

Title Page

Individualized Instruction Strategies in Mainstream Classrooms:  
Including Students with Autistic Spectrum Disorder

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Abstract

This literature review describes research based teaching strategies for general education teachers to provide equal education for students diagnosed with autism. General education classrooms are often made up of students with a broad spectrum of abilities, and it is the teacher's job to meet the needs of those students.

Strategies addressed in this review include animal assisted therapy, antecedent, peer mediated, and self-management approaches. These strategies have been shown to improve social and/or academic abilities for students diagnosed with autism. This review of the literature provides a collective base to aid general education teachers in the instruction of autistic students included in their classrooms.

## Introduction

As a student teacher at an urban elementary school in Northern California in 2004, I was introduced to the delicate balance general education teachers need to maintain to meet the needs of all students in their classrooms. Though I am not a special education teacher, I was able to observe the resource specialist at this school for a day and meet several students diagnosed with autism.

One student in kindergarten was experiencing the first days of school and could not follow the class norms as easily as the other students, so he was allowed to sit on a special pillow during circle time, and the class had a picture schedule to make transitions easier. Another student ran up to me at recess and immediately grabbed my hand, asking every question, no matter the social norm, that popped into his head about me, especially curious as to why I was with his teacher. These students immediately sparked my interest in autism, and I have since been trying to learn as much as I could about the disorder.

Cumine (2003) states that Kanner produced the first study of autism, though the disorder has been around for much longer. Autism is a difficult disorder to diagnose for several reasons. First, diagnosis is based on observed behavior, rather than on a defined test or ability level. Next, there are five different disorders on the autistic spectrum: Autistic Disorder, Asperger Syndrome, Childhood Disintegrative Disorder, Rett Disorder, and PDD-NOS (Pervasive Developmental Disorder – Not Otherwise Specified). Finally, there are many children who remain undiagnosed until later years due to lack of knowledge of the disorder (Cumine, 2000). However, there are specific characteristics of autism that are easily observable. For example, most children with autism have a delay

of speech and lack social skills of normally developing children, though this depends on where they lie on the spectrum. Instead of engaging with other students, they may shadow play, which is to play alongside their peers but not with them. It is difficult for autistic children to connect with other people on a social level, since their behavior is often seen as weird. The more severe autistic children may have other learning disabilities, yet the higher functioning (Aspergers, PDD – NOS) children may have exceptional abilities. (Humphrey & Parkinson, 2006). A good example of a person with autism is Dustin Hoffman's character in the movie *Rainman*.

During my first year of teaching, my previous exposure to students diagnosed with autism turned out to be relevant when one of my kindergartners was diagnosed with PDD – NOS, otherwise known as a highly functioning autistic student. This experience made me acutely aware of the problem that educators in general education classes are often faced with: the challenge of meeting the broad needs of their students with diverse learning abilities. For example, it was challenging to plan lessons that would enable my students to develop reading comprehension skills when the class was made up of high achievers, English Learners, and a student with social difficulties. The interest I have developed, coupled with the students I have worked with made it an obvious choice for me to choose a topic related to autism for my research project.

### *Statement of Problem*

A major problem in many public elementary schools is that students diagnosed with autism are placed in mainstream classrooms with teachers who do not know how to

meet their needs. These students are then often labeled with behavior problems or develop social stigmas that inhibit normal interaction with their peers. If they are placed in a classroom with a teacher who is unaware of their needs and has not learned strategies to support them, these students can cause a problem with classroom management.

Teachers may become concerned with keeping the student from disturbing others, instead of attempting to raise the academic or social ability of the student diagnosed with autism.

### *Purpose Statement*

The purpose of this review of the literature on autism is to understand techniques and strategies classroom teachers can use to improve the educational experience of diagnosed autistic students in mainstream classrooms. Inclusion is not only mandated by law, but it emulates the real world in which our students will need to function. Creating a caring, tolerant, collaborative, and diverse learning environment should be the goal of all teachers and schools.

### *Research Question*

What are the strategies that an educator can use to promote equal education for all students in general education classrooms? What is the best way to integrate students with disabilities into general education classrooms, even though many teachers are not versed in effective strategies to help students diagnosed with autism?

