

From the Best-Selling School Success Series!

school success for kids with **Autism**

- Includes ready-to-use strategies for teachers, administrators, and parents
- Covers developmental issues from preschool to high school
- Provides guidance for helping kids across the autism spectrum



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Sara G. Egorin-Hooper

Introduction

Sara G. Egorin-Hooper

A true friend knows your weaknesses but shows you your strengths; feels your fears but fortifies your faith; sees your anxieties but frees your spirit; recognizes your disabilities but emphasizes your possibilities.

William Arthur Ward

IMAGINE your favorite friends coming over to spend the day to share adventure, food, and fun. You begin to think about your friends' interests, foods they love, and meaningful ways you can connect with them. You want to be respectful of and sensitive to each friend's unique interests and needs. You know that one friend has several food allergies that will require some planning and creative cooking. Some of your friends are active and love to hike while others tire more easily and enjoy hanging out. These individual differences comprise the mixed group of friends who will soon

be a special part of your planned day. You want to accommodate individually as well as collectively.

In preparing for their arrival, you think about what your friends will enjoy doing and set up the day based on what you know about them. You make a variety of dishes so there are some yummy choices for all. *You would never think of saying, "Well, this is all I made to eat, so it's too bad that you can't eat what's here; you'll just have to watch the rest of us while we eat."* After lunch, you choose a walking path, one with benches, so anyone can stop and pause during the walk if needed. *You would never say to your friend, "I'm sorry you're so wiped out—hang in there, we only have 5 more miles to go."* Clearly, what sensitive, caring people *intentionally* do is consider the interests, capabilities, and needs of those with whom they will be sharing time and space.

These are some of the considerations for creating a successful classroom experience for students with an autism spectrum disorder (ASD). Today's classrooms are made up of a very diverse group of students and each student has his own learning style. The student with an ASD brings his own unique learning strengths and challenges to a classroom, and there are both universal (meaning strategies that are helpful to *all* students) and ASD-specific strategies that can be put in place to ensure a positive and successful learning environment. This book will guide both educators and parents through these strategies across the age-span; however, despite the age of the student or the type of classroom, the fundamental component for success is the ability for teachers to create connections with and between their students.

Teachers are responsible for orchestrating meaningful relationships and learning in their classrooms each day. To accomplish this goal, teachers must demonstrate the willingness and open-mindedness to *see the value* of establishing an environment where their caring actions make a positive impact for students and *embrace the opportunity* to create an energizing classroom where all students belong and are invited to feel that their unique gifts are recognized and celebrated.

Creating an Inviting Classroom Community

Every day in a classroom needs to be like preparing for a visit from favorite friends. Just as you sustain your friends and are in turn sustained by them, the same dynamic exists between a teacher and her students. Teachers must also make the effort to create a memorable and mutually worthwhile classroom experience for all. Students and their families need to feel a sense of belonging from the moment they walk into the school.

Universal Educators

Every human being who touches the student's life is to be viewed as a "universal educator," including families who are integral and must be valued for their connection to and understanding of the whole student. Universal educators live and foster the message that we are "all students and teachers to each other," and learning is about taking in and making sense of experiences wherever we are and with whomever we are in life.

- The best universal educators don't see disability as a deficit, but rather as a difference. They use these differences as tools to motivate, teach, support, and actively engage each student in learning.
- The best universal educators model sincere, genuine appreciation and acknowledgment of each individual with whom they work, and then act intentionally to put purposeful strategies and supports in place.
- The best universal educators provide opportunities for students to contribute to the whole class—rather than always being the ones who are helped.
- The best universal educators respect, acknowledge, and consider ways to make learning accessible to students through choices that

empower students, contribute to their success, and encourage them to take risks.

- The best universal educators, regardless of their title or role, continually reflect upon these qualities and imagine the possibilities that can and do result for students when meaningful, relevant classroom and instructional considerations are in place.

Thinking into the past to reflect on a favorite teacher conjures up first and foremost a memorable person who made us feel welcomed and valued in so many ways and modeled the real three Rs: relationships, respect, and relevance (not your grandmother's readin', writin', and 'rithmetic). Imagine a teacher who did this for you.

Relationships: Building Connections With Students

You are likely thinking of a teacher who learned your name right away and made you feel special by this personal acknowledgment; asked about personal experiences in your life such as your birthday party or how you were feeling when you returned from being absent from school; sent home a newsletter that included highlights of your daily activities and your accomplishments and acknowledged that you were part of a family; put up a bulletin board of photos of himself and other staff members along with a list of their favorite things; allowed students to have a bulletin board that did the same to give you something personal and tangible with which to connect; and met you at the door every day to greet you with a smile and a spirit of excitement about you being there and what you would learn that day, which made you want to come to school.

Respect: Fostering Mutual Trust

You are likely thinking of a teacher who recognized your keen interests or passions by complimenting you to others in the class and allowing you to share your ideas and stories; displayed everybody's artwork in the room and hallways and saw special talents in your artistic efforts, regardless of their lack of museum quality; gave you jobs so

you could contribute to the class in a meaningful way and feel needed; invited others to your classroom so you could showcase your accomplishments and talents; and responded patiently to a wrong answer or off-beat question with “That’s an interesting, creative way to look at that!” or “I’ve never thought of it in that way before.”

Relevance: Showing Usefulness in What Is Learned

You are likely thinking of a teacher who gave you choices in your activities and assignments and showed he valued your opinions, ideas, and interests; allowed you to dance the “longitude and latitude” song, measure square footage going toe to heel as you walked across the floor, or learn addition and subtraction by hopping and jumping on the walk-on number line as fun, helpful ways to learn, practice, and understand something new and difficult; and gave you opportunities to get comfy in a beanbag or rocking chair, blow bubbles and catch them before they hit the ground, make favorite creatures out of play-dough, watch the fish swim in the classroom aquarium, or read a book outside in the courtyard on a nice spring day when you just needed time to be yourself and unwind.

Reframing Our Picture (the Fourth R— One More for Good Measure!): Seeing Students From a Different Angle, Focusing on Students’ Gifts, Strengths, Capabilities, and Possibilities Rather Than on Their Deficits and Limitations

You are likely thinking of a teacher who always modeled forgiveness and recovered quickly even when upset with you; took the time to teach you positive, more socially acceptable ways to deal with your frustration, confusion, or social “misreads” and guided you in developing skills for handling difficult situations; let you know that if you could just get through a specific amount of work you thought was really hard, you could celebrate by having a set period of time to play your favorite computer game or read your favorite book; challenged you to expand your interests and exposed you to new learning when

you insisted on staying with the one activity you liked; helped you save face when you rigidly dug in your heels; and addressed your need for structured and clear expectations by reminding you through chanting “and that’s the rule in school.”

