

# How Media Literacy Education through Multimedia Tools Can Empower Learners with Autism

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# Abstract

The United Nations recognize and celebrate diversity and promote the rights and welfare of Autism spectrum disorder (ASD) people. Ratifying the Convention on the Rights of Persons with Disabilities (UNCRPD) in 2008 reaffirmed the fundamental principle of universal human rights. UNCRPD provides an effective tool to promote an inclusive and caring local and global society and ensure that the autism community leads full and meaningful lives. Besides, the UN Sustainable Development Goal 4 Quality Education aims to enable upward socioeconomic mobility and poverty eradication through education for all. Since there is increasing interest in international opportunities and the promotion of scholarship as the world shrinks and creates new challenges and opportunities, this study aims to engage in the conversation related to the education of people with autism locally and globally. ASD is a neurological condition, but communication, social, and functional challenges are primarily due to an impoverished environment in all realms of life. This paper advances ways ASD learners can benefit from media literacy education (MLE). It shares how MLE can lead to new, alternative, and inclusive teaching practices that empower ASD learners.

# **Keywords**

Autism, Multimedia, Literacy, Disability, Education, Rights

# **1. Introduction**

About 15 percent of the global population has a disability (World Health Organization & World Bank, 2011), which consists of about one percent (75 million) of people with autism spectrum disorder (ASD) (Centers for Disease Control and Prevention, n.d.). The United Nations (UN) has been at the forefront of recognizing and celebrating diversity and promoting the rights and well-being of disabled people since its founding. The adoption of the UN Convention on the Rights of Persons with Disabilities (UNCRPD) in 2006 and its ratification by over 180 countries in 2008 reaffirmed the fundamental principle of universal human rights. The purpose of UNCRPD "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." (https://www.un.org/en/observances/autism-day/background) UNCRPD seeks to promote inclusion and full participation of all disabled people in all spheres of life equally with nondisabled people. Thus, UNCRPD provides an effective tool to promote an inclusive and caring society for all and ensure that the autism community leads full and meaningful lives. The United Nations dedicated April 2 the World Autism Awareness Day (United Nations, n.d.a). This day provides a platform for the people with autism and the disability community and their allies to raise awareness of the rights of people with ASD. The goal is to advocate for respect for the inherent dignity of people with autism, individual autonomy, and the ability to make choices. Advocates create awareness about equity, equality, and non-discrimination and engage in actions to dismantle myths, and combat stereotypes, prejudices, and harmful labeling and practices.

Interest in autism contributes to the flow of information about ASD individuals worldwide. Media, a critical and powerful societal instrument, influences the understanding of autism (Friesem, 2017). In all its forms, mainstream, digital, commercial, social, and political, media are the greatest influencers of opinions, feelings, thoughts, and behaviors; they inform and shape our culture, customs, and beliefs (Haller, 2010). Hence, ASD students must gain media literacy skills to produce and consume messages without poisoning their minds. Since the introduction of the industrial and digital economies, media has played a vital role in shaping how the public perceives disabled people. However, the perception of disabled people has been incorrect for the past two centuries (Haller, 2010). As a result, many portrayals of ASD people are untrue and thus perpetuate misconceptions of autism and deficit culture. Efforts to improve the well-being of ASD individuals have focused on providing health and education-related services (Manning-Courtney et al., 2013; Ravindran & Myers, 2012) and the development and dissemination of appropriate information about autism through media (McHue, 2018; Ressa, 2021).

Improved digital infrastructure coupled with ASD people's communication at a socio-spatial distance has seen increased autistic community engagement with the media and, therefore, development of autistic culture as a counter to the neuro-normative culture that frames them as differently deficient (Davidson, 2008; Sinclair, 2005). Besides, previous studies on media literacy education (MLE) have focused on using media to teach disabled students either to participate in media education or to engage in media to improve the well-being and academic performance of ASD learners (Dalton, 2017; Siegel, 2017). However, few studies (Pandya et al., 2016; Wadley & Schutt, 2013) have focused on how educators currently teach about autism and how media can be accessible to empower ASD learners in the school and community. As there is little effort by educators to use media to engage ASD students, MLE can benefit neurotypical and neurodiverse students and educators and the public to understand ways of developing innovative instructional practices to support the educational and functional needs of ASD children (Friesem, 2017a). Furthermore, whereas many recent studies have focused on autism awareness and the representation of autism in the media, there is little information on how educators teach about autism.

