A Guide to Teaching Students With Autism Spectrum Disorders

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Council for
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Preface

T he intent of this Division on Autism and Developmental Disabilities (DADD) Prism Series, Volume 7 book is to provide a user-friendly guide for special and general education teachers, teacher candidates who will soon enter the field, and all who are responsible for the education of students with autism spectrum disorders (ASD). There are a number of factors that influenced us in editing this DADD Prism Series Volume 7 book. First the Prism series is written for teachers and the content is intended to be relevant to classroom practice. Second, we wanted this book to be accessible and user-friendly. The chapters are concise, provide "real life" examples, and list resources for further study. Third, and most important, we wanted to present research-based strategies that are effective when teaching students with ASD. In cases where there is not sufficient research with students with ASD to guide practice (e.g., providing access to the general education curriculum), authors described how practices that are effective with other populations of students can be adapted for learners with ASD. All the contributors to this book have taught students with ASD and other developmental disabilities, and are currently involved in teacher training at universities, professional conferences, or in school districts. We share these research-based strategies because we value teachers and all the students we teach.

This book is composed of 13 chapters, divided into three sections: *Getting Started, Effective Instructional Strategies*, and *Access to the General Education Curriculum*. Section I, *Getting Started*, contains three chapters. In Chapter 1, Robert C. Pennington discusses how to set up instructional environments that will meet the learning needs and preferences of students. Strategies are discussed that include not only classroom arrangement, but also instructional and structural supports such as visuals, schedules, and direct instruction. Brenda Smith Myles, Amy Bixler Coffin, Jill Hudson, Renee A. Lake, Barry Grossman, and Ruth Aspy address the question "How do I determine what to teach?" in Chapter 2. A number of assessments and models are described to assist teachers in comprehensive program planning for students with ASD and other developmental disabilities. In Chapter 3, Barbara A. Wilson addresses the question, "How do I know if my students are learning?" A detailed description with examples is presented focusing on collecting and analyzing data that will provide on-going measurement of student progress and instructional effectiveness.

Environmental Arrangement

Robert C. Pennington

When designing a classroom environment to include a student with autism spectrum disorders (ASD), the teacher must first consider the environmental arrangement. Through careful planning, features of the student's educational environment can be structured to both support the student's skill acquisition and reduce challenging behavior. Teachers can provide frequent opportunities to respond, increase the predictability of daily routines, and decrease the influence of competing sensory stimuli during instruction. Building the optimal instructional environment involves making decisions related to the physical layout of the classroom, the placement of preferred items within the classroom, the use of antecedent prompts and visual supports, the temporal structure of activities, and the selection of appropriate instructional arrangements.

These critical programming decisions are addressed within the Individuals With Disabilities Education Improvement Act (2004) and can be documented as supplementary aids and services in the individualized education program (IEP). Supplementary aids and services are comprised of any support, program modification, or accommodation that is provided to a student to help them achieve annual goals, to access the general education curriculum, and to be educated with peers without disabilities (Heward, 2009). Environmental supports can contribute greatly to the education of persons with ASD and therefore should be documented in the IEP to ensure their inclusion in the educational program.

Physical Layout of the Classroom

Teachers must first consider the safety of all students when designing the physical layout of the classroom and remove any visual barriers that would provide students the opportunity to engage in problem behavior without intervention. For example, some students

Assessment for Program Planning

Brenda Smith Myles, Amy Bixler Coffin, Jill Hudson,
Renee A. Lake, Barry Grossman, and Ruth Aspy

Thorough assessment across domains and settings provides the information multi-disciplinary teams need to create comprehensive individualized programs for students with autism spectrum disorders (ASD). Traditionally, program-planning assessment has focused on academic, daily living, social/emotional/behavioral, recreation and leisure, sensory and motor, and communication skills. Although these areas are important, assessment should also focus on the areas that impact the learner with ASD: (a) specific characteristics of ASDs that must be addressed through direct instruction, (b) levels of supports needed to access curriculum, (c) strengths that can be used as a vehicle for instruction and motivation, (d) futures planning to establish long- and short-term goals, and (e) instructional strategies that are consistent with student needs. Designing and implementing a comprehensive program that contains the aforementioned elements increases the student's academic achievement (Mesibov, 2008). This chapter introduces methods that multidisciplinary teams can use as they assess students with ASD as part of the process of designing effective, comprehensive programs.