All of these qualities contribute to the building of an authentic connection between students, families, and educators. These connections, these relationships are the foundation for successful learning in any classroom. Throughout this book, the reader will gain information on how to create a classroom environment that is nurturing, supportive, and effective for students with ASD, from early childhood through the transitioning adult. Parents will gain valuable information about what essential elements to look for in a classroom to successfully support their child with ASD. The intention is to provide useful details about curriculum content, instructional strategies and supports, and inclusion practices that are critical components in any classroom for a student with ASD. However, the reality lies in the true appreciation of starting with the information in this introduction: the importance of establishing meaningful relationships.

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Strategies for Teaching Kids With Autism

Christine Hoffner Barthold

Tell me and I'll forget; show me and I may remember; involve me and I'll understand.

Chinese Proverb

THIS chapter will cover some general strategies for teaching students with ASD. Many of these strategies should be applicable to any student in any classroom, with some adaptations and creativity. Not too long ago, many students with ASD were considered unteachable and were placed in institutions or substandard settings (Scott, Clark, & Brady, 2000). Presently there is a shift toward more inclusive settings where students with ASD are educated alongside their typically developing peers. It can be difficult to choose what strategies will work best for students with ASD, particularly because there is not one strategy that has proven to be most effective for all students with ASD (National Research Council, 2001). In addi-

tion, many teachers and other professionals have had little autism-specific coursework to prepare them (Schwartz & Drager, 2008). A list of quick tips and tricks, although appealing, does not adequately address the needs of individuals with ASD or answer pressing questions about the best interventions to choose from the myriad available today. Therefore, having a good foundation of general instructional practices and an understanding of how to weigh the evidence is crucial. This is also important for parents. The financial investment in interventions can be significant; therefore, choosing those based in solid science is more cost-effective than those that may not have a scientific foundation. When evaluating educational programs for their child, it is important that parents look to see whether the research-based strategies described in this chapter and elsewhere in this book are being used. Otherwise, families and schools may be wasting time and money.

Choosing Strategies

Choosing effective strategies from the many that exist can be a challenge for parents and teachers alike. A recent study identified more than 100 different types of strategies often used by parents and clinicians, from behavioral therapy to biological interventions (Green et al., 2006). Parents often try multiple strategies in the hope that one will make a difference. Unfortunately, for many of these strategies, there just is not enough evidence to support that they work. Even when common sense prevails, our common sense can be wrong. It is thus very important that recommended strategies are “evidence based.” This fact was highlighted in the No Child Left Behind Act (NCLB, 2001), which incorporated a number of standard-based principles of education reform. One of the standards in NCLB emphasizes an increase in quality of education by incorporating the use of scientifically based instructional strategies.

What does it mean to use evidence-based strategies? Many experts (e.g., Dunst, Trivette, & Cutspec, 2002; Odom, Collet-Klingenberg,

Rogers, & Hatton, 2010; Reichow, Doehring, Cicchetti, & Volkmar, 2011) have attempted to define evidence-based strategies. All agree that the core part of the definition is that there must be clear and unambiguous evidence that the use of a strategy resulted in improvements in student responding. The effectiveness must be demonstrated within the context of research studies that are designed so that other possible explanations can be ruled out. Accessing information on which strategies are considered to be evidence based has been made easier by the publication of several articles (available online) that review evidence-based strategies with respect to teaching students with ASD (e.g., National Autism Center, 2008; Odom, Collet-Klingenberg, et al., 2010).

It is somewhat beyond the scope of this chapter to provide an in-depth analysis of all of the different evidence-based strategies available for students with ASD. However, what follows is a brief overview of some of the more frequently used evidence-based strategies for ASD as well as a few that are popular, but not necessarily evidence based. Interventions and treatment models are broken down into the following categories: (1) evidence-based interventions, which consist of specific strategies that can be incorporated into any curriculum and/or setting (Odom, Collet-Klingenberg, et al., 2010); (2) evidence-based comprehensive treatment models (CTMs; Odom, Boyd, Hall, & Hume, 2010), which are usually multicomponent treatment packages systematically designed to be implemented over extended periods of time and to address core symptoms of ASD; (3) CTMs that are not evidence based but that rely upon evidence-based strategies; and (4) popular strategies and CTMs that do not have an empirical evidence base at this time. Finally, we will end this chapter discussing the evidence-based strategy of Positive Behavior Supports (PBS) and some critical strategies for understanding and replacing challenging behaviors.

Evidence-Based Strategies

Many of the evidence-based strategies used with students with ASD are based on the principles of applied behavior analysis (ABA).

In ABA, there is an emphasis on breaking complex skills into observable, measurable components. These components are taught with clear instructions and specific reinforcement for appropriate responding. Many students with ASD do best when both instructions and feedback are clear and concrete. ABA provides a system for doing so and helps students learn appropriate skills quickly and efficiently. Interventions are often based upon the strengths and needs of the child. An emphasis upon what triggers responding (i.e., antecedents) and what motivates or reduces responding (i.e., consequences) is emphasized (Bailey & Burch, 2006).

A recent comprehensive review of the literature revealed 24 evidence-based practices for use with students with ASD, with the majority of these practices using some sort of ABA (Odom, Collet-Klingenberg, et al., 2010). Eight of the 24 more commonly-used strategies described will be discussed: (1) reinforcement, (2) Discrete Trial Teaching, (3) naturalistic teaching strategies, (4) Picture Exchange Communication System (PECS), (5) teaching social skills, (6) prompting, (7) visual supports, and (8) structured work systems. The National Professional Development Center on Autism Spectrum Disorders' website (<http://autismpdc.fpg.unc.edu>) contains training modules, practice briefs, and implementation guidelines for more information regarding these and additional evidence-based strategies. It is important that teachers and parents obtain guidance and/or further training from a qualified professional when considering the use of the procedures described below.

