



Using Applied Behavior Analysis to Educate Students with Autism in Inclusive Environments

It is important that all students receive appropriate educational services so that they can reach their potential as individuals and as members of the wider community. There has been a continuing increase in the number of students eligible for special education services under the definition of autism. This increase has made the education of students with autism within inclusive classrooms a key priority for educators and parents. Children with autism are entitled to effective evidence-based interventions delivered in the least restrictive environment possible, and preferably in general education settings.

Applied Behavior Analysis (ABA) provides an evidence-based framework for addressing the needs of students with autism within inclusive educational settings. ABA and inclusive practices are not only compatible frameworks, but are also powerful methods of assuring educational progress for students with autism.

Autism

Autism is a disorder affecting a significant number of children within the Commonwealth of Pennsylvania and across our nation and the world. Current estimates regarding the incidence of autism suggest that autism occurs in about 1 in 68 children (CDC, 2015). As of December 2014, 29,273 Pennsylvania students received special education services under the eligibility definition of autism (PDE Child Count Data, 2015).

The core characteristics of autism are impairments in social interaction and communication and the presence of repetitive or stereotyped patterns of behavior. Autism is considered a spectrum disorder in that it can affect patterns of behavior and levels of involvement to different degrees across individuals who have received the diagnosis. All individuals with autism can learn; however, skill levels for cognition, communication, social and motor skills may show considerable variation across individuals.

Inclusive Practices

Inherent in inclusive practices is the concept of belonging or membership within the general education classroom. It differs from the past practice of mainstreaming where a child needed to demonstrate a readiness to be educated in general education settings by obtaining a predetermined academic or behavioral level of functioning. Inclusive practices means that all students, regardless of cognitive or academic level, are members of the general education class, and that appropriate supports are provided so that each student can learn and participate.

Inclusive education is about individuals belonging to a community. Their community may include their school, the age-appropriate group of children with whom they will interact, and the neighborhood in which they reside. According to a significant federal court ruling (*Oberti v. Board of Education in Clementon School District*, 1993), "Inclusion is a right, not the privilege of a select few." An inclusive school is a place where everyone belongs, is

accepted, and supports and is supported by her or his peers and other members of the school community in the course of having his or her educational needs met (Stainback & Stainback, 1990, p. 3).

The Individuals with Disabilities Education Act (IDEA) supports inclusive practices by requiring that "to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children that are nondisabled; and that special classes, separate schooling or other removal of children with disabilities from the regular educational environment occurs only if the nature or severity is such that education in regular classes with the use of supplementary aids and services, cannot be achieved satisfactorily" (IDEA, 1997).

The least restrictive environment component of IDEA establishes a preference for educating students with disabilities in general education classes with supplementary aids and services (Burns, 2003; Etscheidt & Bartlett, 1999). Consideration of the general education classroom must be the starting place for any decision making about the placement of a student who receives special education services. Adaptations and modifications to the general education curriculum and activities are provided to ensure the student is receiving instruction appropriate to his or her needs.

The term "full inclusion" is used by some to mean the inclusion of every student with a disability in a general classroom, throughout the school day, without exception. Although it may be appropriate for some students to remain in general education all day, IDEA requires that a continuum of placements varying in their restrictiveness be available to ensure that all needs are met. Pennsylvania school districts maintain the required continuum of placements that are designed to provide a rich supply of diverse programs that support sound inclusive practices.

Although adherence to a high level of academic standards is imperative, inclusive education asserts that “Whether students’ needs have been met is reflected not only by whether they have attained certain objectives, but by the impact that educational experiences have had on their lives” (Giangreco, 1994). The quality of life of an individual with a disability and his or her acceptance and participation in the community are as important as academic growth.

Applied Behavior Analysis

Applied Behavior Analysis (ABA) is a scientific approach to behavior focused on environmental events that are crucial to its understanding and change: antecedents and consequences. Its principles are used to change and improve behaviors. The effectiveness of these principles has been confirmed by many experimental studies and can be applied in a variety of settings with different types of people—infants to adults.

