



Use of Integrated Teaching Approaches to Enhance Students with Autism Spectrum Disorder's Functional and Educational Skills

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ABSTRACT

Autism spectrum disorder (ASD) learners have capabilities but frequently experience functional and academic difficulties. This article calls attention to the current debates about autism and the challenges of including ASD students in school systems. I assert that supporting the education of ASD students locally and globally is critical for their wellness and society. I focus on the qualities of learners with ASD to reveal that they have the capacities and abilities to learn and maintain that they can succeed in schools and communities with appropriate support. I illustrate selected best teaching practices and discuss ways educators can use them to develop functional and academic skills of ASD learners and dismantle autism myths. I conclude by calling on stakeholders to promote inclusion and teach life and educational skills to enable ASD learners to grow and develop into individuals capable of having meaningful lives in school and adulthood.

Keywords: autism, education, skills, instruction, technology, multimedia

INTRODUCTION

There has been increased identification of children with autism in America and globally (United Nations General Assembly, 2008). As a result, many schools in America and around the world have grappled with ways of teaching, including them in the school community and society. Much effort has been into identifying their health and educational characteristics within and outside the school. But at the same time, the process has been bereft of controversies and tug-of-war among scholars, professionals, students with autism, and their families (Sinclair, 2005). Behind all these efforts by practitioners, laypersons, organizations, and governments are ideologies of ability (Siebers, 2008), which often lark on categorizing and managing the “new” epidemic. These debates and practices have often tended to alienate people with autism and push their families to the spectator position.

Making education accessible to ASD children is critical for challenging prevalent myths and stereotypes of autism. Education provides ASD children opportunities to exhibit their talents and therefore empowers them to challenge misconceptions about autism. However, school normalcy has been a barrier to their schooling (Davis, 1995). Normal has become a way of judging and discriminating against disabled individuals that do not meet the nondisabled standards or ways of life such as laughing, talking, speaking, jumping, singing, crying, and performing activities such as bathing, toileting, drawing that happen naturally or as designed by the nondisabled people (Garland-Thomson, 1997). “When this principle is applied to

contemporary schools, students who are perceived as and labeled disabled have been noticed for the 'wrong' reasons, namely for not conforming to expectations" (Baglieri et al., 2011, p. 2130).

Science has enhanced our understanding of human conditions, including autism, and led to the development of behavior management practices (Bolton, 2009; Manning-Courtney et al., 2013). Contrarily, science has also sustained harmful practices. Scientific proclamations have led to beliefs, rituals, and routines geared toward taming autism. The ideology of ability governs school rules and learning practices. They have become instruments by which ASD learners are positioned in the school environment as the "other" and how they are identified, determined, and allocated different learning opportunities based on the qualities that science considers prevalently different from the norm (Baglieri et al., 2011). The ideology of ability contributes to the misconception, discrimination, and exclusion of ASD students from the regular classroom. I argue that the science of discovery of autism and over-emphasis and over-focus on labeling children and youth with autism has perpetuated practices towards enforcing normalcy to the disadvantage of the autism community, including ASD learners and that these biased practices that aim to make ASD people/learners socially acceptable do more harm than good to their wellbeing.