Reinforcement

One of the most critical components of any teaching program for students with ASD is the systematic presentation of reinforcement for socially appropriate behavior. Whether or not materials are reinforcing is determined by their effect on behavior. In other words, materials are reinforcing if student behavior increases after the material is provided; if behavior does not increase, the material is not reinforcing regardless of how much a teacher thinks the material should be reinforcing or

how reinforcing it is to other students in a classroom. It is also arguably the most important strategy; without it, other interventions will be far less potent.

The range of materials that may be reinforcing to a student is, in many respects, unlimited, depending on whether student behavior increases. Teachers will often use tangible materials (e.g., certificates, stickers, small toys, books, magazines, video games), privileges (e.g., team captain, line leader, passing out materials, sitting next to the teacher at lunch), or access to special activities (e.g., computer, DVD player, radio). The use of any of these should always be paired with social praise so that there is an increased likelihood that social praise will also become reinforcing. The most important point to remember is that everyone is different and so what is reinforcing to each student in a classroom may vary tremendously. That is why teachers and parents must select reinforcers from the perspective of the child, not what the adults might want the child to work for.

Concerns about students becoming dependent on concrete reinforcers are common. The fact is that all human beings are, to some extent, dependent upon concrete reinforcers. A person may love his job, but if he stopped getting paid for his work, it's doubtful that he would come to work indefinitely just for intrinsic motivation. The difference is that most adults with typical development have built up a tolerance to delay of reinforcement and can work for longer and longer periods of time without needing some sort of concrete reinforcer. This can also be true for students with ASD—at first, more concrete and contingent reinforcement might be necessary, but with careful planning students can gradually build up their tolerance so that more delayed and natural reinforcers (i.e., the ones that typically motivate other students) can be utilized (Alberto & Troutman, 2009).

How are reinforcers identified? There are many formal assessments that can be used to assess reinforcement (e.g., Mason & Egel, 1995), but the simplest way to figure out what might be reinforcing is to place a child in an environment where she has many options and see what she gravitates toward. Typically, the things that students tend to pick when left to their own devices function well as reinforcers. Similar

information can also be obtained by asking parents and previous teachers what materials have been used as reinforcers previously.

What about the student who doesn't seem to be motivated by anything? First of all, it is important to ensure that there are enough interesting choices available. Using the same reinforcer over and over again will often result in a decrease of responding, an indication that the reinforcer is no longer effective. Even for students who are motivated by praise, using the same phrase like "good job" can lose its effectiveness after a while. Teachers can decrease the likelihood of this happening by ensuring that they have a variety of preferred materials and activities available and by letting students choose what they want to work for during each teaching session. Teachers can also increase the novelty of materials by making some student preferences unavailable and then reintroducing them at a later time.

Identifying reinforcers is only the first step, however. It is important that items are used correctly to maximize their reinforcing potential. Parents and teachers should make sure that reinforcement is provided when children respond appropriately when the correct cue is provided. For example, it is more important to reinforce a student for tying his shoe when he sees that it is untied than in response to a teacher or parent saying, "Tie your shoe."

Reinforcement must also be provided immediately following the appropriate response, especially when students are just beginning to learn a skill. Waiting until the student comes home or it's convenient to provide a reinforcer will just confuse the student. It is also important for teachers to change the schedule of reinforcement once a student begins to learn the skill being taught. For example, as a student begins to learn a skill, a teacher might begin to provide reinforcement after the third or fourth correct response instead of reinforcing a student each time he responds correctly. Changing the schedule of reinforcement so that it is more intermittent is necessary in order to maintain the skill over time (Alberto & Troutman, 2009).

Keeping the teaching environment interesting and motivating, with related and natural reinforcers, will help students learn more

Table 3.1**Using Reinforcement**

Tips	Example
<ul style="list-style-type: none"> • Be creative! Don't discount a reinforcer because it seems strange. Some individuals with autism are motivated by odd things like pieces of string. • Be sure to reinforce immediately after the required response, especially when a student is beginning to learn skills. Reinforcement should be reduced once a child begins to learn a skill so that it is provided only after some occurrences of the behavior (e.g., after every third response). • No freebies! If you decide to use something as a reinforcer, make sure the child earns it every time it's given to him. • Have a variety of ways that you reinforce the child's behavior—praise, tangible items (e.g., certificates, stickers, posters), privileges (e.g., team captain, line leader, choosing a TV program, choosing a snack) and/or activities (e.g., computer time, games, playing outside, special projects). • Always provide social praise when using other forms of reinforcement. 	<p>Janice, a parent of a 3-year-old with autism, knew that her child liked to drink juice and she wanted him to request juice when he was thirsty. At breakfast the next day, Janice gave her son an empty cup. When he said "juice," she immediately gave him a small amount of juice. When he drank it, he said "juice" again, and Janice was ready to give him more. He said "juice" about 20 times in a 15-minute period.</p>

readily. For example, there is not really a motivation for a student with ASD to put on a coat unless she is going someplace cold; therefore, recess might be the ideal time for teaching that skill as opposed to "drill time." Similarly, individuals rarely ask for food unless they are hungry. Therefore, snack times and lunch might be a great time to practice requesting skills. Tips for using reinforcement and an example describing implementation can be found in Table 3.1.

Discrete Trial Teaching

Discrete Trial Teaching, or DTT, is probably one of the oldest and

most effective strategies used for presenting instruction to students with ASD (e.g., Cohen, Amerine-Dickens, & Smith, 2006; Smith, 2001). (DTT is also known as Discrete Trial Instruction or DTI.) In a discrete trial, skills are broken down into very specific component parts and taught step by step. Smith (2001) identified five parts that form a discrete trial: (1) the discriminative stimulus or instruction, (2) teacher assistance (i.e., prompt) immediately before or after the instruction to help ensure a correct response, (3) the student response, (4) systematic reinforcement for correct responses or error correction, and (5) a short pause between trials.

The discriminative stimulus will vary among trials, but usually consists of some sort of short instruction (e.g., “touch your nose,” “read the story,” “get ready to go to lunch”). These instructions can either be very simple for students who are early learners or more complex as students acquire more skills. The student is expected to respond relatively quickly; although wait time between the discriminative stimulus and response varies among practitioners with accepted wait time typically between 2 and 5 seconds (Lovaas, 2002). It is also important that all individuals working with a student with ASD expect the same response. If one person accepts crouching as sitting down and another accepts only “criss-cross applesauce,” the instruction and progression through the protocols can be rather inconsistent. The teacher, especially in the beginning of instruction, may prompt a correct response from the student in order to minimize errors. For example, the teacher may use hand-over-hand guidance to help the student be successful. The prompt is subsequently faded as the student learns the skill so that she ultimately learns to respond to the instruction alone.