This study offers a comprehensive review of the relationship between autism and the media from a global and multidisciplinary worldview to build upon existing studies. This paper examines media literacy approaches to understand how educators teach about autism in rapidly changing technological means of communication. So, the paper aims to reveal the place of MLE in teaching ASD learners. The goal is to emphasize the significance of MLE in shaping the neurodiverse-neurotypical relationships in this crucial era of digital pluralism. Despite the pervasive existence of disability in the media (Bogdan et al., 2012) and the potential of media literacy to contribute to the empowerment of disabled students, few studies have focused on MLE for ASD learners. Consequently, ASD individuals remain on society's periphery because of the deficit culture. So, the objective of this study is to discuss how the best practices of MLE can enable the development of new, alternative, and more inclusive teaching practices to empower individuals with autism.

# 2. Media, Content, and User

The effectiveness of teaching and learning using media depends on the type of media, the content, and the user, which I will discuss in-depth next (Friesem, 2017b; NAMLE, 2007).

# 2.1. The Media and Media Literacy Education

Media mean all kinds of channels for transmitting messages, which vary due to technological revolution (Green, Green, & Smooth, 2018; Haller, 2010). Different forms of media include mass media (e.g., television programs), print media (e.g., blogs, magazines, books, and posters), visual media (e.g., films, graffiti, iPosters, statues, and graffiti), audio media (e.g., radio programs), and social media (YouTube, Facebook, Twitter, and TikTok). These media share the universal purpose of enabling communication. Media are powerful and play an essential role in society (Haller, 2010), and in schools, they have gained momentum as a teaching and empowering tool for disabled learners. As such more disabled persons are becoming literates.

Literacy is the ability to encode and decode symbols and synthesize and ana-

lyze messages. Media literacy is the ability to access, analyze, evaluate, create, and act using all forms of communication: that is, the ability to convert and interpret the symbols transmitted via media in order to synthesize, analyze, and produce mediated messages (National Association for Media Literacy Education [NAMLE], 2007). Media education is the study of media, including practical experiences with media production and consumption. MLE is the educational field dedicated to teaching the skills associated with media literacy. MLE involves analysis, production, or both (Friesem, 2017b). Media literacy analysis requires analysis, reflection, and communication of the interpretations of things represented in the media. In contrast, media production is the ability to creatively compose one's own messages to reflect the understanding of a phenomenon.

Different forms of media-related literacy exist. For instance, digital literacy is the set of skills required to use digital media, such as knowing how to access the internet, how to send an email, what a meme is, and the ability to protect oneself from online harm. In contrast, news literacy is the set of skills needed to navigate news media precisely, such as knowing how news is gathered and disseminated and the impact of such information on society. Media literacy builds upon the foundation of traditional literacy and offers new forms of reading and writing and analyzing and comprehending information, and in the process, empowers people to be critical thinkers and makers and broadcasters of messages, effective communicators, and active citizens (Green, Green, & Smooth, 2018; Haller, 2010; Siegel, 2017).

# 2.2. The Content and Becoming Literate, Visible, and Agent of Change

In the 19th and 20th centuries, disabled people were expected to be invisible and voiceless. However, new media has made them proactive and visible. Thus, integrating disability in MLE should involve NAMLE's (2007) core principles to allow disabled people to have a counter-cultural voice (Friesem, 2017b). Today media also offer disabled people more opportunities to become literate and engage in radical opposition to the dominant knowledge of disability, unlike twenty years ago when media contributed to misconceptions of disabled people unchecked. Becoming literate is vital for ASD individuals as it is for neurotypicals. Effective literacy instruction for ASD learners should focus on creating self-awareness, improving comprehension, reading, vocabulary, fluency, and art skills, and helping them acquire repertoires that will enhance their meaningful functional involvement in their environment (McIntyre et al., 2017). Reading skills should emphasize helping ASD learners read books, articles, pamphlets, signs, and symbols, whereas writing skills should focus on assisting them in developing abilities related to handwriting on books and pads and computer typing using a keyboard. Communication skills should focus on helping ASD learners develop functional communication techniques revolving around encoding and decoding information. That is, developing skills in listening, comprehension, deciphering ideas, dealing with practicalities and realities, engaging in critical thinking, and deriving pleasure in literacy experiences.