Education Rights of ASD Children and Youth

Qualities of ASD

Autism spectrum disorder (ASD) is a life-long developmental condition responsible for significant behavioral, physical, social, and communication challenges (Bolton, 2009; Manning-Courtney et al., 2013; Monroe, 2009; Omar & Bidin, 2015; Ravindran & Myers, 2012). Although ASD learners have well-developed cognitive abilities and the capacity to encode and decode information, they often experience difficulty with communication and social interactions that negatively impact their education (Browder et al., 2009; McIntyre et al., 2017). Problems are linked to several factors, including limited literacy skills, which may be linked to insufficient authentic literacy practices and an impoverished environment. Habitually educators frequently predict ASD conditions and abilities and therefore settle on quite early on not investing in training to teach appropriate literacy skills to ASD learners in terms of reading, comprehension, writing, speaking, listening, and thinking, which are essential for both educational achievement and community participation. Difficulties have also been associated with the different mental processing of visuals and sound due to neurological imbalance and chemical changes in the brain that interfere with the attention to certain details and phenomena (Carnahan et al., 2011; Ricketts, 2011). In addition, challenges with executive functioning, understanding figurative language, and taking other people's perspectives can negatively affect the reading comprehension of ASD learners (Carnahan et al., 2011; Norbury, 2004). Although ASD learners display functional and educational difficulties, every learner is different and has different abilities and unique difficulties. Then, educators must tailor communication and social interventions to each ASD learner based on their needs, abilities, interests, preferences, and contexts (Brown et al., 2013).

Education for All

Society and our schools are naturally diverse in terms of dis/ability, race, class, gender, sex, age, and geography. Diversity is inherently human, and people with autism are part of human diversity (i.e., neurodiversity). In the history of formal education, especially in the Global North

countries such as the United States, learning has been organized based on age and grade (Baglieri et al., 2011). These have determined behavior expectations and, as such, have been used to evaluate students' worthiness. Those found to exhibit nonstandard behaviors per nondisabled people's beliefs have found themselves pushed to the margin of the school community or placed in segregated special classrooms and schools to protect nondisabled students (Cubbage, 2017) and teachers from contamination and harm (Osgood, 2008). "Students labeled by differences are defined as outliers within schools according to what they have not done, cannot do, or can do very well in relation to the curriculum" (Baglieri et al., 2011, p. 2136). Segregated classrooms have become spaces of surveillance and examination. Students who exhibit behaviors deemed outside of the norm are subjected to nondisabled-based tests and/or standardized-based battery tests and nondisabled benchmarks (Baglieri et al., 2011).

Moreover, those who fail to meet their nondisabled expectations are punished—held in low expectation, suspended, or expelled (Brantlinger, 2004). Schools should not be social laboratories but social spaces that enable the inclusion and belonging of all students. Also, they should be spaces where the effort of professionals, including scholars, researchers, educators, and families, go into creating welcoming learning settings that enable ASD students' participation in schools and community. Hence, learning institutions must promote equity: They should lead in dismantling obstacles and promoting inclusion, the acceptance, tolerance, and transformation of individuals, and reformation of institutional practices. Faculty should not subscribe to the notion that schooling or learning should be regimented and exclusionary for children with autism. Instead, they should provide special education services to enable the inclusion of ASD students.

The United Nations (UN) Convention on the Rights of Persons with Disabilities (UNCRPD) 2006 purpose "is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity" (United Nations, *n.d.*) On April 2 every year, the world celebrates World Autism Awareness Day. Then, nations should invest in the education of ASD children to help improve their quality of life (<https://www.un.org/en/observances/autism-day/background>). Doing so would help align the objectives of the nation with the Sustainable Development Goals 4, which emphasize access to quality education as an instrument to achieving UN Vision 2030 of poverty eradication (United Nations, *n.d.*). Throughout the paper, I argue that using best practices in education will help ASD learners acquire the repertoires needed to function in class, school, and community. This is critical for including ASD learners in schools (Baglieri et al., 2011) and adults with autism in the broader society (Sinclair, 2005). I explicitly identify implications for theory, research, and practice regarding the instructional and inclusive shifts related to ASD learners. I emphasize that valuing ASD students means providing rich learning environments for them to succeed in school and life. In the following sections, I present different educational approaches that can be used to train ASD learners to acquire functional and academic skills.