A correct response should be followed with praise, preferred items, and/or a small amount of food, depending on what has been identified as reinforcing to the student. If the student responds incorrectly or fails to respond at all, some form of feedback is given to indicate to the student that her response was incorrect (e.g., “Let’s try again) and the instruction is presented again, typically with teacher assistance. A short pause of 1–2 seconds separates the trials, which makes them

Table 3.2**Implementing Discrete Trial Teaching**

Tips	Example
<ul style="list-style-type: none"> • Provide a brief, clear instruction or question that is appropriate to the skill being taught. • Reinforce the student if his response is correct and occurs within 5 seconds following the instruction. • Deliver feedback for incorrect responses (“try again”) and provide assistance (prompts) following the next instruction. • Pause 1–5 seconds (intertrial interval) before presenting the instruction that starts the next trial. This helps to ensure that the student learns when one trial is completed and a new trial begins. • Before trying discrete trial teaching, consult a qualified behavior analyst for help. Many are listed at http://www.bacb.com. 	<p>Tom, the teacher of Lisa, a 9-year-old with autism, is trying to teach coin identification and value using DTT.</p> <p><i>Tom:</i> “Lisa, give me the nickel and tell me how much it is worth”</p> <p><i>Lisa:</i> <i>Hands teacher the nickel.</i> “This is a nickel, and it is worth five cents”</p> <p><i>Tom:</i> “That’s right! Good for you.” <i>Pauses 1–5 seconds and presents next instruction.</i></p>

discrete (Smith, 2001). Table 3.2 provides tips for using DTT and an example describing implementation.

As mentioned previously, there is an enormous amount of evidence supporting the effectiveness of DTT. However, two limitations in particular have been identified. First, students may only learn to respond correctly when the teacher gives the instructions and not when the specific instruction is absent. For example, a student with ASD may learn to play with peers when the teacher says, “Go play with your friends”; however, he may not play with his friends if only the friends are present (natural cue for playing). A second concern is that students may have difficulty using the skills in settings outside of the classroom due to the highly structured nature of DTT (Naoui, 2009; Smith, 2001).

Naturalistic Teaching Strategies

Teachers and parents may be able to reduce problems with DTT by using naturalistic teaching strategies. These are strategies where the teacher follows the student's lead and/or contrives situations where communication and socialization can be facilitated. The reinforcers are considered to be more contextually relevant. For example, a favorite cookie might be placed in a clear container that the student is unable to open. Therefore, the student must ask an adult for assistance in accessing the cookie (the reinforcer). The key aspects of naturalistic strategies are the emphasis on the student's motivation and the usability of such strategies in everyday, naturally occurring events, such as in play, meal time, or completing homework. Strategies that utilize naturalistic teaching strategies include, but are not limited to, Pivotal Response Training (PRT; Koegel & Koegel, 2006) and Incidental Teaching (IT; c.f., McGee, Krantz, Mason, & McClannahan, 1983). Some people erroneously think that naturalistic strategies are different from ABA, when in fact they are a different application of the behavioral model. Reinforcement and error correction is systematic and based upon the student's response.

In naturalistic interventions, the teaching stimuli are chosen by the student; that is, things that the student is already interested in are used as the teaching stimuli. For example, if a student is picking up and spinning the wheels of a toy car, the teacher will use that car to teach a skill in the moment as opposed to taking away the car to be used later. The teacher will then create some opportunity for social interaction around this interesting and potentially reinforcing item. For example, the teacher might pick up the car and hold it expectantly while waiting for the student to ask (e.g., verbalize, sign, point to, give a picture) to play with the car. Once the student makes a close approximation of the response (e.g., "play car," "can I have car?"), the teacher will provide some sort of naturalistic reinforcement such as rolling the car back to the student. Because skills are taught in the natural environment using stimuli that the student already gravitates toward, there is a good probability that the student will apply the social and communication skills learned to the areas where they are most expected (Koegel & Koegel, 2006).

Table 3.3

Implementing Naturalistic Teaching

Tips	Example
<ul style="list-style-type: none"> • Use naturally occurring routines to teach. For example, have the child request food during meal time or identify items of clothing during dressing. • Do something unexpected, leave something out of a routine, or complete a task differently in order to entice the child to communicate. For example, during a mealtime, you might give a spoon but no food. When dressing, you might try to put the child's pants on her arms instead of her feet. • Arrange the environment so that children are more likely to initiate communication. For example, having a highly desirable item visible but out of reach is a good way to facilitate child-initiated requests. • If the child makes an attempt to communicate, reinforce it! Don't expect "please," "thank you," or complete sentences from the very beginning. • Keep teaching light and fun. If you feel like you're forcing too much, back off and try again later. 	<p>Hannah was teaching her 10-year-old daughter, Annalisa, to identify common self-care products. During bathtime, instead of handing Annalisa the shampoo, she handed her a toothbrush. When Annalisa looked confused, she picked up the shampoo and said, "shampoo." She then expected Annalisa to say the word "shampoo" back. At first, it sounded like "sha-sha," but Hannah was thrilled and gave Annalisa the shampoo.</p>

Occasionally, the environment might be engineered or sabotaged in order to prompt the student to initiate communication. For example, a student might be given a worksheet but not a pencil. This situation would serve as a natural prompt to the student to subsequently ask for a pencil. Similarly, a teacher may place a student's favorite toys so that they are visible but out of reach. The student is more likely to initiate a request in this situation than if the toys were more readily accessible. Tips for using naturalistic teaching strategies are provided in Table 3.3, as well as an example showing their application.

Picture Exchange Communication System

It is essential that students with ASD be provided with and taught how to use functional communication systems immediately following diagnosis, given the profound communication problems that are so evident in these children. Nonverbal communication systems may be the most appropriate for the large number of students with ASD who have difficulty with verbal communication. The Picture Exchange Communication System (PECS; Bondy & Frost, 1994) is an evidenced-based communication system that methodically teaches students to communicate using picture symbols. Training takes place in six phases, where students are systematically taught more complex exchanges with a book of picture symbols. Putting pictures in a book and giving them to a student is not synonymous with PECS, nor is the act of having a student simply point to a picture included as part of the PECS procedure. The most important component of the PECS communication system is the exchange of the picture or object from one individual to another, which signals intentional communication between two people. In order for the system to be effective, it is important that these phases are taught as developed in the PECS manual. Furthermore, it is essential that the picture symbols are readily available to the student in *all* environments (including home and community; Frost & Bondy, 2002; Sulzer-Azaroff, Hoffman, Horton, Bondy, & Frost, 2009).