### Theoretical Rationale

In 1975 the Education for All Handicapped Children Act was passed, and people began to take a closer look at the education provided for students with disabilities (IDEA, 2004). Prior to this federal law, educators in the United States public school system were segregating disabled students from their peers, not allowing them quality education, and forcing families to go outside of the public schools to receive adequate services (IDEA, 2004). Conditions have improved for these students since 1975, though low expectations of the students resulted in lower quality of educational services. Thus, in 1990 Congress passed an amended version of the Education for All Handicapped Children Act, titled Individuals with Disabilities Education Act 1990 (IDEA, 2004). This act not only ensured free access to education for all students, regardless of disability, but it raised the standard of education required for disabled students (IDEA, 2004). The most recent amendments to IDEA 1990 came with the reauthorization of the Act in 2004. IDEA 2004 includes small adjustments to wording and definitions, yet carries the same message: that every child deserves the opportunity to succeed through access to free, high quality education amongst one's peers.

### *Assumptions*

It is assumed that schools in the US place students diagnosed with autism in general education classrooms without providing specific training to the general education teachers. It is also assumed that the information and strategies explored in this paper, if



implemented, will increase teacher confidence and ability to work with students affected by autism. It is also assumed that these teachers would have the opportunity to implement strategies reviewed in this paper, and that the teachers would have appropriate knowledge of their students so as to decide what method would work best for their student. Every student with autism demonstrates different characteristics, and most studies reviewed show that different methods of intervention should be attempted before choosing just one.

### *Background and Need*

The need for general education teachers to receive more information regarding students with special needs is evidenced in the work of Guay (1994). She examines the feelings of preparedness from art teachers that teach a general education classroom that includes students with disabilities. Seventy five percent of the 300 art teachers who belong to the National Art Education Association responded to the mailed survey. Of the 84% teaching students with disabilities, 58% felt they were not prepared to teach students with disabilities, and 15% felt they were minimally prepared. The teachers who did not feel prepared to teach students with disabilities learned to do so by learning from students, observing special education teachers, trial and error, taking workshops, or attending graduate school. (Guay, 1994). Instead of entering the classroom with a reserve of strategies to meet the needs of students with disabilities that may be included, teachers had to reinvent the wheel by trying to develop teaching methods and materials. The need to better educate general education teachers about strategies to teach students with special needs also surfaces in Jennings' (2007) work.

He used an internet-based questionnaire to survey 142 public university elementary and secondary credential programs. He chose to focus on New Jersey, Illinois, Alabama, Pennsylvania, and California because these states have both urban and rural representation. Twenty six percent of the respondents were from California universities.

Jennings examined the priority given to different diversity topics in teacher credential programs, all of which were integrated into other classes. Every state ranked “race/ethnicity” as the highest priority. In most states, the diversity topic of “special needs” was ranked 2<sup>nd</sup> to the highest priority; however, the mean scores for California placed “special needs” much lower compared to New Jersey, Illinois, Alabama, and Pennsylvania. Jennings believed this is due to California’s high emphasis on language diversity (Jennings, 2007).

## Review of the Literature

The review of literature examines many themes related to autistic spectrum disorders and social and academic improvements in general education classrooms. The review includes: 1) the importance of inclusion classrooms to the social and academic improvement of students diagnosed with autism; 2) methods of intervention 2 a) including antecedent, adult proximity, self – monitoring, peer engagement, and animal therapy.

### *Inclusion*

Students diagnosed with any level of the Autism Spectrum Disorder face many challenges. Typically, autism is associated with the inability to relate to others socially, a need to have environmental sameness, communication disorders, and “[is] well known for...atypical and often difficult to understand behavior, including stereotypic, repetitive, and self-stimulatory responses” (Simpson, 2003 p.116). Because of this irregular behavior, it is often difficult, yet necessary, to include students with Autism Spectrum Disorder in general education classrooms. Not only is it California state law (IDEA, 2004), but inclusion is an opportunity to socially educate both students with ASD and general education students. However, as Ochs, Kremer-Sadlik, and Sirota describe in their 2001 study, it is important that everyone involved is well informed of the disorder.

In a qualitative study used to “examine the situational dynamics that impact the social positioning of high functioning children with autism in mainstream public school

settings” (Ochs, et. al, 2001, p. 401), sixteen students diagnosed as high functioning autistic were observed. Each student was included in a general education classroom, two with an aide in addition to the teacher. The authors wanted to observe negative inclusion and positive inclusion.