Traditional Assessment

In addition to having knowledge of the complexity of ASD, teams must also understand the myriad types of assessment that can be utilized to develop a program for the learner with ASD. Two types of assessment used in program planning assessment are curriculum-based assessments (CBA) and criterion-referenced tests (CRT). CBA are useful for program planning because they are derived from the school's curriculum. Some teams may use CRT in addition to or instead of CBA to determine student skill levels. CRT provides information both on skills the student has mastered and those the student has not mastered although they are not directly derived from the learner's school curriculum. Both types of assessment emphasize whether or not the student can perform a task.

Progress Monitoring

Barbara A. Wilson

Overall, the use of progress monitoring results in more efficient and appropriately targeted instructional techniques and goals, which together, move all students to faster attainment of important state standards of achievement. (National Center on Student Progress Monitoring, n.d., What Are the Benefits of Progress Monitoring section, para 2)

Student progress data are increasingly emphasized in education, as most states now conduct routine standardized assessments of all students in addition to the specific testing requirements of federal education laws. Primarily summative in nature, these assessments typically report on the effectiveness of learning postinstruction and consequently provide limited information on student progress as instruction is being implemented. Progress monitoring is a system of data collection and analysis that provides on-going information regarding student learning and instructional effectiveness. It also addresses a number of needs relevant to educating students with autism spectrum disorders (ASD) and provides information on student progress throughout instruction so that instruction can be modified to better meet the unique learning needs of the student. The data compiled through progress monitoring can also be used to meet federal requirements that eligible students' individualized education programs (IEPs) contain measurable goals with progress reported periodically throughout the year (Yell, 2006). Progress monitoring is a flexible system that easily lends itself to measuring progress on the variety of academic, communication, self-help, and behavioral goals that are often identified for students with ASD.

Systematic Instruction

Kara Hume

One goal of educators is to increase student engagement and active participation in classroom activities, using specific materials, and during interactions with peers and staff across the school day. Research has indicated that engaged behavior in students with disabilities is the single best predictor of academic gains (Bulgren & Carta, 1993). Similarly, the amount of time a student with autism spectrum disorders (ASD) is actively engaged in or attending to activities and interactions has been cited as one of the best predictors of student outcome (Iovannone, Dunlap, Huber, & Kincaid, 2003). However, characteristics related to a student's ASD, such as difficulty planning and organizing, limited ability to ignore competing information in the classroom, and challenges making connections between content/ideas (Hill, 2004), often make active engagement in the school setting difficult. If active engagement is going to be achieved with students with ASD, systematic instruction must be implemented to meet the needs of these students. Careful planning about how information will be presented and how students will respond is required to ensure the greatest likelihood that engagement will occur.

What Is Systematic Instruction?

Iovannone et al. (2003) defined systematic instruction for students with ASD as "planning for instruction by. . .carefully outlining instructional procedures, evaluating the effectiveness of the teaching procedures, and adjusting instruction based on data. . ." (p. 157). Essentially, educators should specifically plan *how t*o provide instruction based on the needs and characteristics of their students with ASD while planning for high levels of engagement (Iovannone et al., 2003).

Functional Communication Training

Robert C. Pennington and G. Rich Mancil

One of the diagnostic criteria for autism is impairment in communicative functioning. Researchers have reported that many children with autism spectrum disorders (ASD) do not acquire a functional communication system (Miranda-Linne & Melin, 1997). As a result, children with ASD may learn to engage in challenging behavior in lieu of using conventional communication (Bott, Farmer, & Rhode 1997; Chung, Jenner, Chamberlain, & Corbett. 1995, Sigafoos, 2000). If unaddressed, these problem behaviors may serve as barriers to success across a wide range of contexts (e.g., school, community, vocational). In addition, these problem behaviors are likely to increase in severity as children grow older.

