve developmental outcomes. Structured TEACCHing principles and the four elements of structure, adapted to be developmentally appropriate for young children, can serve as important tools for teaching a number of skill areas, including coordinated attention, expressive communication, and play skills. By specifically partnering with parents in natural environments and applying Structured TEACCHing strategies to daily routines, this intervention model ensures that the goal of engagement is supported throughout the child's day.

Other Visual and Augmentative Approaches

Visual and/or augmentative approaches can be quite helpful in teaching communication to young children with ASD. Rather than focus only on speech, these approaches emphasize the importance of directing communication in a variety of forms to others and utilize visual cues or electronically generated sounds to support the child. Three examples of these approaches are PECS, speech-generating devices, and video modeling.

Picture Exchange Communication System

PECS (Bondy & Frost, 1998) is one approach that has proven effective in teaching children a range of communication skills (see Wong et al., 2015, for a review). This approach is designed for children with limited functional communication skills to initiation as well as back and forth communication. PECS is one example of an alternative and augmentative communication system. The approach entails teaching a child to give a partner a picture of an item in exchange for the actual item. For example, if a child wants to play with a toy train, he would give the communicative partner a picture of a train, and the partner would then give the child the actual train. PECS uses behavioral strategies to build the exchange skill and expand upon the vocabulary and length of communication. Research has shown improvements in communication and social skills in young children who learn this approach (Carr & Felce, 2007; Dogoe, Banda, & Lock, 2010; Jurgens, Anderson, & Moore, 2009) as well as to older learners (see Wong et al., 2015, for a review).

Speech-Generating Devices

Speech-generating devices include a range of devices that speak electronically when a child pressed a button. At a simple form, there may be one button to push to request "more," and the device speaks "more." In a more complex form, the child could press three picture buttons or icons that represent more, bubbles, and please, and the device would speak that phrase. Studies have shown that the use of speech generated devices promotes spontaneous language in minimally verbal children with ASD when paired with a naturalistic developmental behavioral approach (Almirall et al., 2016; Kasari et al., 2014). Use of these devices can also promote peer interactions in preschool aged children (Thiemann-Bourque, Feldmiller, Hoffman, & Johner, 2018).

Video Modeling

Another visual approach that can lead to gains in communication, social, play, and daily living skills is video modeling. In this approach, individuals are presented with videos that demonstrate skills or behaviors being taught. For example, a child might watch a video of children taking turns appropriately to learn how to take turns with his peers. Or, a parent might watch a video of how he plays with his son and get feedback or tips about ways to engage his child in more complex ways (e.g., video self-modeling). In an early intervention context, video modeling can improve play skills (e.g., Dueñas, Plavnick, & Bak, 2019; Hine & Wolery, 2006). In these studies, young children watch videos of children playing and then show increases in varied play with peers in their school setting. With older children and even adults, video modeling can lead to changes in a range of skills and behavior, including conversations, self-help, and parenting (see Wong et al., 2015, and Hong et al., 2016, for a review).

Summary

In summary, the TEACCH approach as well as other augmentative communication approaches can support young children with ASD by supporting areas of relative weakness, such as understanding language or using speech. It is promising that these approaches can be used with other approaches to support children and families.

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