Negative inclusion is when there is a failure to attempt to include students with special needs, such as ignoring or rejecting the student. Though the students would often appear oblivious to the rejection from their peers or teachers, the authors found the students were able to recount the incidents when asked about their day by their families. Positive inclusion is when there is an attempt to include students with special needs in activities, regardless of the outcome (Ochs, et. al, 2001). The authors found that the schools and classmates that were fully informed about the behaviors and challenges of Autistic Spectrum Disorder showed more occurrences of positive inclusion. Some examples observed were classmates acknowledging and correcting behaviors, classmates befriending students with ASD, classmates demonstrating or explaining what to do, and giving credit for good ideas proposed by the student with ASD. With proper guidance and access to strategies for helping include students diagnosed with autism, teachers and students in general education classrooms can improve the quality of education for such students.

### *Antecedent*

The strategies that fall under the category of antecedent are all methods of intervention that would occur before the required task. These strategies attempt to prevent the occurrence of challenging stereotypic behaviors of students diagnosed with autism, and also help prepare the students to cope with the upcoming task.

#### Picture Communication Symbols

One method of antecedent intervention for students diagnosed with autism is the use of pictures and picture schedules. Because autism affects receptive language, students with autism have trouble understanding or responding to spoken commands or requests (Pries, 2006). However, people with autism generally show strengths in their visual perception and memory, so it is logical to think the use of visual aids would be beneficial.

Preis wanted to compare the effect of verbal commands when presented with and without pictures to children with autism. The participants were five children between the ages of 5 and 7 diagnosed with autism disorder. Their language comprehension skills were moderately to severely impaired, and their receptive vocabulary skills were all at or below the 10<sup>th</sup> percentile (2006).

To begin her study, Preis performed a pre-intervention commands assessment consisting of 128 verbal commands given over the course of one to two sessions, depending on the child's attention span. The commands were presented verbally with no gestures or cues to aid comprehension. The commands were based on skills for following directions expected by 5 years old and younger, and they were given from

easiest(6 months old) to hardest(5 years old). Some examples of the commands are: “stand up,” “open the box,” “give the spoon to her,” and “show me the one that is wet.” (2006).

During the intervention phase, the same commands were given as the pre-intervention assessment. However, this time the commands were randomly and equally assigned to two treatments: treatment A (using pictures) and treatment B (no pictures). The examiner would present all the commands verbally, regardless of treatment, and initially with a physical model, then verbally with just a gesture such as pointing, and finally verbally with no gesture. If the participant did not respond to the initial physical model, the examiner would use a hand over hand method. The only difference in presentation of treatments was that commands under treatment A were also aided by a picture. There were no more than six commands taught at each session, and a command was considered mastered if the participant could perform it five consecutive times over three consecutive sessions. The participants were rewarded with a choice from a prize box after every 15 trials (Preis, 2006).

In the end, the participants demonstrated that the commands learned under treatment A were retained better. To monitor what treatment allowed better retention, the examiners conducted a generalization phase and a maintenance phase in which the commands were given again 10 and 20 weeks after the intervention phase. During the generalization phase and the maintenance phase every participant was able to perform almost 50% more skills learned under treatment A than under treatment B (Preis, 2006).

## Priming

Priming is a method of preparation “using materials that closely approximate those involved when performing an upcoming task” (Craig, 2005, p. 370). Because students diagnosed with autistic spectrum disorder have impaired social interaction and communication skills, it is often difficult for them to fully understand the language concepts presented in school curriculum. Therefore, it is sometimes helpful to prepare students with a preview of what is to be learned.

Craig (2005) performed a case study on a student with PDD-NOS and hyperlexia named Jason. Because Jason had hyperlexia, he was able to decode and write many words at age 2.5, though he did not begin speaking until age 5. Ever since kindergarten, Jason would make a written schedule for himself, making transitions a bit easier. When he was young (3-5 years old), Jason’s parents placed him in special programs to help increase the frequency of verbal responses and pair them with appropriate eye contact. As he progressed, his goal changed and the focus was to improve the structural and pragmatic quality of language interactions.