Researchers and practitioners have applied a variety of interventions to address challenging behavior exhibited by people with autism (Machalicek, O'Reilly, Beretvas, Sigafoos, & Lancioni , 2007). Unfortunately, many of the interventions implemented in the studies reviewed by Machalicek et al. (2007) failed to address the lack of communication skills that may be at the core of the challenging behavior. Consequently, students may continue to use challenging behavior to express their wants and needs. One promising intervention that simultaneously addresses communication needs and challenging behavior is functional communication training (FCT). Functional communication training is a procedure in which students learn communication skills to replace their challenging behaviors. Researchers have demonstrated that students maintain new skills acquired through FCT and may apply them in new contexts (Durand & Carr, 1992).

Naturalistic Interventions

G. Rich Mancil

When first hearing the term *naturalistic interventions*, one may wonder what this entails. Does it refer to interventions done in natural settings such as homes and classrooms, or to how interventions are implemented in these aforementioned contexts? The answer is a little of both. Naturalistic interventions are a collection of practices like environmental arrangements, interaction techniques, and behavioral strategies that are implemented in natural settings. Some researchers and practitioners in the field of autism spectrum disorders (ASD) use the term incidental teaching interchangeably with natural interventions (Mancil, 2009), while others purport it is merely one of the practices within naturalistic interventions along with milieu therapy and embedded instruction (Mancil, 2009).

The overall approach of naturalistic interventions is to address target skills of learners by using their interests to guide interventions and instruction. The idea is to build more complex skills by using these interests that are naturally reinforcing and fit within the typical interactions in settings. Baer consistently mentioned that for behavior change to be effective and maintained, the new behaviors must come into contact with naturally occurring reinforcers (Stokes & Baer, 1977).

Basic Steps in Implementing Naturalistic Interventions

When implementing naturalistic interventions (Cowan & Allen, 2007), the basic steps include (a) identifying the skill to be taught, (b) choosing the appropriate context (classroom, playground, etc.), (c) choosing particular strategies/procedures to use, (d) training all pertinent staff, (e) implementing the intervention, and (f) tracking data and making changes as needed. These steps are shown in Figure 6-1 and will be described in detail in a case study.

Increasing Social Skills

Monica E. Delano, Kelly Whalon, and Barbara Y. Wert

Developing social communication skills is inherently challenging for people with an autism spectrum disorders (ASD). Even with early intervention, some social communication difficulties are expected to persist during the school years and beyond (Loveland, & Tunali-Kotoski, 2005). The social communication challenges experienced by children across the autism spectrum will present differently (Loveland & Tunali-Kotoski, 2005), and as a result, social skill instruction should target individual needs (Olley, 2005). Despite this variability, there is some predictability (Loveland & Tunali-Kotoski, 2005) that suggests initiating, responding to, and maintaining interactions with others are generally important instructional targets for learners with ASD (Olley, 2005).

Effective social skill instruction includes opportunities for students with ASD to engage in authentic social interactions in multiple, typical settings throughout the school day (Bellini, Peters, Benner, & Hopf, 2007). Such opportunities provide students with ASD a chance to practice newly acquired skills in natural settings, thereby increasing generalization and maximizing gains (Bellini et al., 2007). If students with ASD are provided little time to socially interact with their general education peers, then time to enhance their social skills is limited (Marans, Rubin, & Laurent, 2005). Yet, even in inclusive settings, minimal time is provided for students with ASD to interact with their peers without disabilities, and access to evidence-based social skill instruction is lacking (Theimann & Kamps, 2008). The effects of insufficient time and opportunity for interaction are compounded by the fact that many social skill interventions are minimally effective (Bellini et al., 2007). Two interventions with research support are *peer-mediated instruction* and *video modeling*.

Effective Toilet Training

Martha E. Snell and Monica E. Delano

Learning to use the toilet is one of the most difficult self-care skills to teach because it requires a functional bladder, an awareness of bladder fullness and bowel tension, and many related dressing and grooming skills. Most children, including those with disabilities, master bowel control before bladder control and daytime before nighttime dryness. Children with disabilities, including autism spectrum disorders (ASD), frequently experience delays in learning these skills. Because incontinence can have a damaging effect on the individual, can be stressful for families, and is more difficult to eliminate in older students, it is important that teachers know effective toilet training strategies.