Integrated Educational Approaches

Tailored integrated educational strategies are vital to teaching ASD learners to gain functional and academic skills. Integrating universal design of learning (UDL) principles (i.e., multiple means of engagement, representation, and expression), National Association for Media Literacy Education (NAMLE) competencies, socio-emotional learning (SEL), and culturally relevant

pedagogy (CRP) concepts in lessons are vital in teaching ASD students skills they need to challenge harmful norms and myths (Friesem, 2017; Siegel, 2017; Wadley & Schutt, 2013). UDL framework recognizes the influence of space and learning materials on the access and participation of learners in the settings and learning activities. It emphasizes accommodations and modifications of learning materials and environments to reach all learners (Dalton, 2017). SEL happens through role-modeling, practice, and tools for practice such as play to enhance students' social and emotional qualities that help build their self-esteem and positive coping skills (Jones & Doolittle, 2017). These protect ASD students from dangers such as anxiety. Media literacy education involves analysis, reflection, and communication of the interpretations of media information to understand a situation liberatingly (NAMLE, 2007). CRP is a pedagogical approach that happens when educators' practice of cultural competence enables them to know how culture influences learning and use the knowledge to value all learners (Ladson-Billings, 1995).

Educators that use integrated educational strategies can tailor learning activities and events to enhance ASD learners' life skills. Acquisition of these repertoires is vital for their involvement in the school and community and improved quality of life. Various specially tailored educational strategies are used to teach ASD students different life and academic skills. These involve one or a combination of applied behavior analysis (ABA), the structured teaching method in the Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) model, and the Picture Exchange Communication System (PECS) (Omar & Bidin, 2015). ASD learners also benefit from direct and explicit instruction (Roux et al., 2015); anaphoric cueing (Solis et al., 2016), a teaching technique where students learn to recall referents in the text to identify the meaning of words such as verbs or nouns; team teaching and parental involvement, which involves effective communication and collaboration between teachers and parents to develop and improve ASD learners' capabilities; comparing and contrasting diagrams; visual supports including graphic organizers (Carnahan & Williamson, 2013); integration of assistive technology; and a combination of one or many of the above teaching strategies. In addition, some instructional practices involve graphic organizers, systematic prompting, and visual elements considered evidence-based practices in education (Cook et al., 2012; Knight & Sartini, 2015).

Teacher instruction is linked to students learning outcomes. Still, not all teachers are competent in best-teaching practices despite the various effective research-based instructional practices recommended by researchers (Accardo & Finnegan, 2019). Many teachers consider themselves under-prepared to use effective instructional practices that have emerged from extant research with ASD learners, or they lack sufficient resources or school administration or community support for the inclusion of ASD students in inclusive learning environments; furthermore, from fear of being overwhelmed with work, teachers tend to oppose, resist, or remain reticent on the inclusion of ASD children in their classrooms (Busby et al., 2012). Effectiveness of instruction for ASD learners can be achieved when it is student-centered, contextual, genuine, critical, practical, realistic, age-appropriate, and individualized to meet and address individual needs, interests, and abilities in different settings (Omar & Bidin, 2015). In the following sections, I delve into best practices that can lead to positive learning outcomes for ASD learners and how educators can integrate instructional methods—direct instruction, technology, and multimedia—into teaching ASD learners to achieve academic and functional skills.

Tailored Teaching Strategies

Use of Direct Instruction

ASD students experience functional and academic challenges. How teachers teach functional and educational skills is known to affect the abilities of learners to comprehend the information learned (Accardo & Finnegan, 2019). All students, especially ASD students, benefit from evidence-based teaching practices (Accardo & Finnegan, 2019; Cook et al., 2012; Friesem, 2017). Evidence-based teaching practices are standardized instructional practices that lead to positive school outcomes. Unlike neurotypical learners, because of learning difficulties, ASD learners benefit from nontraditional teaching practices such as direct instruction, which is individualized and employs explicit teaching strategies that target academic areas (McIntyre et al., 2017; Siegel, 2017). ASD learners are heterogeneous, so individualized instruction allows for tailoring teaching to the learning styles of each ASD child (Pandya et al., 2016).