It became apparent to Craig (2005) that Jason responded better to questions when asked during the reading of a text, rather than a face to face conversation. His teachers would play off of that strength and began to use cue cards to enhance his ability to respond to questions. As he learned to respond appropriately to certain questions, the cue cards were phased out; however, cue cards were always used during transitions because Jason would get upset when it was time to leave a “play” activity and move onto a “work” activity. In order to get an appropriate response out of Jason, his teacher would

hold a cue card saying “Jason get ready to work” before they transitioned into a new activity.

Jason’s teachers began learning to use strategies of priming for Jason as recommended by his specialist. Vocabulary and language concepts were primed for Jason before they were applied to content learning in the classroom. For example, in Jason’s 5<sup>th</sup> grade history class, his teacher would give him outlines each week that he could take home and use to create a visual time line of events and vocabulary. Jason would then take the events and put them in a Venn diagram to illustrate how the events were related. He would also read the chapters before they would be read and discussed in class. All his work would be done the week previous to the actual lessons, leaving him well prepared and able to fully understand the content. Craig’s (2005) conclusion regarding Jason is that these strategies of priming significantly increased Jason’s quality of language in the classroom.

#### Pre-task sequencing

Pre-task sequencing is a method of intervention for students with autism that includes visual cues of the steps involved in a task presented to the student before the task is begun. In his case study, Brown (2006) focuses on a student, Kirk, who is included in a general education classroom for grade 6-7. Kirk was diagnosed with autism and demonstrated typical behavior related to the disorder, such as a lack of initiating social interactions and communication. When Kirk would finish a task in his class, he would not begin a new task until prompted to do so; thus, he would often sit idly for up to 30 minutes. Brown describes this as “prompt-dependent behavior.” The purpose for this case study was to see the effects of contingency mapping on a student’s problem behavior



(in Kirk's case, prompt-dependency). For Kirk's particular problem, he was given three contingency maps to be followed upon the completion of three separate tasks. For example, Kirk had a contingency map taped above the keyboard of the computer he used for his daily keyboarding task. The contingency map consisted of Picture Communication Symbols for the task (a picture of a computer for keyboarding) and a printed description of the step, then two arrows leading to the problem behavior and the preferred behavior. The problem behavior had three Picture Communication Symbols for the steps typically followed: "if you sit" (picture of a person sitting), "and don't bring your work to \_\_\_ and say 'finished,'" (picture of two people talking and a "no" sign), "you will not get a treat, cracker, broccoli, or juice" (picture of food with "no" sign). The preferred behavior also had three Picture Communication Symbols for the steps to be followed: "if you get up, bring your work to \_\_\_" (picture of person handing a paper to another person), "and say, 'finished'" (picture of person saying "finished"), "you will get at treat, cracker, broccoli, or juice" (picture of food). The contingency maps for each of the three tasks to be completed were identical, except for the first Picture Communication Symbol, which described the task. The actual study was conducted in three stages.

First, Kirk's educational assistant would verbally tell Kirk to complete each of the three tasks independently, without mention of the contingency maps. Next, before beginning each task, Kirk's educational assistant would verbally state the contingency. For example, Kirk's educational assistant would tell him, "When you are finished keyboarding, if you get up, bring me your work, and tell me you are finished you will get a treat. If you do not get up, don't bring me your work, and don't tell me you are finished, you will not get a treat." In the next stage, Kirk's educational assistant would

point to each Picture Communication Symbol on the contingency maps as she stated the meaning of each. Kirk was allowed three minutes to respond before being prompted.

Brown found that during the first stage and second stage Kirk's problem behavior continued without change. However, when Kirk's educational assistant pointed to and explained the contingency map for each task, the time it took to notify the educational assistant of his completion of the task was reduced from three minutes to 13 seconds on average. Brown found that contingency mapping was "more effective than the verbal contingency condition" and it reduced Kirk's need for prompting. (Brown, 2006).

#### *Adult Proximity*

Adult proximity is simply how physically close a teacher or other adult is to a child in a classroom. There have been several studies that have attempted to understand what effect, if any, adult proximity has on students with disabilities in classrooms. In one study, researchers wanted to examine the effects of adult proximity on the behaviors of students diagnosed with autism or ASD that are also placed in general education classrooms (Conroy, 2004).