Applying NAMLE core principles (NAMLE, 2007) ensures that media literacy is inclusive and liberates the masses, especially disabled people predisposed to prejudices perpetuated by the media (McHue, 2018). The first core principle to guide educators' teaching about disability include requiring active inquiry and critical thinking: that is, it proposes that media producers and consumers be inquirers, critical, and add critical questions about the representations and power relations of disabilities. The second principal mandate is expanding literacy to all media so learners can access them. Exploring how different media platforms provide access to different abilities and disabilities can promote better literacy skills. The third principle relates to skill-based learning, which means that educators should target, build, and reinforce or enhance learners' skills. The fourth principle calls on educators to enable learners to reflect on their abilities to chart their trajectory and involvement in civic education. According to these principles, MLE develops informed, reflective, and engaged citizens, which is essential for a democratic society. By reflecting on one's abilities and disability regarding others, educators and the autism community can learn to be more informed and responsible citizens. The fifth principle recognizes that media are cultural agents of socialization. Hence, MLE should help media producers and consumers become aware that media is a part of culture and functions as agents of socialization. To deconstruct cultural texts and demystify their values and roles as socialization agents, educators should provide texts that represent diverse disability voices and bear the responsibility of representing the various types of disability. The sixth principle states that people construct their own meaning. That is, people use their skills, beliefs, and experiences to construct their own meanings from media messages. It is vital that examining one's own bias toward disabilities while understanding and appreciating other perspectives on disability can promote a better understanding of diversity and appreciation of one's own values.

# 3. Users and Their Roles and Responsibilities

Disabled people are heterogeneous and include those with autism. Approximately 75 million people globally have autism, and about 3 million Americans have autism (United Nations, n.d.b). Based on 2016 data, the Center for Disease Control reported that approximately 1 in 54 children in the U.S. was diagnosed with ASD (2020). Including autism in MLE to challenge ableism requires knowledge of the qualities of people with ASD (Sinclair, 2005). Before looking into the ASD learner roles, understanding their traits can help contextualize their learning styles and needs. Educators and the public's knowledge of ASD qualities help them understand their strengths and challenges and provides directions for instituting educational interventions.

#### 3.1. Qualities of ASD Population

People with ASD exhibit different characteristics. ASD self-advocates consider autism an umbrella of human qualities exhibited by neurodiverse individuals, and it is an identity rather than a health condition that requires medical intervention (Sinclair, 2005). In the medical realm, autism is a neurological condition that affects brain functioning and therefore impacts individuals' lives in different ways and at different levels (Manning-Courtney et al., 2013; Omar & Bidin, 2015). Due to challenges, individuals with ASD may experience difficulties with communication, relation-building, and association with people, activities, and events, and therefore their interactions in regular environments. Hence, they represent a diverse quality of life (Guan & Li, 2017; Sinclair, 2005). Students with ASD may also experience difficulties due to limited academic skills (Omar & Bidin, 2015). These challenges become a barrier in the classroom, where learning involves interactions with peers, teachers, and staff.

Manning-Courtney et al. (2013) and Ravindran and Myers (2012) mention that many ASD individuals experience difficulties discerning social cues, communicating, and behaving based on context. In terms of communication difficulties, some are nonverbal. Others struggle with facial expressions or maintaining eye contact, and limited vocabulary. Besides, others display differences in oral language, repetitive speech patterns, and difficulties with the practicality of conversations, which reveal atypical use of gestures and great body postures. Some ASD individuals experience difficulties in establishing relationships, exhibit limited social interactions, or engage in unyielding interaction with others when it comes to social interaction. Some ASD students become disinterested, uninterested, or disinclined in interacting with others. This happens when they perceive to be misunderstood by neurotypicals that find ASD persons rudimentary or sophisticated in their thoughts and communication skills.

