# Rationale for the Utilization of Work Systems with Children and Adolescents with Autism

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The Classroom Connection

Educators who teach primarily through spoken language, social reinforcement, and high expectations for child self-regulation may inadvertently emphasize the learning deficits and neglect the learning strengths of students with autism. Among the strongest proponents for the adaptation of teaching environments to autistic learning patterns have been Schopler and colleagues at Division TEACCH, a state autism program associated with the University of North Carolina (Mesibov, 1997; Schopler, 1971). Work systems, as one of many specific structured teaching strategies recommended by TEACCH professionals (Schopler, Mesibov, & Hearsey, 1995), have garnered considerable clinical interest. In contrast to more traditional teaching strategies that emphasize verbal and social information, work systems rely on visual cues and organization to help children with autism work more independently, more systematically, and with less frustration (Mesibov, Schopler, & Hearsey, 1994; Schopler et a!., 1995).

Work systems organize the individual's work area and materials in a manner that visually communicates all necessary information for an individual to complete a series of tasks (Mesibov, Schopler, & Hearsey, 1994; Schopler et a!., 1995). Work systems are not designed to teach new tasks, an activity more suited to interactive teaching sessions. Instead, the goal is to support independent practice or performance of important skills and activities, such as self-care skills, job related tasks, and academic exercises.

Mesibov and colleagues (1994) indicate that work systems should be individualized for the specific student's level of functioning. For example, a younger student would begin using a three-

bin system. Three task bins would placed at the child's left. The child takes one basket at a time, completes the task, and then places it in a large "finished" basket to the right. After finishing all three baskets, the child chooses an activity from a choice board posted in the work area. As a work system, this arrangement visually communicates four key pieces of information: (a) the work to be done (work in baskets), (b) the amount of expected work (three baskets), (c) when the work is finished (all the baskets have moved to the right), and (d) what happens next (activity choice board). In more complex work systems, additional visual directions can be provided through visual schedules (e.g., a series of picture cards) that communicate the sequence in which tasks should be completed. Even more sophisticated work systems, often involving the use of organizational notebooks and extensive written directions, may be developed for older or higher functioning individuals with autism (cf. Kunce & Mesibov, ]998).

In providing a rationale for work systems, Schopler and colleagues (Mesibov et a!., 1994; Schopler et al., 1995) emphasize that work systems are tailored to several learning and behavioral characteristics associated with autism. For example, by providing work instructions through visual rather than verbal or social cues, work systems build upon the visuospatial processing strengths and circumvent deficits in complex auditory processing, social cognition, or abstract verbal reasoning (see Carpentieri & Morgan, 1996; Siegel, Minshew & Goldstein, 1996 for research documenting this pattern of neuropsychological functioning). In addition, work systems provide a familiar structure and clear endpoint for work sessions, thereby taking advantage of the preference for routine and drive to complete tasks often associated with autism (Mesibov et al., 1994). As a result, individuals with autism are apt to work more independently and with less frustration, thereby increasing the range and decreasing the restrictiveness of settings in which they can function (Hall, McClannaban, & Krantz, 1995, Mesibov et al., ]995).

Finally, by limiting distractions, highlighting relevant information, and by providing a visual and lasting reminder of the sequence in which tasks are to be completed, work systems help compensate for the attentional and organizational difficulties that frequently characterize autism (cf Frith & Baron-Cohen, 1987; Minshew, Goldstein, Muenz, & Payton, ]992;).

In contrast to the clinical literature available on work systems, empirical research on work systems in their entirety is limited. A thorough literature search yielded only one publication, in Japanese, assessing the efficacy of a modified work system (Aoyama, ]995). On the other hand, two of the key components of work systems--organization of the work environment and visual instructions--have been researched in other contexts. First, Duker and Rasing (1989), found that minimizing distractions in the classroom environment (e.g., covering bookshelves, reducing decorations) increased on-task behavior and decreased inappropriate behaviors in children with autism.

Second, the use of visually cued instruction for individuals with autism, especially the use of visual activity schedules, has received substantial clinical and empirical attention (Quill, 1997; McClannaban & Krantz, 1999). Visual schedules can take many forms, such as a sequence of pictures or a list of simple written directions; however, they consistently show what activities are to be done and in what sequence. Sequential photographic or object schedules have been used to help people with developmental disabilities, generally, and autism, specifically, engage in wide variety of activities (e.g., daily living skills, homework, vocational tasks), with increased on-task behavior, independence form supervision, longer response chains, and greater generalization of skills across settings (e.g., Frank & Wacker, ]986; Frank, Wacker, Berg & McMahon, 1985; Hall, McClannaban & Krantz, 1995; Johnson & Cuvo, 1981; MacDuff, Krantz and McClannaban, 1993; Pierce & Schreibman, ]994;Thinesen & Bryan, 1981; Sowers, Rusch, Connis, & Cununings, 1980; Wacker &

Berg, 1983; Wacker, Berg, Berrie & Swalter, ]985).

The unique learning patterns and developmental course of students with autism require specialized instructional programming focused on each individual child's learning needs. A work system is an instructional technique that builds on the strengths of students with autism to promote further independence and growth.