Six students in six different schools participated in the study. All the students ranged from five to seven years old, were diagnosed with autism or ASD, were in a general education setting for at least 50% of the day, and had problem behaviors such as disruptions, vocalizations, or off task behavior. All the classrooms in which the observations were conducted had two adults, usually one teacher and one assistant.

The teachers were not fully informed about the purpose of the study, and the researchers conducted the non-experimental study for about 15 to 20 minutes per session

spread over five weeks. Each participant was observed for a total of five to ten hours (Conroy, 2004). The researchers were recording data regarding the behavior of the participant based on adult proximity or no adult proximity.

This study found that in the absence of adult proximity, the rate of challenging behaviors increased for three of the six participants. For two participants, absence of adult proximity had no effect. For one participant, the rate of challenging behavior actually increased with the presence of adult proximity (Conroy, 2004). The researchers also found that the presence of adult proximity increased the rate of student engagement for all but one participant.

### *Self-Monitoring*

In a case study designed to reduce stereotypic behavior, specifically rocking while sitting or standing, a student was asked to monitor his own behavior (Shabani, 2001). Larry, a 12 year old boy diagnosed with Attention Deficit Hyper activity Disorder and autism, was a student included in a general education classroom. He was often ridiculed by his classmates due to his stereotypic behavior of rocking regardless of what was occurring in his immediate environment.

Before the start of the study, the experimenter conducted a stimulus preference assessment, and found that Larry preferred Doritos, Cheese Its, Disney's Mulan video, and Gatorade as rewards (Shabani, 2001). All sessions, except during the Thinning phase, lasted for five minutes. Larry participated in 2-4 sessions per day, 1-2 days per week. The experimenter evaluated Larry's behavior while sitting and reading a book and while standing and talking to a therapist about his day.

During the Training phase, the experimenter taught Larry self-monitoring procedures. First, the therapist modeled appropriate sitting and standing, also called “sitting or standing nicely” (Shabani, 2001), as well as Larry’s stereotypic behavior of rocking. Larry had to be able to label his own behavior correctly 80% of the time across two consecutive 10 minute sessions before continuing to the next phase. Larry was taught to use a digital timer and to place an “X” in a box on an index card every time he completed a session without rocking. The experimenter slowly increased the time increments required without rocking to receive his reward of preferred stimuli, from ten seconds to five minutes. The experimenter would also evaluate Larry’s recording of his behavior (sitting or standing nicely as opposed to rocking) and allow access to the preferred stimuli or tell Larry his assessment was incorrect. Larry was verbally praised when he accurately labeled his behavior, which was 80% of the time.

During the intervention phase, Larry’s sessions lasted for five minutes and was still rewarded for each “X” (Shabani, 2001). During this phase, Larry’s recordings matched the experimenter’s 90% of the time. During the thinning phase, everything was conducted the same, but the sessions increased by three minute increments up to seventeen minutes for standing and twenty minutes for sitting.

Through the use of Self-monitoring procedures, Larry went from rocking 64% of the time while sitting and 83% of the time while standing to 0 levels of rocking during the thinning phase (Shabani, 2001). Larry’s teacher reported that she was very happy with the self-monitoring strategy because the incidents of other students ridiculing Larry had been reduced, and she did not have to constantly monitor Larry’s behavior.

*Peer Engagement*

“Stereotypy in children with autism includes rhythmic and uncontrolled repetitive behavior that produces no immediately apparent adaptive effects” (Lee, 2007 p.67). In their article, Lee, Odom, and Loftin (2007) recognize that typical behavior of children diagnosed with autism can inhibit other students’ desires to interact with them. The behavior of the students exhibiting stereotypical habits of autistic children will eventually lead to a “social stigma” and “reduce opportunities for societal inclusion” (p.67). In their study, the authors looked at the relationship between stereotypic behavior and social interaction for children diagnosed with autism. They chose three students who were enrolled in a special education class at a general education school, as well as twelve 3<sup>rd</sup> grade students without disabilities as the participants.

The first student with autism was Jason, an 8year old boy who was nonverbal but usually responsive to verbal commands. Next was Peter, a 7year old boy who had frequent vocalizations that were not used for communication. If an unfamiliar peer or adult approached him, Peter would often bite or hit himself or the other person. Last was Victor, a 9 year old boy who would follow simple verbal commands by adults, but would not make eye contact nor initiate communication with adults or peers. All three of these students exhibited stereotypic behavior that included hand flapping, body rocking, repeating meaningless sounds, and chewing on their hands.