Definition of Toilet Training

Target Skills

This chapter addresses instruction of bladder regulation or self-initiation during the daytime. Readers are referred to Snell and Delano (2011) for in-depth coverage. Two types of toilet training skill objectives that educational teams should identify are (a) elimination and (b) related grooming skills. Elimination objectives span from (a) being regulated or habit trained (student learns to go when taken to the toilet and to remain dry during other times), to (b) self-initiation (student learns the natural cues of bladder fullness and to request the toilet or simply to go), to (c) independence (student learns to toilet without assistance). Related grooming skills include getting to the toilet, clothing manipulation, wiping and flushing, and hand washing. Elimination objectives are selected based on toileting records, whereas related skills are selected after gathering observation data.

Barry eliminates when taken but needs to learn to self-initiate, to get to and from the toilet, to push down and pull up his pants, and to flush when finished. Hand washing will wait until later.

Collaboration

Maureen Walsh and Darlene E. Perner

Teachers who instruct students with autism spectrum disorders (ASD) need to work closely together to share their understanding of its many features. It is imperative that teachers form this collaboration and come to agreement about their teaching approaches due to the complexity of the individual needs of these students (Kilham, 2009). Collaboration is a rewarding endeavor, but can often be difficult to achieve in an instructional setting.

Collaboration refers to two or more people working together toward a common goal. In the field of education, teachers collaborate in many ways. One particular type of collaboration that is receiving much attention is the co-teaching model (Friend & Cook, 2007). In this collaborative relationship, the general and special education teacher work together to instruct all students in an inclusive education classroom. It requires commitment and flexibility from both teachers. The collaborative process in a co-teaching model requires

1. self-reflection;
2. professional development;
3. shared decisions;
4. regularly scheduled meetings supporting open communication;
5. on-going assessments of students' strengths and needs, as well as assessments of instructional approaches and collaborative efforts; and
6. a maintained focus on the ultimate goal of meeting all students' needs.

Students with disabilities undoubtedly have the potential to benefit and prosper in an inclusive setting when a strong collaborative support system exists. Specifically, the partnership between the special and general education teacher is instrumental in the outcome of inclusive classroom experiences for students with and without disabilities. Yet

Differentiating Instruction Using Tiered Instruction

Darlene E. Perner and Maureen Walsh

In a way, it's just shaking up the classroom so it's a better fit for more kids.
Carol Ann Tomlinson (From an interview with Leslie J. Kiernan, 1996)

Differentiated instruction is a process that helps general and special education teachers collaborate and meet the diverse learning needs of all students in inclusive classrooms. Teachers should consider a number of important principles when creating a differentiated classroom. These principles can range from adjusting the *content* (the material being presented); the *process* (the methods and activities that help students understand the concepts or skills being taught); and the *product* (the artifacts that students produce to demonstrate their learning) to creating a positive, supportive classroom environment (Tomlinson, 1999). Differentiated instruction involves teachers and students helping each other in learning and in social contexts. Other principles include respecting students' abilities, providing meaningful tasks, giving students choices, and employing flexible grouping. In differentiated classrooms, teachers continuously assess students' abilities/background knowledge (*readiness*), interests, and learning preferences (*learning profile*) and use these data to adjust the content, process, and products accordingly (Tomlinson, 1999). There are many strategies that teachers can use and various ways to implement differentiated instruction. Rock, Gregg, Ellis, and Gable (2008) documented that "teachers can exercise a tremendous amount of creativity and flexibility in differentiating instruction" (p. 34). This chapter will describe tiered instruction and provide an example of a tiered lesson that was implemented by co-teachers in a fifth-grade classroom.