In a recent review of the literature, Ganz et al. (in press) found that PECS, along with other types of picture-based communication systems and voice output communication devices (often known as VOCA) improved communication skills in students with ASD. In addition to increasing communication, using an alternative form of communication also helped increase social skills and reduce problem behaviors. Therefore, providing alternative communication supports may lead to additional social and behavioral benefits (Ganz et al., in press).

Teaching Social Skills

Given that social relatedness is one of the defining features of ASD, several evidence-based strategies have been developed for

teaching appropriate social behaviors. One area that has received considerable attention has been peer-mediated intervention (PMI). PMI includes strategies used to systematically teach typically peers and children with ASD how to engage in positive social interactions. Students as young as 3 have been used to help their peers with ASD increase social skills.

Peer-mediated interventions can be a beneficial part of the program for students with ASD, particularly if they are included with their typically developing peers. The implementation of such programs would require that classroom staff provide opportunities and training that would increase the likelihood of interactions between typical peers and students with ASD. Neitzel and colleagues (Neitzel, 2008; Sperry, Neitzel, & Engelhardt-Wells, 2010) noted that there were common steps present in many research studies on PMI. These included: (1) selecting peers who are well-liked and who interacted frequently with a variety of other students; (2) teaching peers how to engage students with ASD through teacher demonstration, role-play, and explicit reinforcement for using the skills correctly; (3) practice sessions with students with ASD during which staff provided suggestions to peers on how to initiate/maintain interactions; and (4) identifying/providing naturally occurring opportunities for interactions throughout the day so that social interactions will be more likely to generalize to other settings within the school. Tips for using peer modeling are presented in Table 3.4, as well as an example describing implementation.

Video modeling is another strategy that has been used to teach appropriate social behavior. The student watches a short video of competent individuals modeling appropriate social behavior. The advantage is that the student with ASD can watch the same video over and over, pause, and rewind, allowing for a level of practice not available with live models. Video modeling has been effective with students with autism (e.g., Delano, 2007) and has been identified as an evidence-based strategy (Odom, Collet-Klingenberg, et al., 2010).

With video modeling, the teacher defines a social behavior in observable and measurable terms (e.g., greeting strangers by saying “hello”). Teachers will then write a short, concrete script that breaks

Table 3.4

Using Peer Modeling

Tips	Example
<ul style="list-style-type: none"> • Children as young as 3 can be taught to be peer models. • Consider children that may not be “superstars” to be peer models. Children who are socially competent, interested in helping others, flexible, and cooperative often make excellent peer models. • Be sure that children with autism have plenty of opportunities to be with typical peers. • Give peer models specific instructions (e.g., tap your friend on the shoulder to get her attention, provide assistance by showing how to complete an activity) and facilitated practice on how to interact with a child with autism; don’t just put them together and hope things goes well. 	<p>Sam, a child with autism, is included in a typical preschool. Ms. Boyle creates the “social butterflies” group and creates wings for all of its members. During group meetings, the children learn about topics such as initiating social interaction, sharing, and providing compliments. During the first 5 minutes of the group meeting, the children talk about the importance of each skill. Ms. Boyle models concrete ways to implement the social skill, like saying “Thank you” to someone who gives them a toy. Afterward, the group practices using role-playing. Ms. Boyle also points out how some of their friends may need to be reminded more than others about how to share and play together. During playtime, Ms. Boyle walks around and provides praise to the children using the skill she taught them during group time.</p>

down the skill into its component parts (also known as a task analysis). Once the video is made, editing is often necessary to make sure that the necessary skills are modeled appropriately. Students view the video on their own schedule with or without adult assistance. Video modeling has been used successfully to teach a variety of social, play, and vocational skills to students with ASD (Allen, Wallace, & Renes, 2010). Tips for using video modeling and an example showing how it is done are presented in Table 3.5.

Prompting

The idea behind prompting is to provide additional support to a

Table 3.5

Using Video Modeling

Tips	Example
<ul style="list-style-type: none"> • Video models are available online, but videos shot with people familiar to the child or from the child's perspective often work best. • Keep the videos short and interesting. • Videos should show the child with autism exactly what to do in the new situation. • Review the video several times before the child is expected to enter the new situation. • Provide reinforcement when the skills are used in the natural environment. 	<p>Mary, a 16-year-old with autism, had been asked to leave several work placements due to meltdowns. Usually, these meltdowns happened during the first day of work or when an adult changed the tasks that were part of Mary's typical routine. Her teacher decided to make a video of her next job site placement from her perspective that starred her new colleagues and showed the tasks she was going to have to complete. Mary reviewed the video about 3–4 times before she went to her new job site, often rewinding and rewatching her favorite parts. The supervisors at the job site reported that Mary had very few problems her first day on the job.</p>

student in order to ensure that he responds successfully. The more times a student is successful, the more reinforcement can be delivered, which increases the chances that the student will be successful in the future. There are many different ways to prompt a behavior. An example of a prompting sequence is *least-to-most prompting*. In least-to-most prompting, the teacher increases the level of assistance until the student is successful. For example, the teacher may point to the item that the student needs to complete an action. If the student does not respond, the teacher may model the response. If the student is still not successful, then the teacher may provide hand-over-hand assistance (Alberto & Troutman, 2009). More detailed reviews of other prompting systems can be found in Alberto and Troutman (2009) or Boutot and Smith Myles (2011). One of the most important aspects of prompting that teachers and parents need to remember is that prompts must eventually be faded (i.e., the use of the prompt is gradually reduced over time until the student can complete the task

independently); otherwise students may learn to respond only when the prompt is used (Heflin & Alaimo, 2007).

Visual Supports

Many students with ASD are considered to be visual learners; that is, they acquire knowledge best when information is concrete and can be referenced easily. Visual supports, such as schedules, can help a student navigate the world around her by providing structure and predictability. Many people with ASD are literal and concrete interpreters of information. That is, they will most likely do exactly what they are told to do. Things like visual schedules can maximize students' success in independently following the routine and self-regulation surrounding transitions.