Some children with ASD require distinctive and individualized instruction to master literacy skills. Strategies that promote literacy skills include shared book readings, story retelling, escape reading promptness and storybook-generated dialog, object labeling to boost sight word recognition, teaching literacy in natural contexts, and the language skill utilization approach (Manning-Courtney et al., 2013; Ravindran & Myers, 2012). Educators can also make use of environmental texts, images, and sounds; integrate stationary in activities; collect information into a book box that ASD learners can use to practice matching texts and images, picture construction, echo reading, sentence building, and reading aloud (Mims et al., 2012), and story structure or character event maps (Stringfield et al., 2011; Williamson et al., 2015). Similar activities include question generation, reciprocal questioning, cooperative learning, and systematic prompting (McIntyre et al., 2017; Mims et al., 2012). Reading comprehension is enhanced through question-answer strategies in which the teacher asks topic-related questions during and after reading the text or by structuring the text and allowing students to engage in expository writing (i.e., writing that aims to explain a phenomenon but that allows the student to identify, use, and build their vocabulary) (Kim & Kim, 2012).

One of the many academic challenges ASD learners experience is information inferencing. To stimulate their inference abilities, educators using direct questions help guide ASD learners to respond to specific inquiries, which helps improve their comprehension skills (Carnahan et al., 2011). Additionally, a direct method teaching strategy is vital in teaching ASD learners appropriate behaviors in context (Flores et al., 2013). It is connected to behavioral instruction in which educators try to control and nurture appropriate behavior in children with autism. Educators that employ the direct method can also assess ASD behaviors (Flores et al., 2013).

Use of Technology

Equally important in nurturing appropriate behaviors is technology. Technology is becoming a vital teaching strategy for ASD learners (Artoni et al., 2018; Omar & Bidin, 2015). Educational technology (EdTech) refers to media that “involves the disciplined application of knowledge for the purpose of improving learning, instruction and/or performance” (Spector, 2016, p. 10). They include artifacts, photos, books, films, podcasts, websites, and games (Friesem, 2017). Assistive technology (AT) (e.g., robots, toothbrushes, wheelchairs, communication boards, stuttering aids, voice amplification systems, speech output software, and e-books) are devices that can be used to address mental, cognitive, physical, social, and emotional barriers and to design settings and learning materials that allow equal access to education opportunities for

ASD learners (Friesem, 2017). Various kinds of educational and assistive technologies (e.g., simple and sophisticated or cheap and expensive) can be used to enhance the physical, emotional, social, cognitive, and linguistic functionalities of ASD students, especially in areas such as argumentation, problem-solving, communication, arithmetic, reading, writing, speaking, listening, or manipulation of environments (Dell et al., 2017; Friesem, 2017). EdTech and AT allow the participation of ASD students in learning processes by mitigating environmental and personal barriers (McIntyre et al., 2017).

Modern technologies benefit ASD learners because of their versatility, efficiency, portability, and aesthetics. EdTech and AT new features ease the human-technology interface and encourage student-technology interaction and learning processes (Omar & Bidin, 2015). Many appropriate behaviors and skills can be nurtured by programming technology, for example, Picture Exchange Communication System (PECS) on iPad (Hill & Flores, 2014; Omar & Bidin, 2015). In terms of educational materials, technology is useful in contextualizing course materials and helping ASD learners efficiently interact with various course content in ways that challenge and develop their behaviors and skills. Computer-based intervention programs increase and improve the functional and academic skills of learners with autism. In particular, computer technology has proven to be a beneficial intervention strategy for behaviors exhibited by ASD learners, especially in addressing social and communication challenges (Hill & Flores, 2014). Lammers and Palumbo (2017) found that websites such as FanFiction.net can have multiple features, such as voiceover, which allow ASD students to listen to fan stories and respond to phenomena in writing and reviewing materials. It also enabled them to share their thoughts with followers and continue networking.

