

Preparation for Teachers for Students with Autism Spectrum Disorders: A Call for Quality and Quantity

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Abstract This paper describes and documents the need for an increase in both the quantity and quality of training programs for one of the rapidly expanding areas of special education – children with Autism Spectrum Disorders. Challenges and barriers to teacher preparation efforts are described along with program research based strategies and emerging concepts that should be included in a teacher preparation program in the area of Autism Spectrum Disorders.

Keywords: *Autism Spectrum Disorders, teacher training, teacher competencies, mentoring and induction*

Cite This Article: Freddie W. Litton, Anthony R. Rotatori, Rita Coombs-Richardson, and Rachel Martinez, "Preparation for Teachers for Students with Autism Spectrum Disorders: A Call for Quality and Quantity." *American Journal of Educational Research*, vol. 5, no. 2 (2017): 225-230. doi: 10.12691/education-5-2-19.

1. Documented Shortages

Autism spectrum disorders (ASD) are a type of developmental disability that can cause significant social, communication, and behavioral challenges [7]. In the United States, the Centers for Disease Control and Prevention [11] estimates that 1 in 68 births have been identified as having an autism spectrum disorder. The identified prevalence of ASD in 2000 was 1 in 150 children [1]. This represents an 80% increase in the number of children identified with ASD in just over a decade. The significant increase in this diagnosis is greatly impacting our educational, social and economic system [39]. The Autistic Society using the GAO Report on Autism (2005) estimates the cost of lifelong care to be \$3.2 million per person but can be reduced by two-thirds with careful diagnosis and intervention. They also report the average per-pupil expenditure for educating a child with autism to be over \$18,000, roughly three times the expenditure for a typical regular education student. Post-school outcomes are also troubling as the National Transition Study (2012) found only 56% of students with autism finished high school. More and better training programs have the potential to make education for ASD students more cost effective and to significantly improve their outcomes.

While autism is the fastest-growing disability category [7], the need for qualified personnel is also significantly growing. According to the National Research Council (NRC) report, "Educating Children with Autism", Commissioned by the USDOE Office of Special Education Programs (OSEP), one of the most pressing

challenges for school systems is keeping up with the increase in personnel needed to provide services for students with autism. The challenge involves not only the quantity of personnel but the quality of those personnel. Educators who teach students with ASD must be knowledgeable of the range of available interventions as well as research-validated practices. Teachers must also be able to implement them individually based on student need [22,28,42]. Nationwide surveys report an urgency for improved special education services which creates a continuing challenge for schools (Bennett & Dukes, 2013).

2. Preparation of Special Education Teachers for ASD

In a United States survey of universities offering training programs in ASD, respondents of 87 institutions of higher education showed that 41% offered no ASD-specific coursework with a special education degree, 50% of the institutions had no autism-specific competencies, 36% indicated that their states had no autism competencies, and 14% of respondents did not even know if their state had competencies for autism [3]. Similarly McCulloch and Martin [31] reported that 46% of school districts could not find qualified special education teachers to work with students with autism. Clearly, the data indicates a great need for more and better trained teachers in ASD.

A recent review of universities in one large state, Texas [2] found that only 35 of 66 universities offered a Master's degree in Special Education, and of those 35 degree programs, over half (53%) were merely for preparation as a generalist and/or educational diagnostician. Five

universities have a Master's degree in special education with a minor in autism and 3 with a minor in Applied Behavior Analysis (ABA). Texas desperately needs more special education programs where ASD is the main focus of the degree. A shortage of special education teachers therefore exists nationally, in particular in the state of Texas (Rausch, 2008; TEA, 2011, and USDE, 2012). The shortage exist in both urban and rural areas (i.e. HISD and VISD), both a focus of PASD (Ludlow, et al., 2005; McLeskey, et al., 2004 and West and Jones, 2007). In addition, attrition also diminishes the pool of special educators as they leave the classroom at twice the rate of general education [43]. The chief suspect in attrition is lack of properly trained teachers.

A generation of children from racially, culturally and linguistically diverse groups continues to be at-risk and many are placed in special education (Guiberson, 2009; Hernandez, 2010). Research has shown that racially diverse and lower-income students tend to be identified with autism at later ages—or misidentified. Consequently, students may not receive early intervention during the critical time period in which they are likely to receive the greatest benefits [50]. These data have implications for professional training to work in marginalized schools, in that they underscore a need for improved teacher training in culturally responsive practices related to classroom environment, family engagement, access to the general curriculum, and instructional practices [21].

3. Strategies to Address the Challenges Impacting the Shortages

A review of the literature has identified the following 5 challenges impacting the field of special education and its teacher shortage. It should be our goal in teacher preparation programs to address each of these challenges.