Picture schedules that function much like a to-do list are often very helpful for students on the autism spectrum (Banda, Grimmett, & Hart, 2009). Having clear signals that consistently are associated with transitions from one activity to another can really help a student become comfortable and more ready to learn. Teaching students what to do and *when* is critical to success (Hume, Loftin, & Lantz, 2009).

When creating a visual schedule, it is very important to tailor the schedule to the developmental level of the student. Younger children and students with lower cognitive skills will have trouble processing a schedule that includes all of the day's events. For these students, it might be helpful to begin with only what is happening now and what happens next. For others, a schedule that depicts a finite amount of time (e.g., the morning) may be more effective. Schedules typically move from left to right or top to bottom. A daily schedule for a student with ASD is shown in Figure 3.1. This example is for a written schedule, but pictures could also be used to represent the classes if the student could not read a written schedule.

With any type of visual system (e.g., communication device, work system, visual schedule), the ability of the student to process symbols must be considered. Although commercially available symbol systems are popular, they may be too abstract for early learners. Photos and/or

Period/Time	Class	Room #
1: 7:25–8:15	Math	223
2: 8:20–9:10	English	110
3: 9:15–10:05	Computer Lab	115
4: 10:10–11:00	P.E.	Gym
5: 11:10–11:30	Lunch	Cafeteria
6: 11:40–1:40	Community/Work	
7: 1:50–2:20	Social Group	122
8: 2:30–Dismissal		

Figure 3.1. Daily schedule for a high school student with ASD.

actual items might be more appropriate for these students. For more advanced students, a written to-do list may be sufficient—remember that letters are symbols, too. It is important that when visuals are created that the developmental level of the child, the complexity of the task, and the legibility of the symbols are all taken into account (Mineo Mollica, Virion, Gray, & Pennington, 2005).

Structured Work Systems

A goal for most students on the autism spectrum is independence. However, many times, instructional methodologies and interventions can foster dependence upon others for prompting and reinforcement (Hefin & Alaimo, 2007). Structured work systems were developed to help the student with ASD organize and sequence tasks in a concrete way. These systems often work in tandem with visual supports. According to Carnahan, Hume, Clarke, and Borders (2009), the work system should explicitly show the student what to do, how many items to complete, when the work is ended, and what to do once the work is done.

Especially for beginners, the system moves from left to right and items are arranged in sequence. For example, a teacher might

be teaching a student how to sort utensils and bag them for a local eatery. The beginning of a work system might have a set of utensils and a set of zipper bags. The student matches the knife, fork, and spoon to a model and puts them in a bag. That bag is then put into another container to the right of the student. Once all of the bags are filled, the student can access the CD player at the end of the work system. Teaching is done through the least obtrusive prompting system necessary, using few verbal prompts to insure independence. Structured work systems can be used for vocational tasks or academic tasks—anything that has a sequence.

Evidence-Based Comprehensive Treatment Models (CTMs)

Two recent reviews of the literature (National Autism Center, 2008; Odom, Boyd, et al., 2010) gathered the evidence of available treatment studies of students with ASD. As with evidence-based strategies, the CTMs with the most supportive evidence are for the most part based upon ABA. The CTMs identified by Odom, Boyd, et al. (2010) as having the strongest evidence included LEAP (Hoyson, Jamieson, & Strain, 1984), the May Institute (Campbell et al., 1998), the Princeton Child Development Institute (Fenske, Zalenski, Krantz, & McClannahan, 1985), the Lovaas Institute (Cohen et al., 2006), and the Early Start Denver Model (Rogers & Dawson, 2010). Two of these CTMs are highlighted below. If you are interested in learning more about identified CTMs, we encourage you to read the National Autism Center's report and Odom, Boyd, et al. (2010).

Lovaas Institute

O. Ivar Lovaas was one of the first individuals to create a CTM for students with ASD. Building upon work by individuals such as Ferster (1961), Lovaas created a curriculum that included teaching expressive communication, receptive communication, imitation, matching and

sorting, and social behaviors. These behaviors were primarily taught through Discrete Trial Teaching. Although typically implemented in the home, Lovaas programs are also implemented in schools and clinics. Intervention is intensive; 35–40 hours per week is considered to be optimal for success. At present, the Lovaas model has the most evidence for effectiveness, with at least three studies supporting that individuals make better gains with this model than other, more eclectic interventions (Howard, Sparkman, Cohen, Green, & Stanislaw, 2005).

Early Start Denver Model (ESDM)

This model is the most recent of all of the evidence-based models presented, but has a rich history. The Early Start Denver Model (Rogers & Dawson, 2010) is a model of early intervention that bases its techniques upon ABA, brain and neurological research, and cognitive science (i.e., research into how we think and process information). It is an interdisciplinary, parent training model. The intervention is based upon increasing social interactions with adults and focuses heavily on imitation, verbal and nonverbal communication, and play skills. Skills are taught so that they are fluent, reciprocal, flexible, and spontaneous. The intervention incorporates traditional ABA, the play-based elements of naturalistic teaching, and the Denver Model. In the Denver Model, adults modulate and model positive affect and provide positive interactions in a developmentally appropriate way. Parents must be extremely involved in this model, and intervention is intensive (ideally, happening throughout the day).

The ESDM has been validated by a randomized study. This type of study is considered to be the gold standard of science. In a randomized study, participants are randomly assigned to a treatment group (in this case, ESDM) or a control group (in this case, typical community-based interventions). Average performance of the groups was compared at the end of the first and second years to see if there is any difference between them. Children in the ESDM group made more progress than their peers in typical community-based interventions (Dawson et al., 2010).

Comprehensive Treatment Models That Incorporate Evidence-Based Strategies

There are CTMs that have not been tested empirically, but nonetheless incorporate evidence-based strategies such as discrete trials or structured work systems. Three examples of these CTMs are TEACCH, Applied Verbal Behavior, and Social Thinking.