Mitigating the Dangers of Technology

The use of computer technologies to support ASD learners' acquisition of appropriate behaviors remains nascent. Consequently, computer programs can make learning difficult for ASD learners when the programs are not compatible with social norms and are not contextual. Like all learners, ASD students are vulnerable to distraction and, therefore, at risk of not comprehending learned materials (Omar & Bidin, 2015). Educators should design computer programs that appeal to ASD learners' attention and fit their needs and abilities to enhance comprehension of learned materials. In addition, educators must be aware of the dangers that incompatible computer programs pose when program contexts make it difficult for ASD learners to discern information quickly with minimal stress. Technology program designers and educators must consider user interfaces to develop information flows that integrate elements in ways that enhance proper information flow that helps develop information comprehension (Clark & Mayer, 2011).

Equally important is the design of computer-based programs that match children's social and psychological traits so that the electronic environments do not overwhelm ASD learners in ways that hinder the development of appropriate skills needed to function in the school and the broader community (Omar & Bidin, 2015). The key lies in building computer programs that allow ASD learners to acquire skills that will enable them to develop relationships with teachers and peers and gain academic and functional skills to transfer to different settings. Therefore, educators should factor in methods that help maintain the positive relationship between ASD learners and the technology used to teach appropriate behavior when designing computer programs. The goal is to support ASD learners in developing technological skills and general

repertoires. When creating an intervention program, educators should assess areas of improvement for ASD learners and then program the computer with the information that will provide the output necessary to enhance cognitive competence and functionality in multiple environments.

ATs can only be helpful when educators know how to incorporate content to teach efficiently and when students can manipulate them to learn (Dell et al., 2017; Spector, 2016). ASD students should not simply become receivers of ATs and passive consumers of media information but should be involved in questioning the sociocultural influences of EdTech and ATs (Friesem, 2017). Advancement and availability of technology such as podcasts and mobile apps mean that educators can involve all students, including those with autism, in media production and analysis at all levels of schooling (Friesem, 2017; NAMLE, 2007). Hence, educational and assistive technologies provide avenues to use multimedia and expand media literacy opportunities for ASD learners.

Use of Multimedia

The academic success of ASD children depends on their reading, comprehension, listening, and arithmetic abilities (Omar & Bidin, 2015). In particular, reading and comprehension abilities are critical in memory building of learned information. However, for children with ASD, these academic skills can pose considerable challenges that derail their academic wellbeing in school and negatively impact their life quality. Nonetheless, studies have demonstrated that multimedia resources effectively teach functional and academic skills and, thus, empower ASD students (Vanegas, 2019). Furthermore, multimedia materials can help ASD learners improve their academic skills, such as communication, writing, reading, math, and cognitive skills, such as executive functioning, emotional, and social skills (Pandya et al., 2016; Wadley & Schutt, 2013). In addition, multimedia resources combine multiple means of communication (e.g., text, graphics, and sound).

Graphics and Texts

Reading comprehension is a cognitive and linguistic process in which an individual can identify the meaning of a word, phrase, or sentence by understanding the units involved (Kim & Kim, 2012). Combining visual and aural resources increases ASD learners' comprehension and inference of information learned (Whalon & Hart, 2010), while blending graphics and texts enhances reading comprehension (Vanegas, 2019). Multimedia materials with visual movements help ASD learners process visual information and understand the tasks better. Visual information captures their attention and increases their focus on relevant information, allowing them to complete assignments. Graphics help with the organization of memory, which helps ASD learners to focus on pertinent information (Coffindaffer, 2010; Omar & Bidin, 2015). Multimedia tools allow the presentation of interactive visuals that can stimulate ASD learners' cognitive processing (Artoni et al., 2018; Fletcher & Watson, 2014; Hayes & Yeganyan, 2010).