Lee, Odom, and Loftin (2007) conducted the study in three phases, the baseline phase, intervention phase, and reimplementation phase. The baseline phase involved all the participants being told they could play in a specific area, but given no further instruction. The intervention phase included all participants, but the peers were

instructed to use skills they were taught to “get their friends to play with them” (p.70), such as sharing, suggesting play ideas, assisting, and being affectionate. The reimplementation phase was similar to the intervention phase, just given at a later date.

Each phase of their study contained two play atmospheres. The first was the structured play, in which the peers were prompted to use the skills they were taught to initiate interactions with the autistic students. If there was no interaction attempted within 30 seconds by the peers, a teacher would prompt the peer to do so. The second atmosphere was the generalization or free play, in which two untrained peers were allowed to play with the same students from the structured play. No prompts were given by the teacher during the generalization play.

During the intervention phase and the reimplementation phase the amount of social engagement increased among the autistic students (Lee, 2007). The teachers were using fewer prompts as the sessions continued, showing that the peers were initiating more interactions on their own. The authors also noted that as social engagement increased, the amount of stereotypic behaviors in all three autistic participants decreased significantly, though not entirely.

### *Animal Therapy*

Weiss (2002) conducted a study of animal-assisted therapy and children with autism spectrum disorder. The goal of the study was to find out if animal assisted therapy could increase social interactions and spontaneous speech in children diagnosed with autism. The case study involves a 7 year old girl diagnosed with Autistic Spectrum Disorder, who attends a special day class for ½ the school day and a general education

class for the other ½. The girl exhibited typical autistic characteristics, such as impaired language and lack of meaningful social interactions with people. The study was conducted in four 30 minute sessions in which the first two included the researcher and the girl, and the last two included the researcher, the girl, and the researcher's dog. At each of the four sessions, the researcher remained passive during the first and last 10 minutes. During the middle 10 minutes, the researcher attempted to encourage social interaction and spontaneous speech through prompting, modeling, and parallel playing. Weiss did not record any numerical data from the first session, since the purpose was to see how the girl behaves in a typical situation. During the second session (no dog), the girl produced 63 occurrences of spontaneous speech and 51 attempts at social interaction. The third session (dog present) showed an increase in both social interactions (185) and spontaneous speech (261). Though not as frequent as the third session, the fourth session (dog present) also showed an increase in social interactions (153) and spontaneous speech (168) from the second session with no dog present. Weiss explains that the day before the fourth session, her dog suffered a broken foot and was not as willing to be interactive with the girl. Overall, the sessions with a dog present resulted in more social interactions and more occurrences of spontaneous speech. When with the dog, the girl was able to express feelings of happiness, talked with and about the dog, played with the dog, and related the play activities to movies and stories from her prior knowledge. "All of these positive behaviors are areas where autistic children tend to show greatest deficits" (Weiss, 2002, p 27).

Anderson (2007) agrees that dogs help bring out positive behavior in children with disabilities. This article not only describes the procedure for introducing a dog into

a classroom with disabled children, it also describes the outcomes of the author's empirical study of having a dog in a classroom including students with emotional and behavioral disorders. The author used her own students as participants in her study, which happened to be a self-contained special day class. Each student in the classroom was diagnosed with one to three disorders, including Aspergers Syndrome, and was placed in this particular classroom due to failure to succeed in the general education setting. The dog used in the study was a toy poodle owned by the researcher, and every student in the class was allowed to interact with the dog at least 10 minutes each day. The outcomes of the study were that students' attitudes toward school improved, they found companionship with the dog, and students learned self-regulation by "managing their behaviors toward the dog through appropriate verbal and physical interactions" (Anderson, 2007, p.6). Also, the frequency of positive peer interactions in the classroom increased, which supports Weiss' research stated above.



## Discussion

### *Summary of Major Findings*

As the studies show, there is a major problem in public schools in the U.S. All too often students diagnosed with Autistic Spectrum Disorder are placed in general education classrooms and face academic and social difficulties. In addition to the hardship placed on the students with ASD, general education teachers are not prepared to help these students perform to the best of their abilities.