TEACCH

TEACCH stands for Treatment and Education of Autistic and related Communication handicapped Children; however, it's best known by its acronym. Created in the early 1970s by Dr. Eric Schopler and his colleagues in North Carolina, TEACCH emphasizes altering the environment to capitalize upon the strengths of many students with ASD and to promote their independence. Interventions in TEACCH build upon what are considered to be strengths of a lot of kids with ASD: structured environments, visual cues and schedules, and emphasis on routines. Structured work systems and visual supports and schedules are critical components of TEACCH. Although TEACCH does not have as much evidence to support its use in schools, two small and well-designed studies support its effectiveness (Hume & Odom, 2007; Ozonoff & Cathcart, 1998). Therefore, while more research needs to be done with regard to TEACCH, it is a treatment model that provides systematic and visually based instruction that teachers and parents might consider for their students with ASD.

Applied Verbal Behavior

Applied Verbal Behavior (AVB) combines the more strict drill-based structure of DTT and the more naturalistic characteristics of PRT/IT to teach students to communicate and socialize. The main focus of AVB is the function of language, something that Skinner (1957) called “verbal operants.” In general, AVB focuses on the following verbal operants: manding, which is any type of request or protest;

tacting, which is labeling items; receptive language; imitation; and intraverbals, which is the use of language for social means (akin to casual conversation). Self-help skills such as feeding and dressing are also addressed. Unlike traditional DTT, skills are mixed within teaching sessions and mand (request) training is a main focus, especially for beginning learners.

Social Thinking

A relatively new strategy popular for students with mild autism and Asperger's syndrome is Social Thinking, developed by Michelle Garcia-Winner. In Social Thinking, there is more of an emphasis on the cognitive-behavioral aspects of social skills; specifically, taking the perspective of others. In Social Thinking, students learn why social skills are important and how these skills translate into better relationships with others. Social skills, such as learning to be with a group, self-awareness, keeping comments and questions quiet until a good opportunity presents itself, and using one's imagination, are taught via structured activity, analysis of videotapes, self-monitoring, books, and visual aids (Garcia-Winner, 2008). Although Garcia-Winner stated that the exercises in her manual are based upon the science of cognitive behavior therapy, to date there is only one small research study that supports its effectiveness (Crooke, Hendrix, & Rachman, 2008). Therefore, while Social Thinking may be a promising strategy for individuals with more mild ASDs, more research needs to be done before it can be considered to be an evidence-based practice.

Popular Strategies, but Not Evidence Based

There are many strategies and CTMs for students with ASD that are popular, but lack empirical evidence to support them. These include sensory-based strategies, DIR/Floortime, biomedical and dietary interventions, and Relationship Development Intervention

(RDI). As with previous sections, it is not possible to list all of the popular non-evidence-based treatments. The purpose of this section is to familiarize the reader with treatments that are commonly encountered in a school setting.

Sensory-Based Strategies

Several authors have noted that individuals with ASD exhibit behaviors that suggest the presence of sensory dysfunction. Schaaf (2011) noted that such a dysfunction may impact a person's ability to engage in a variety of behaviors (e.g., play, social behaviors, self-care skills). Within school programs, occupational therapists typically design and implement, with the help of classroom staff, strategies for responding to sensory dysfunction. The activities chosen are based on the individual's needs as identified through a comprehensive assessment. For example, staff may increase a student's vestibular experiences through swinging or other forms of movement, use joint compression or weighted vests in order to provide "deep pressure" to specific points on the body, or might brush the student's arms and legs with a dry brush. The assumption is that these types of activities will help address the sensory needs of students with ASD so that processing of sensory information is more efficient (Devlin, Leader, & Healy, 2009).

Unfortunately, there is little research that supports the effectiveness of such strategies. Studies that have suggested that sensory strategies are effective have not been completed in a manner that supports such conclusions. The lack of evidence has led investigators to conclude that, at the present time, there is not enough evidence to include sensory stimulation techniques as an evidence-based strategy (e.g., Schaaf, 2011; Thompson, 2007).

DIR/Floortime

Floortime, or the Developmental, Individual Differences, Relationship-Based (DIR) model was developed by Drs. Stanley Greenspan and Serena Wieder. This model focuses on engagement

with adults and nonverbal behaviors. In Floortime, the therapist follows the student's lead, using the student's natural preferences and interaction style to build interactions. The purpose of Floortime is to develop social-affective, communication, and cognitive skills within a healthy emotional environment (Greenspan & Wieder, 2006). Even though Floortime has been used for more than 20 years, there is surprisingly little evidence to support its effectiveness. Only one small study is available that supports the use of Floortime (Solomon, Nechles, Ferch, & Bruckman, 2007). Much more research into Floortime needs to be done.

Restricted Diets and Biomedical Interventions

Hyman and Levy (2011) noted that many families include dietary restrictions as part of the overall interventions applied to their children with ASD. Teachers, of course, would not be responsible for implementing any type of dietary or medical interventions on their own. They might, however, be asked by parents to restrict certain foods in an attempt to control the symptoms of autism in the students they serve. For example, many families have their children with ASD on a diet that limits intakes of gluten (found in grain products) and casein (found in dairy products) because gluten-free and casein-free (GFCF) diets have been reported to reduce behaviors characteristic of individuals with ASD. Unfortunately, there is not enough evidence to support the use of GFCF diets with individuals with ASD. In a recent review of the studies on GFCF diets, Mulloy, Lang, O'Reilly, Sigafoos, and Lancioni (2010) found that current research does not support the effectiveness of GFCF diets with individuals with ASD.

Relationship Development Intervention (RDI)

Developed by Dr. Steven Gutstein, RDI is designed to teach students how to share experiences on a social level, which is often impaired in students with ASD. Parents are the main interventionists in RDI, with assistance from a trained and certified RDI consultant. Activities typically involve some sort of give-and-take play, starting with simple

activities (such as banging on a drum) to more elaborate imaginative play (such as dress-up). On the RDI website, the developers claim that such activities, when done in a developmentally appropriate sequence, increase neural connections, allow students to be more flexible in their thinking, and increase social interactions (see <http://www.rdiconnect.com/pages/our-programs.aspx> for more information). At present, there is one small study done by Dr. Gutstein and his colleagues supporting its effectiveness (Gutstein, Burgess, & Montfort, 2007). Although some parents report success with RDI, much more research is needed before it can be considered an evidence-based strategy.

The Importance of Teaching for Application

No matter what type of strategy is chosen, teachers and parents must consider how they will ensure that students apply what they learned to the right environments. Just because a student can do a skill during drills at a table or choose the correct response during a role-play *does not* mean that she will be able to do this anywhere else. For most kids, it is sufficient for them to learn something in one or two environments. Their behavior then *generalizes* to novel situations, items, or people. That is, they are able to apply what they learned. Unfortunately, this is not so for many students with ASD. Therefore, it is important to teach in as many environments as possible, and make sure that students maintain what they have learned over time (Albin & Horner, 1988).