1) Shortage of special education personnel with advanced degrees who possess evidence-based practices (EBPs) to address the specialized services for high-need children with disabilities and autism spectrum disorders in low performing schools. Increasing numbers of students identified with (ASD) require the skills and expertise of professionals trained to address specific needs. Individuals with ASD present complex behavioral, social and linguistic needs that necessitate specialized educational services [45]. It is critical for faculty in special education to lead the way in defining, measuring and improving the preparation of quality teachers [30].

2) Need for more teachers in special education with advanced degrees from underrepresented groups including individuals with disabilities. The need for master's-level teachers from underrepresented groups is particularly vital to districts in urban settings perceived to have challenging working conditions, large populations of impoverished or minority students, and low per-pupil expenditures. A preparation program should aggressively seek to include individuals from underrepresented groups to participate in the program.

3) Lack of technology/assistive technology knowledge among teachers certified in special education, especially related to the high need special education population such as ASD.

With evidence indicating the increase in the diagnosis of autism, as well as the complexity of working with individuals with ASD, training programs specializing in ASD have become an educational necessity [45]. Best practice in technology and inclusion in training teachers is crucial to accommodate students with ASD in schools as it has been found to lead to independence and learning [23]. Use of technology holds great promise for helping students with autism learn, communicate, and function effectively in the modern world [6]. Teachers need to be trained in the use of high-tech and low-tech devices. An increasing number of studies show that computer technology used in teaching is well accepted by individuals with ASD [4,37,44]. The use of assistive technology in interventions often requires training that many teachers lack yet holds enormous potential for learning for students with ASD [19].

4) National requirements and legal regulations for special populations.

Schools face a complex challenge of including students with disabilities and at the same time require high expectations for all students. All students, including those with disabilities and other challenging needs are expected to make yearly progress toward proficiency, as defined by the various accountability systems. Special education teachers should meet the same highly qualified standards as general education teachers. Teachers of students with ASD must demonstrate subject matter knowledge appropriate to the level of instruction needed to teach the student effectively; however, they must also meet the skills and standards developed by organizations such as the Council for Exceptional Children (CEC) [10] and others [34,46] to accommodate instruction for students with special individual needs.

5) Overrepresentation of students from culturally and linguistically diverse groups in special education.

Research indicates that racially, culturally and linguistically diverse students are over-represented in special education at higher proportional rates than their Caucasian peers (Richards, Artiles, Klinger & Brown, 2005). Demographics are rapidly changing and minority students are becoming the majority in many urban districts. In one state in the U.S., Texas, the total public school enrollment made up of minorities was 67% by 2012, yet the total special education enrollment made up of minorities was near 73%, a measurable disparity.

4. Conceptual Framework

Any teacher preparation program should have a conceptual framework or philosophy to guide its training. Such a curricular framework should emphasize a belief in collaboration, social responsibility, diversity, community involvement, service work and reflection upon the moral and ethical nature of this profession. The Social Constructivist-collaboration framework has continued to evolve informed by evidence-based practices and theories provided by Vygotsky (1978), Bandura (2000) and others [12]. A conceptual framework to educate future special educators should:

*Realize that collaboration is an effective and necessary component of services.

- *Understand that knowledge is socially connected.
- *Participate in volunteer or service learning activities.
- *Learn from faculty mentors and diverse communities.
- *Pay attention to the social and the distinctiveness of teaching/learning and organizational life.
- *Reflect on the knowledge and ethical validation of what is best for students.
- * Adhere to social justice principles.

At the heart of the stated core values is the concept that we are one human family. Our responsibilities to each other bridge national, racial, economic and ideological differences. Collaboration, a strong component in special education [16], takes center stage in any framework.

5. Retention Approaches to Support Student to Completion, Including Faculty Mentoring

First, each student admitted to a training program should be assigned to an advisor who will serve the dual role of faculty advisor and mentor. (2) A second retention strategy includes scholarship assistance that allow them to attend school. The scholarships could cover the cost of tuition, textbooks, childcare, and the cost of travel to campus. (3) A third strategy includes utilization of existing Student Success Center for academics (i.e. Writing Center, Subject-Area Tutoring, Supplemental Instruction, Study Skills Workshops, Instructional Resources, Testing Services); Office of Disability Services; and Center for Teaching Innovation (technology/online course support for faculty). (4) A fourth strategy could include opportunities to travel and/or participate in at least one state or national conference on special education. Attendance and participation at such conferences are motivating and collaborative and should serve to help retain students. (5) A fifth strategy is to make students aware of the broad range of psychological services that may be available in a Counseling Center, such as personal or family counseling offered by degreed and licensed professionals. (6) A sixth strategy is to provide technological training and services by IT staff. The free loan of laptops if needed, especially to accommodate distance scholars, socioeconomically disadvantaged scholars, or those in need of a laptop for other reasons. In the event assistive technology devices may be needed they will also be provided. After reviewing the retention research on mentoring, the faculty members of a training program should use specific aspects that support retention such as those suggested by Tinto, (2014) This framework includes the following four components:

- Connect – students connect with at least one significant individual
 - Accept – students feel accepted by their peer group
 - Trust – students develop a level of trust with their advisor/mentor
 - Support – students feel supported in their academic endeavors

Mentors selected from the faculty should be volunteers, receive a stipend, and receive training as to how to be an effective mentor. Mentor meeting topics include but are not limited to acclimation to graduate school, self-efficacy, mentor/mentee responsibilities, how to request accommodation,

assistive technology, learning styles, modality assessment, communication and conflict resolution, and goal setting and career planning. Each mentor should serve only five students.

Students will have at least two mentoring sessions each semester, but targeted mentoring should be employed when necessary to ensure that all students persist in and complete the program. Mentoring of students by faculty should be included because of the numerous positive benefits of mentoring [5]. Mentoring also encourages retention, reduces turnover costs, improves productivity, elevates knowledge, enhances professional development and supports the creation of a multicultural workforce by creating relationships among diverse groups (Mentoring Center, 2014). Mentoring is defined as a professional relationship in which an experienced person (the mentor) assists another (the mentee) in developing specific skills and knowledge that will enhance the less-experienced person's professional and personal growth (Flaxman & Ascher, 1992).

6. Teacher Competencies in ASD

Historically, the preparation of special education teachers for ASD has been challenging for two primary reasons:

1) Few countries and few states throughout the United States have licensure in the area of autism; therefore, there have been limited guidelines mandating teacher qualities and requirements, and

2) The recent movement towards non-categorical licensure in special education has made it difficult to provide specialized training [22]. Nonetheless, over the last 10-15 years there appears to be greater consensus in the professional literature about individual strategies and methods for educating students who have autism. Iovannone et al. [27] suggested 6 essential themes and Scheuerman et al. [42] recommended 13 competency areas. More recently, a few states in the United States have begun to develop competencies needed for licensure, most notably Virginia, California, Ohio, and Florida. The CEC Division on Autism and Developmental Disabilities (DADD) also approved competencies in 2009. The National Autism Center in 2009 examined treatments and classified them into established, emerging, unestablished, and ineffective/harmful treatments. These researchers found 11 effective strategies. This year (January 24, 2014), the NPDC on ASD, utilizing a similar review of intervention strategies, found a total of 24 evidence-based practices worthy of recommendation.

After reviewing and examining these previous efforts and current research, it is recommended that a training program adopt the 8 Virginia Skill Competencies and the 24 NPDC Evidence-Based Practices to guide training efforts. These current, multiple, validated efforts are needed given the fact that students with ASD differ tremendously from each other, teachers must be fully prepared to address the entire array of learning needs, instruction must be provided to all ages, and needs vary by placement of students (i.e., self-contained versus full inclusion). The eight key competency areas adapted from Virginia's successful validated standards are as follows:

A) General Autism: Addresses basic knowledge, information, diagnosis and characteristics.

B) Comprehensive Instructional Programming: Addresses assessment and goal setting.

C) Communication: Focuses on practices and skills for language and communication.

D) Social Skills: Focuses on practices and skills needed to improve social functioning.

E) Behavior: Focuses on communication by behaviors and developing positive plans to teach new skills and reduce inappropriate problem behaviors.

F) Sensory Motor Development: Addresses sensory motor supports that might be needed.

G) Environmental Structure/Visual Supports: Safe structured environment.

H) Independence and Aptitude: Skills for independence.

7. Evidence-Based Practices

The 24 Evidence-Based Practices (EBPs) identified by NPDC listed below should be incorporated into coursework and field placements. The value of these practices is that NPDC has developed for each practice an Autism Internet Module (AIM) available free of charge. Each module has case studies, instructional videos, and pre- and post- assessments. AIM will be used by every student in the program. The 24 recommended practices are as follows:

1. Antecedent-Based Interventions (ABI)
2. Computer-Aided Instruction
3. Differential Reinforcement
4. Discrete Trial Training
5. Extinction
6. Functional Behavior Assessment
7. Functional Communication Training
8. Naturalistic Intervention
9. Parent-Implemented Intervention
10. Peer-Mediated Instruction and Intervention
11. Picture Exchange Communication System
12. Pivotal Response Training Groups
13. Prompting
14. Reinforcement
15. Response Interruption/Redirection
16. Self-Management
17. Social Narratives
18. Social Skills
19. Speech Generating Devices / VOCA
20. Structured Work Systems
21. Task Analysis
22. Time Delay
23. Video Modeling
24. Visual Supports

8. Emerging Practices from Research

To help achieve the professional development a competent, highly trained teacher of ASD students, the curriculum should also include emerging practices from research to practice in Special Education such as Universal Design (UD), Positive Behavioral Support (PBS), Response to Intervention (RTI), Culturally

Responsive Teaching (CRT), Assistive Technology (AT), and Professional Coaching (PC).