In schools, ABA has been used to guide a wide variety of successful educational practices in both general and special education programs. Over the past 20 or more years, ABA has been established as a powerful source of interventions in educational programs for students with autism. ABA has consistently been effective in assisting individuals with autism in achieving meaningful and non-trivial progress (see NAC Standards Report, 2009).

By analyzing the relationship between the antecedent (what happened before the behavior occurred), the behavior (what behavior actually occurred), and the consequence (what happened after the behavior occurred), educators or educational teams can begin to develop a comprehensive plan for changing behavior.

Interventions derived from the field of ABA have been demonstrated as being effective in assisting individuals with autism in acquiring skills that provide significant educational benefit (NAC, 2009). Interventions based on the

principles of ABA have been developed (Hundert, 2009) to establish conditions that support individuals with autism as full members of the schools they attend.

The Link Between Autism, Inclusion, and ABA

Having students simply placed in an environment because it is inclusive is not enough. “Being there” is necessary, but not sufficient. Students need to be included and receive meaningful educational benefit. It is the individualized education program (IEP) planning team, including parents of students with autism, that determines both services and least restrictive educational programming.

In Pennsylvania, Individualized Education Program (IEP) teams are required to adhere to the following guidelines when making educational placement decisions:

- A free and appropriate public education (FAPE) must be provided to every student with an IEP; moreover, FAPE must be delivered in the least restrictive environment (LRE) as decided by the IEP team.
- Students will not be removed from general education classrooms merely because of the severity of their disabilities.
- When students with disabilities, including students with significant cognitive disabilities, need specially-designed instruction or other supplementary aids and services to benefit from participating in general education classrooms, as required in their IEP, local education agencies are obliged to ensure that those services are provided.
- IEP teams must determine whether the student’s IEP can be implemented in general education classrooms with supplementary aids and services before considering removal from the general education classroom.

- School districts will consider the full range of supplementary aids and services in general education classrooms, based on peer-reviewed research to the extent practicable, including modification of curriculum content, before contemplating placement in a more restrictive setting.

“Supplementary aids and services means aids, services, and other supports that are provided in general education classes, other education-related settings, and in extra-curricular and nonacademic settings, to enable children with disabilities to be educated with nondisabled children to the maximum extent appropriate.”

(PA Education Regulations, Chapter 14, 34 CFR 300.42)

In educational settings, supplementary aids and services must be available to all students who need them. Supplementary aids and services are designed to provide meaningful educational benefit and are provided in a manner that avoids stigmatizing students (Gaskin Settlement Agreement, 2005). Stigmatizing is calling attention to differences in a way that lessens a person’s value or esteem. Instruction for students with autism may target several areas that

will allow critical supports to be delivered without stigmatizing effects (Hundert, 2009):

- Teaching the skill to participate and learn in a group
- Teaching the skill to initiate and sustain reciprocal peer interactions
- Teaching the skill to complete seatwork assignments independently
- Teaching the skill to communicate needs clearly and independently
- Teaching the skill to follow classroom routines independently
- Reducing problem behaviors that interfere with learning
- Teaching the skill to self-regulate, make inferences, and take the perspective of others

These areas are not prerequisites for participation in an inclusive setting for students with autism, rather they are areas in which supplemental aids and services are often beneficial. Each of these areas has been addressed through behavior analytic principles.

While the body of interventions derived from the field of ABA for inclusive educational practices is too large to be reviewed in detail here, some key interventions are highlighted on the following page. Effective student outcomes and inclusive educational opportunities are selected from evidence-based approaches. The evidence of what works for students is central for planning purposes. ABA provides a powerful, evidence-based framework for addressing the needs of students with autism. Decision making, however, should not be guided by any one approach, rather it should be guided by the collaborative and data-based discussions of the IEP team. ABA is one of several approaches that need to be considered in planning educational programs.