Colored Graphics and Texts

Computer technology increases the possibilities of educators using visuals to support ASD students acquire appropriate behaviors. For example, mobile-colored images accompanied with texts in the right fonts help such students focus on content and strive to understand the information (Omar & Bidin, 2015). They enable the integration of graphics and texts that capture ASD learners' attention (Coffindaffer, 2010; Khowaja & Salim, 2013). Children with ASD

exhibit improved comprehension when graphics and texts are presented in certain colors (Plass et al., 2014). Colors are natural stimuli and are used every day—be they colors of flowers, stones, lakes, rivers, sky, or buildings. They all significantly inform us about our environment and location within settings (Plass et al., 2014). Colored images are used to navigate one's environment: Signs and symbols; for example, rocky grey hills, brown perched earth fields, or putrefied, smoky black factory chimneys. Besides, colors are environmental stimuli that help with attention—the coding and encoding of information. Colors stimulate memory and increase the possibilities of ASD students' comprehension of learned materials (Dzulkifli & Mustafa, 2013). This can be explained by the fact that ASD learners are better at encoding and decoding visuals than verbal language. ASD learners are quickly captivated by colored figures, diagrams, drawings, shapes, and texts. Many colors used in multimedia, such as yellow, blue, and green, are known to effectively improve reading accuracy and attention (Omar & Bidin, 2015). Moreover, integrated images and texts in green, yellow, and red provide natural colors and feelings that encourage ASD learners to engage in social interactions, which help decode events and activities in their environments (Adele, 2014).

Colored images and texts attract people's attention. The viewer is made to interact with the materials in ways that allow them to approximate the happening and make and attach meaning to the content (Adele, 2014). Therefore, choosing appropriate textual colors is critical in ensuring that ASD students learn the materials presented to them without being confused. In addition, colors should match and achieve compatibility with shared materials and information to ensure that they do not distract ASD learners. For instance, studies have demonstrated that a white background with black-font texts decreases ASD students' inattention behavioral issues and increase their focus and information comprehension (Omar & Bidin, 2015).

CONCLUSION

There is an increase in the global ASD population. This poses opportunities and challenges in schools, especially those less prepared for this population. However, autism, like the rest of disability identity, is a natural phenomenon, so children and youth with autism are here with us. This makes schools the ones to change to accommodate their learning needs. ASD learners have the capacities and abilities to learn. Society must support schools to provide ASD learners with appropriate educational opportunities, resources, and services to acquire functional and academic skills. Critical for the local and global communities is to take apart cultural, infrastructural, and educational barriers that limit their inclusion in school communities. This can be realized when various educational stakeholders collaborate, especially educators and families of ASD children. Parents and educators are closer to children with ASD than many other professionals or community members, so they can provide immediate student-centered support needed by the student with ASD to make a successful academic journey. There must be a goal-directed collaboration for every support to coalesce around the ASD student. Educators must train ASD learners to acquire functional and academic skills.

In the history of formal education, children have been dichotomized into two—normal versus abnormal—which has allowed the classification and categorization of children with autism. These categories, over time, have been used to decide placements of ASD children or those chosen to receive special education segregated and provided watered-down curricula, while those considered nondisabled children are provided with a general education curriculum and held in high expectations. Accordingly, families of children with and without disabilities have

had different opinions about the placement of their children. Naturally, parents want the best for their children. When confronted with two education systems— special education system and general education system— however, parents of nondisabled children by default choose general education, hoping it will empower their children. The thinking that general education is superior, special education is inferior, that nondisabled children are normal and valid, and disabled children are abnormal and invalid is ingrained in people's minds. This is the basis for autism myths and the exclusion of children with autism. It is deemed proper that a child with autism should be treated differently from those without disabilities. This thinking also traps stakeholders, including teachers and policymakers. However, the education system should not condemn learners with autism. Then challenging the deficit culture, including autism myths, stereotypes, and stigma, is needed to correct people's worldviews of ASD learners and transform education systems into ones that value all children. Labeling ASD learners add no value to their education. Instead, what is needed is to make quality education accessible to them to prepare them for participation in the neo-liberalized globalized capitalist economy.

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