Universal Design (UD): The goal of UD is to maximize the learning of *all* students by applying UD principles to all aspects of instruction (e.g., delivery methods, physical environment, information resources, technology, personal interactions, and assessments) [9]. Studies in UD indicate that providing students with multiple options to view content increases learning [38]. McNamara and Shapiro [32] suggest that digital agents can serve effectively as mentors to provide strategic think-aloud to help students make connections from previously introduced material to new content. Additional research in universally designed programs for ASD can differentiate instruction by reaching out to every student in the classroom [6,38].

Positive Behavioral Support (PBS): One of the main barriers to inclusion of special education students, historically, has been difficult behavior manifested by students with disabilities or other challenges arising from circumstances associated with their disabilities. Recent research indicates that school-wide implementation of Positive Behavioral Supports (PBS) provides a promising strategy for reduction in office discipline referrals, reduction in suspensions, improved academic performance, and ensuring safety in the classroom [8,29,40]. Its goal is to improve behavior and to promote access to and participation in the general curriculum for all students regardless of a student's disability.

Response to Intervention (RTI): Response to Intervention (RTI) is a three-tier system (beginning in general education and possibly ending in special education) that fosters early intervention and disability identification. Before the referral reaches the formal assessment, the general classroom teacher and the special education teacher implement academic and/or behavioral interventions and monitor students' response [17,20]. RTI will depend on whether it is appropriately implemented by highly-trained professionals. RTI, when properly developed, can reduce the overrepresentation of students from ethnically, culturally and linguistically diverse population into special education.

Culturally Responsive Teaching (CRT): Gay [18] defines culturally responsive teaching as using the cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective for them; it teaches to and through the strengths of these students. It is a necessary component for teacher education because most teachers are from the dominant culture [41]. CRT serves to differentiate instruction, teach the whole child and therefore is a valuable component for any teacher preparation program. [33,41].

Assistive Technology: AT is one kind of technology that can be used to enhance the functional independence of a person with a disability (Family Center on Technology and Disability, 2014). Reviews of the scientific literature on evidence-based practices with AT [6,13,36,44] found that it holds the potential to enhance the quality of life for students with disabilities (including ASD), improve success in inclusion and academic development, and in general provides a means to compensate for existing difficulties. AT can be anything from a simple low-tech device, such as a magnifying glass, to a complex high-tech device, such as a computerized

communication system. Assessment of technology needs is the key to effective service and is required on the child's IEP. This course in AT can introduce students to examples of augmentative and alternative communication, how to assess student needs, and how to incorporate any AT with therapies, interventions, or services. Educational Technology and Mobile Learning [14] reviewed and recommended seven great talks on Autism and all students will be required to view them in this course.

Professional Coaching: One of the recent recommendations from the NPDC on ASD is the use of a coaching process for the work of practitioners to make informed decisions about instruction and intervention [52]. A Professional Coach is defined as "a trusted individual who has been given permission to speak into the life of another for the purpose of helping the client define, pursue, and achieve the goals he or she has identified" [35]. The NPDC believe that coaching is a key ingredient for the successful implementation of evidence-based practices, is relationship based, and is developed within the cultural context of organizations.

9. Induction

Induction for beginning teachers has become a major topic in education policy and reform in recent years [24,38]. The underlying principle behind such programs is that teaching is complex work, teacher preparation is rarely sufficient to provide all needed knowledge and skill to be successful, and that experience plays a pivotal role. The research suggests that there is a strong link between beginning teacher's participation in induction programs and retention [26] and that it is even more critical for new teachers who are minority [25]. Research in special education demonstrates that a quality teacher induction has a positive effect on student achievement and improves retention rates of teachers [5]. For these reasons including a one-year induction program in conjunction with the local school districts' programs with the express purpose of retaining these highly qualified personnel is recommended. The literature also suggests a comprehensive approach (three or more supports), such as administrative support, seminars, common planning time with more experienced teachers, reduced workloads, and assistance from a classroom aid is more effective than any one single approach [25,26].

10. Summary

A review of research indicates there is a shortage of teachers specifically trained to work with students who have ASD and that improvements in existing programs to prepare teachers are needed. There does presently exist a number of components that should be present in any training program, specific competencies now exist for teacher preparation programs and a number of emerging or current research-based practices also exist and should be incorporated into any training program. A need for more and improved preparation programs for teachers of ASD is called for based on this review.

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