In order to ensure that what we teach generalizes to new environments, it is also important to introduce novel people and stimuli and require more than just rote responses from students. It is true that it takes a community to teach students with autism. “Teachers” of students with autism may include family members, individuals in the community, friends, and peers.

Handling Problem Behavior Through Positive Behavior Support

Many students with ASD have problem behaviors such as meltdowns, aggression, or strict adherence to routines. Often, the first response by parents or teachers might be to punish the behavior and make sure that it never happens again. However, that can backfire. Evidence suggests that Positive Behavior Supports (PBS) is the most effective strategy for handling problem behavior presented by students with ASD. In PBS, the reasons behind problem behavior are assessed through a process called Functional Behavioral Assessment (FBA). A more socially acceptable alternative is then taught to the student and systematically reinforced.

The fact is that if a student is repeatedly engaging in problem behavior, that behavior is probably being reinforced in some way. There are considered to be four main reinforcers for problem behavior, sometimes called functions: attention, escape, access to items, and automatic reinforcement (something internal that's not easily measured; Floyd, Phaneuf, & Wilczynski, 2005). Typically, however, outside forces are reinforcing problem behavior; for example, the well-meaning cashier who gives the student a lollipop in line in order to stop him from crying or a parent rushing to comfort a student who is having a severe meltdown. These seem like they are reasonable responses. Doing any of the above will stop the problem behavior for the time being, but for the student with ASD, these acts might serve to increase that problem behavior in the future.

Just because something seems to be reinforcing or punishing to a person doesn't mean that it will be so. For some students, attention of any kind—yelling, praise, being singled out—can be reinforcing. For other students, time-out can be quite reinforcing, because they are escaping a situation they don't want to be in anyway. It is not uncommon to see teachers and parents attempt to talk to a student while they are engaging in problem behavior, hoping to explain to them what they are doing wrong. For students with typical development,

this may be an effective means of decreasing problem behavior. Most students with ASD do not have the communication skills to process what the teacher is telling them or the immediate self-regulation skills to change the behavior once they are upset. More importantly, the student has now initiated a social interaction with problem behavior.

The first part of addressing problem behavior is to figure out the function. Typically, that is done through observation. What are the things that are happening before the problem behavior occurs, and what are the things that are happening after the problem behavior occurs? What might be triggering or reinforcing the problem behavior? This process is known as Functional Behavioral Assessment (FBA). Teachers may be familiar with the FBA process; when done correctly, the research supports that it is an effective tool for decreasing problem behavior. Parents should request an FBA if they think there are any behavior problems that might impede learning. Tips for conducting an FBA, along with an example, are presented in Table 3.6.

Once the reinforcer for problem behavior is identified, care should be taken to eliminate or reduce the amount of reinforcement the student receives for problem behavior. *Extinction* is the contingent removal of consequences for previously reinforced behavior. For example, a student has a tantrum to receive a candy bar in the grocery store. In the past, her mother has given in, but this time she puts her foot down.

Extinction is a very powerful tool for decreasing behavior, but there are some caveats to its use. Things often get worse before they get better. This is called an *extinction burst*. If a caregiver gives in and reinforces behavior when it's at its worst, there is a risk of problem behavior becoming consistently worse. However, if the caregivers are consistent with extinction, problem behavior will soon decrease dramatically.

The other thing to keep in mind when using extinction is the concept of *differential reinforcement*. If extinction is used exclusively, the student has no idea what he is supposed to do instead. So, he'll come up with something to replace the behavior—most likely another problem behavior. For example, it is determined that a student hits to get out of

Table 3.6**Conducting Functional Behavioral Assessment**

Tips	Example
<ul style="list-style-type: none"> • An FBA is required in school whenever a problem behavior impedes a child's learning. • An FBA at a minimum should include: information about the classroom from teachers as well as instructional assistants, direct observation data about what parts of the environment might trigger problem behavior, and a statement about the possible function of the problem behavior. • It's rare that behavior serves a sensory function; usually, behavior serves to get something (positive reinforcement) or get out of/put off something unpleasant (negative reinforcement). Try to rule out triggers in the environment first before deciding that the behavior is internal. • Parents who want to get an idea of why a child is doing what she does can write down what happened immediately before the behavior occurred and what happened immediately after (see the example in this table). Look for patterns to emerge after several days that will help identify possible functions of the behavior • For severe behavior problems (e.g., self-injury, severe aggression), seek the help of a qualified behavior analyst. 	<p>Sal, a 5-year-old with autism, would often start to complain loudly around dinnertime. Sal's father, Jack, decided to keep a journal where he wrote down what happened right before Sal began complaining and what happened immediately after he complained. What Jack found was that Sal would often start complaining right as he started cooking dinner, and that it would often increase when he told Sal sternly to "be quiet." Jack hypothesized that Sal complained in order to get his attention. Armed with that knowledge, Jack started making sure that Sal was engaged with a puzzle or another activity before he started dinner. He checked on Sal frequently and praised him when he was quiet. If Sal started to whine, Jack ignored him. After a short time, Sal complained a lot less than he did before.</p>

a difficult task (escape). Therefore, the team decides that it will no longer allow the student to escape the task contingent upon problem behavior. Hitting goes down, but after a while, the student starts biting in place of hitting and the process begins again. It might be better to teach the student to ask for a break when she feels overwhelmed. Over time, it is possible to decrease the number of breaks and have the student working

at a steady pace. If a student didn't know how to read, add, or play, then the adults in her environment would teach her, not punish her for not knowing what to do. The same approach should be taken when addressing inappropriate behavior (Petscher & Bailey, 2008).

Conclusion

Teaching students with autism may seem different, but most of these ideas will sound very familiar. The most important things to remember are to (1) work as a team, (2) try different things, (3) refer to the research, and (4) plan individually for success. Each of these topics will be discussed throughout the various chapters in this book; however, it is important to remember that with those four critical elements, students with autism will have an important foundation for success.

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SCHOOL SUCCESS FOR KIDS WITH AUTISM describes how parents and teachers can work together to create nurturing, supportive, and effective classroom environments from preschool to high school.

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About the Editors

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