- Often a class-wide approach can be effective in promoting adjustment for students with autism. Class-wide interventions have been implemented that address many of the areas listed by Hundert (2009).
- Communication skills for students with autism in general education settings can be enhanced through teaching students how to make meaningful requests (Sundberg and Partington, 1998), how to ask for information when they are not sure (Ingvarsson, Hollobaugh, 2010), how to respond to questions (intra-verbal training) and how to improve conversational skills (Davis, Boon, Cihak and Fore, 2010).
- Peer interactions have been facilitated through interventions such as social skill training, peer incidental teaching (McGee et al., 1992), recess buddies (Laushey and Heflin, 2000) and social scripts (Goldstein and Cisar, 1992; McClannahan, 1998; Sarokoff, Taylor and Poulson, 2001).
- Social script interventions such as “power cards” can promote conversational skills acquisition (Davis, Boon, Cihak, and Fore, 2010).
- Picture activity schedules may promote independence for students with autism (Bryan and Gast, 2000; MacDuff, et al. 1993; McClannahan and Krantz, 1999).
- Self-monitoring strategies have been shown to be effective in assisting students in adjusting to a wide range of issues that may arise in the general education environment.
- Positive behavior supports (Horner, 2000) have been derived from applied behavior analysis and suggest principles that can reduce problem behaviors by making the behavior inefficient and ineffective for whatever function it may

serve. Behavioral interventions from both applied behavior analysis and positive behavior supports have focused on teaching students alternative behaviors that are a more effective form of communication than engaging in problem behavior (Carr and Durand, 1985).

- Video modeling is an effective tool for assisting students with autism in developing a wide range of social skills (Charlop–Christy and Daneshvar, 2003).

In addition, behavior analysis has established effective procedures for training communities in the awareness of individual abilities and the acceptance of differences for all students, including those with autism.

Inclusive practices are best facilitated when supplementary aids and services are well planned, person centered, and evidence based. The field of applied behavior analysis provides a powerful source of intervention design, monitoring, and training to insure that students with autism receive maximum benefit from their educational experience in a wide range of settings, including the general education classroom.

References

- Baer, D.M., Wolf, M.M., & Risley, T.R. (1968). *Some current dimensions of applied behavior analysis*. Journal of Applied Behavior Analysis, 1, pp. 91-97.
- Behavior Analyst Certification Board. (2010). BCBA and BCaBA behavior analyst task list, Third Edition.
- Bryan, L.C., & Gast, D.L. (2000). *Teaching on-task and on-schedule behaviors to high-functioning children with autism via picture activity schedules*. Journal of Autism and Developmental Disorders, 30, pp. 553-567.
- Burns, E. (2003). *A handbook of supplementary aids and services*. Springfield, Ill.: Charles C. Thomas.
- Carr, E.G., & Durand, V.M. (1985). *Reducing problem behavior through functional communication training*. Journal of Applied Behavior Analysis, 25, pp. 777-794.
- Charlop-Christy, M.H., & Daneshvar, S. (2003). *Using video modeling to teach perspective taking to children with autism*. Journal of Positive Behavior Interventions, 5, pp. 12-21.
- Center for Disease Control and Prevention (2015). *Autism and Developmental Disabilities Monitoring (ADDM) Network*. <http://www.cdc.gov/ncbddd/autism/addm.html>.
- Davis, K.M., Boon, R.T., Cihak, D.F., & Fore III, C. (2010). *Power cards to improve conversational skills in adolescents with Asperger syndrome*. Focus on Autism and Other Developmental Disabilities, 25, pp. 12-22.
- Etscheidt, S., & Bartlett, L. (1999). *The IDEA amendments: A four step approach for determining aids and services*. Exceptional Children, 65, pp. 163-174.
- Gaskin v. Pennsylvania, 389 F. Supp. 2d 628 (E.D. Pa. 2005).
- Giangreco, M.F. (1994). *Effects of a consensus-building process on team decision-making: Preliminary data*. Physical Disabilities: Education and Related Services, 13 (1), pp. 41-56.
- Goldstein, H., & Cisar, C.L. (1992). *Promoting interaction during social play: Teaching scripts to typical preschoolers and classmates with disabilities*. Journal of Applied Behavior Analysis, 25, pp. 265-280.
- Horner, R.H. (2000). *Positive behavior supports*. Focus on Autism and Other Developmental Disabilities, 15, pp. 97-105.
- Hundert, J. (2009). *Inclusion of students with autism: Using ABA-based supports in general education*. Austin Texas: Pro-ed.
- Individuals with Disabilities Education Act of 2004, 20 U.S.C. §1412 (a)(5).
- Individuals with Disabilities Education Act. (2006). IDEA Regulations 34 C.F.R. § 300.114(a).