Section III
CHAPTER

11

Developing Reading Skills[1]

Monica E. Delano and Kelly Whalon

Challenges with language and communication development are characteristic of children with autism spectrum disorders (ASD). Most children with ASD start to speak later and develop language at a much slower rate than typically developing peers (Tager-Flusberg, Paul, & Lord, 2005). Difficulties with expressive and receptive language persist in school-age children with autism and may be a significant obstacle to the development of literacy skills. Federal education law mandates that students with ASD receive access to the general education curriculum, and that reading instruction include evidence-based instructional methods such as those advocated by the National Reading Panel (NRP; National Institute of Child Health and Human Development, 2000). Yet, there is a limited body of research to guide teachers in providing reading instruction to students with ASD (Whalon, Al Otaiba, & Delano, 2009). Given this lack of evidence-based practices, teachers may consider a few options. First, they can work with the child's family to identify meaningful literacy goals based upon the family's preferences and priorities. Next, teachers may examine evidence-based practices for teaching literacy skills to other populations of students and use or adapt these methods for learners with ASD. Collaborating with general education teachers and reading specialists to provide access to the general education curriculum will be critical. Another approach is to apply practices that are effective in teaching other skills to students with ASD (e.g., systematic instruction) to teaching literacy. Finally, teachers may consult the available literature on teaching literacy skills to students with ASD. It is likely that educators will need to use a combination all of these options to develop effective literacy instruction for learners with ASD.

Teaching Written Expression

Monica E. Delano and Robert C. Pennington

Written expression, required for independence across a wide range of contexts, is a valuable tool for students with autism spectrum disorders (ASD). In educational settings, most students are expected to demonstrate their knowledge through written products. Writing skills also are critical to future success in many vocational settings (National Commission on Writing, 2004). Employers increasingly assess writing competencies when hiring and determining promotion. Once on the job, individuals will be required to perform a variety of tasks that involve basic to more complex writing skills. Finally, written expression has increasingly become the preferred medium for social interaction. Individuals will perform interactions daily via e-mails, texting, or social media networks (e.g., Facebook, MySpace). Those without the skills to engage in this new electronic world will find themselves increasingly isolated.

Despite the importance of writing skills, researchers have conducted few studies involving teaching written expression to students with ASD. As with reading, available research provides little guidance to educators in planning and implementing writing instruction for students with ASD. Recommendations about writing instruction for students with ASD must be based upon writing research with other populations of students, effective instructional practices for students with autism, and practices identified by the limited research base on teaching writing to students with ASD. In addition, the planning and implementation of writing instruction involves cooperation and support from a variety of professionals (e.g., classroom teachers, special educators, instructional assistants, speech language pathologists, assistive technology consultants, occupational therapist). Because writing occurs across all curricular areas, a team approach is especially critical. Also, close collaboration between the school staff and students' families will lead to the development of meaningful goals for written expression.

Teaching Mathematics to Students With High Functioning Autism

Peggy J. Schaefer Whitby

Mathematics is one of the most challenging areas of the school curricula for students with disabilities, including students with autism spectrum disorders (ASD). Researchers have noted that nearly 25% of children with ASD meet criteria for a mathematics learning disability (Mayes & Calhoun, 2006). Many of these children demonstrate average performance related to early mathematics skills that involve rote memorization (Chiang & Lin, 2007); however, as mathematical material transitions to a greater emphasis on conceptual understanding, a decrease in performance is noticed (Whitby & Mancil, 2009). Strengths in rote acquisition (Mayes & Calhoun, 2003a) and procedural knowledge sometimes result in the appearance of high mathematical ability, especially in the early years (Whitby & Mancil, 2009), which may delay appropriate intervention.

Currently, evidenced-based strategies to teach mathematics to children with high-functioning ASD are limited (Lord & McGee, 2001). Traditionally, children with ASD have been taught using direct instruction, discrete trial training, or Touch Mathematics (Bullock, 1991) approaches. Direct instruction has been effective in increasing discrete skills such as identifying numbers, rationale counting, memorization of mathematical facts, and memorization of mathematics procedures (Cihak & Foust, 2008; Taubman et al., 2001). However, direct instruction procedures may not build the conceptual knowledge that leads to success in high-level mathematics such as applied problem solving. Students with ASD have difficulty with conceptual knowledge and applied problem solving across all domains (Goldstein, Minshew, & Siegel, 1994). The National Council for Teachers of Mathematics (NCTM) stresses problem solving as a main goal of mathematics for all students across five skill areas: numbers and operations, algebra, geometry, measurement, data analysis, and probability (NCTM, 2000). Most state and district mathematics goals