Other students may consider the students with ASD as “weird” due to their stereotypic behavior, and teachers may feel frustrated, leading to neglect or discipline problems in the classroom. However, as the studies show, once teachers know how to best serve their students, the classroom environment will be more manageable and productive. Not only will the students gain knowledge from differentiated instruction, but the teacher will have strategies to help them deal with a challenging social situation.

If the teachers are able to properly understand the challenges that come with ASD, they will be able to better serve their students through the strategies described above. When implemented, the strategies for students with ASD will not only improve the social interactions but also the academic ability and understanding of these students.

### *Limitations/Gaps in the Literature*

The studies reviewed in this paper all included elementary students diagnosed with ASD. A limitation that was found during my research was that the studies were all conducted by people heavily versed in Autism Spectrum Disorders. The researchers used

students that were both included in mainstream classrooms as well as students enrolled in special day classes. Though these facts are ideal for a research study on the effects of strategies for students with ASD, it is not a good representation of a real general education classroom. Most classrooms that have a student included in their classroom, as I did when I taught kindergarten, do not have a professional present to teach the teacher how to work with the autistic student.

### *Implications for Future Research*

As a general education classroom teacher, it would be interesting to see how a teacher like myself would accommodate a student diagnosed with ASD included in their classroom if the strategies were readily available. It would be inaccurate to say there is one strategy to help all students with ASD, so the teacher would need to understand every aspect of the incoming student. Because classroom teachers are able to recognize behavior patterns with their students, teachers may be able to match a behavior with a specific need that an autistic student may have.

Therefore, I have created a reference guide to strategies for students with ASD (Appendix) that general classroom teachers may find helpful. I took the information from the studies reviewed and presented it in a concise table. For six behavior challenges commonly associated with Autistic Spectrum Disorder I named the strategy research has shown to help, along with a brief description and the expected outcome.

After informally piloting this guide at the school where I currently teach, I found that general education teachers as well as my principal have been excited and receptive to the ideas presented. There is one teacher who has her second student with Aspergers

included in her classroom this year. She was particularly interested in the quick reference guide and wants to try the pre-task sequencing strategy. This teacher was very enthusiastic to have several new strategies that she could reference depending on her student's behavior. She also suggested other forms of intervention that works with her autistic student, such as wearing a weighted vest.

The Resource Specialist was also interested in my research and was happy to say she has used two of the strategies on my reference guide. Overall, it seems like the quick reference guide would be very helpful to many of the general education teachers at my school. If used how I intend, it could be a very helpful tool. My intention for the quick reference guide is to have any teacher be able to quickly locate the behavior of the student, get a basic understanding of a strategy to try, and then use this paper to get a more detailed understanding.

#### *Overall Significance of the Literature*

The literature included in this paper showed strategies that helped students with ASD improve their social and academic abilities when included in general education classrooms. As stated previously, autism is a disorder that affects people in many different ways; therefore, it would be difficult to prescribe one method of intervention. This literature review only described a few strategies that have been shown to improve the educational quality of students diagnosed with autism, but that is more than many general education teachers are aware of. There would be a significant improvement in classroom environments if general education teachers had access to strategies to help their students perform to the best of their abilities.

Appendix

Behavior	Strategy	Description	Expected Outcome
Student's receptive language is low and has trouble following oral directions	Picture Communication Symbols	When giving directions, a picture of the desired action is shown to the student in conjunction with the verbal cue until the student learns to complete the action when given verbally.	Student will respond appropriately to verbal commands.
Student is not fully engaged in classroom lessons and quality of language use is low	Priming	Student is prepared with appropriate information before the whole-class instruction by giving the student (or parents) outlines of what will be taught. Student is also allowed to read any information that will be read in class ahead of time. Student is encouraged to create a visual representation of the information, such as a timeline, illustration, or Venn Diagram before the actual instruction.	Student will be able to contribute to class discussions and will be able to fully understand the concepts that may have been difficult to comprehend.
Student is prompt-dependent or has trouble with transitions	Pre-Task Sequencing	Student is given a picture schedule of a desired task, what to do when completed, and how the student will be rewarded if done, as well as a consequence for non-completion.	Student will be aware of expectations and will become less reliant on prompts to continue to the next step.
Students are not engaged in the lessons	Adult Proximity	Adult positions self near student with Autistic Spectrum Disorder during times of expected engagement.	Though studies did not show decrease in problem behavior, it was found that students were more engaged when adult proximity was present.
Student has stereotypic behavior that affects social and academic ability	Self-Monitoring	Student is taught to monitor own behavior through recording occurrences of appropriate behavior. Student is rewarded when target behavior is achieved for a certain amount of time.	Student will learn to monitor behavior and reduce stereotypic behavior
	Peer Engagement	Peers are taught to "get their friends to play with them" and socially engage students with ASD.	Stereotypic behavior of students is reduced as social engagement is increased.
Student produces few social interactions or meaningful speech occurrences	Animal Therapy	Introducing a dog to a classroom with students that are socially challenged to teach them how to interact and treat others.	Students will learn to express feelings and be able to relate interactions with dog to interactions with people.