- Ingvarsson, E.T., & Hollobaugh, T. (2010). *Acquisition of intraverbal behavior: Teaching children with autism to mand for answers to questions*. *Journal of Applied Behavior Analysis*, 43, pp. 1-17.
- Krantz, P.J., & McClannahan, L.E. (1998). *Social interaction skills for children with autism: A script fading procedure for beginning readers*. *Journal of Applied Behavior Analysis*, 31, pp. 191-202.
- Laushey, K.M., & Heflin, L.J. (2000). *Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors*. *Journal of Autism and Developmental Disorders*, 30, pp. 183-193.
- MacDuff, G.S., Kranz, P.J., & McClannahan, L.E. (1993). *Teaching children with autism to use photographic activity schedule: Maintenance and generalization of complex response chains*. *Journal of Applied Behavior Analysis*, 26, pp. 89-97.
- McClannahan, L.E., & Krantz, P.J. (1999). *Activity schedules for children with autism: Teaching independent behavior*. Bethesda, MD: Woodbine.
- McGee, G.G., Almeida, M.C., Sulzer-Azaroff, B., & Feldman, R.S. (1992). *Promoting reciprocal interactions via peer incidental teaching*. *Journal of Applied Behavior Analysis*, 25, pp. 117-126.
- McGregor, G. (2008). *Supplementary aids and services (SaS) consideration toolkit*. Pennsylvania Training and Technical Support Network, Bureau of Special Education, Pennsylvania Department of Education.
- National Autism Center. (2009). *National Standards Report, Addressing the Need for Evidence Based Practice Guidelines for Autism Spectrum Disorders*.
- Oberti v. Board of Education of the Borough of Clementon School District, 995 F.2d 1204 (3rd Cir. 1993).
- Pennsylvania Education Regulations, Chapter 14, 34 CFR 300.42.
- Pennsylvania Code (2009): 22 Pa. Code §14.102 (a) (2) (xxiv). *Least Restrictive Environment (LRE) and Educational Placement for Students with Individualized Education Programs (IEPs)*.
- Pennsylvania Department of Education, *Child Count Data*, December 2015.
- Pennsylvania Department of Education. (2006). *Supplementary aids and services*.
- Sarokoff, R.A., Taylor, B.A., & Poulson, C.L. (2001). *Teaching children with autism to engage in conversational exchanges: Script fading with embedded textual stimuli*. *Journal of Applied Behavior Analysis*, 34, pp.81-84.
- Stainback, S., & Stainback, W. (1990). *Inclusive schooling*. In W. Stainback & S. Stainback Eds, *Support networks for inclusive schooling* (pp. 3-24). Baltimore: Paul H. Brookes.
- Sundberg, M.L., & Partington, J.W. (1998). *The assessment of basic language and learning skills: An assessment, curriculum guide, and teaching system for children with autism and other developmental disabilities*. Danville, CA: Behavior Analyst.

Commonwealth of Pennsylvania

Tom Wolf, Governor

Department of Education

Pedro A. Rivera, Secretary

Matthew Stem, Deputy Secretary, Elementary and Secondary Education

Ann Hinkson-Herrmann, Director, Bureau of Special Education