References

- Anderson, K. (2007). Who Let the Dog In? How to Incorporate a Dog into a Self-Contained Classroom. *Teaching Exceptional Children Plus, 4 (1), Article 4*. Retrieved November 17 from <http://escholarship.bc.edu/education/tecplus/vol4/iss1/art4>.
- Brown, K., and Mirenda, P. (2006). Contingency Mapping: Use of a Novel Visual Support Strategy as an Adjunct to Functional Equivalence Training [Electronic Version]. *Journal of Positive Behavior Interventions, 8 (3), 155-164*.
- Craig, H., and Telfer, A. (2005). Hyperlexia and Autism Spectrum Disorder: A Case Study of Scaffolding Language Growth Over Time. *Topics in Language Disorders, 25(4), 364-374*. Retrieved October 13, 2007, from Education Research Complete database.
- Conroy, M., Asmus, J., Ladwig, C., Sellers, J., and Valcante, G. (2004). The Effects of Proximity on the Classroom Behaviors of Students with Autism in General Education Settings. *Behavioral Disorders, 29(2), 119-129*. Retrieved November 17, 2007, from Education Research Complete database.
- Cumine, V., Leach, J., and Stevenson, G. (2003). *Autism in the Early Years: A Practical Guide*. London: David Fulton Publishers.
- Guay, Doris M. (1994). Students With Disabilities in the Art Classroom: How Prepared Are We? [Electronic Version]. *Studies in Art Education, 36 (1), 44-56*.

- Harrower, J.K., Dunlap, G. (2001). Including Children with Autism in General Education Classrooms: A Review of Effective Strategies [Electronic Version]. *Behavior Modification, 25*, 762-784.
- Humphery, N. and Parkinson, G (2006). Research on Interventions For Children and Young People on the Autistic Spectrum: A Critical Perspective [Electronic Version]. *Journal of Research in Special Education Needs, 6(2)*, 76-86.
- Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C.1400 *et seq.* (2004).
- Jennings, Todd (2007). Addressing Diversity in United States Teacher Preparation Programs: A Survey of Elementary and Secondary Programs' Priorities and Challenges From Across the United States of America [Electronic Version]. *Teaching and Teacher Education, 23(8)*, 1258-1271.
- Lee, S., Odom, S., and Loftin, R. (2007). Social Engagement With Peers and Stereotypic Behavior of Children with Autism [Electronic Version]. *Journal of Positive Behavior Interventions, 9(2)*, 67-79.
- Ochs, E., Kremer-Sadlik, T., Solomon, O., and Sirota, K.G. (2001). Inclusion as Social Practice: Views of Children with Autism [Electronic Version]. *Social Development, 10 (3)*, 399-419.
- Preis, J. (2006). The Effects of Picture Communication Symbols on the Verbal Comprehension of Commands by Young Children with Autism [Electronic Version]. *Focus on Autism and Other Developmental Disabilities, 21 (4)*, 194-210.

Shabani, D., Wilder, D., and Flood, W. (2001). Reducing Stereotypic Behavior Through Discrimination Training, Differential Reinforcement of Other Behavior, and Self-Monitoring [Electronic Version]. *Behavioral Interventions, 16*, 279-286.

Retrieved February 16, 2008 from

Weiss, S. (2002). Tails as Teachers: Animal-Assisted Therapy and Children With Autism Spectrum Disorder. Unpublished manuscript, Dominican University of California.