Additionally, ASD individuals may exhibit other unusual behaviors; for example, preoccupation with just one idea, person, or object, which leads to a pattern, routine, or stereotypic and repetitive motor features (e.g., walking on tiptoes or rocking and spinning objects). They can also become captivated by moving objects (e.g., a wall clock), or they can prefer the same or similar settings. When it comes to learning, depending on their low or high cognitive abilities, ASD learners experience challenges in dealing with information due to the difficulties above and because of communication and language disorders and the inability to express abstract concepts. Some struggle with the formulation of concepts, ideas, and abstract thinking or with the formulation of ideas that can be shared with others in a caring manner. Others struggle with decision-making, planning, organizing, and problem solving functionalities. Individuals with autism exhibit various strengths and weaknesses, so they experience social, physical, health, and educational difficulties differently (Ravindran & Myers, 2012). Therefore, it is vital to help children with ASD function in structured (e.g., the school and workplace) and unstructured environments (e.g., community, party,

or stadium).

#### 3.2. The Roles of ASD Learners

There are many benefits of MLE, which is important for ASD students' involvement in autism awareness. MLE benefits students, educators, and the public (Accardo & Finnegan, 2019; Cook et al., 2012; Friesem, 2017b). It builds students' abilities by providing opportunities to use media technology and information competently, constructively, and productively. It expands students' competencies in critical thinking (Pinkleton et al., 2012), production, and analysis (Fisherkeller, 2011). Learners competent in media literacy capably discern and consume information in the films without becoming swayed by and addicted to fallacies and fake news (Sprafkin et al., 1990). They also improve language competency in reading and comprehension and self-efficacy in learners (Khowaja & Salim, 2013; Knight & Sartini, 2015). ASD students also experience enhanced social interactions and language skills and involvement of ASD learners in the individualized education plan (IEP) process (Pandya et al., 2016). These strengthen their social and emotional well-being and contribute to their self-awareness, self-management, self-rediscovery, self-identity, and self-advocacy (NAMLE, 2007; Wadley & Schutt, 2013). MLE also improves classroom attention and participation (Dezuanni & Gattenhof, 2015; Omar & Bidin, 2015), creates civic awareness and involvement, and encourages identity building and community development (Sinclair, 2005). Besides, MLE leads to innovative practices that increase the constructive involvement of disabled students and nondisabled people in the school and community and allow ownership of the information, increasing self-esteem (Friesem, 2017a). Accordingly, involving ASD students in media production (e.g., video production) and analysis (e.g., critiquing of films) leads to better academic, social, physical, and emotional outcomes (Friesem, 2017b).

#### **Use of Multimedia by ASD Learners**

Multimedia are critical in training ASD students to acquire educational and functional skills. Effective learning using multimedia depends on individual ASD learners' qualities, including intelligence quotient and knowledge of their community culture, language, and atmosphere (Clark & Mayer, 2011; Coffindaffer, 2010; Eitel & Scheiter, 2014; Omar & Bidin, 2015). Learners with ASD should be aware of the processes in their communities and how societal structures and neurotypical beliefs, commitments, capabilities, and actions affect their well-being. Educators must help ASD people evaluate institutions and governments rather than be passive citizens, assess their relations with nondisabled people, and take responsibility for engaging in ministries that shape appropriate educational missions (Schwarz, 2007). Educators can achieve these goals by understanding ASD characteristics.

Many ASD learners experience communication difficulties due to impairment or delayed language acquisition, negatively affecting their interactions, relations, learning, and quality of life (Sinclair, 2005). Language acquisition and use are intertwined with each other. Language use depends on one's ability to encode and decode information and then share that information (i.e., communication). The communication process involves reading, speaking, and pronunciation abilities. Multimedia with graphics and texts creates opportunities for ASD learners to develop verbal and nonverbal communication skills that are necessary for them to participate in learning and the community.

Media are powerful opinion shapers and behavior influencers (Haller, 2010). So ASD students should be competent in identifying facts from fallacies and use the information meaningfully to challenge normalcy to empower the ASD community. This requires constant access to media and interactions with instructors and peers. Participation in media production and consumption enhances media literacy skills (Cubbage, 2017; NAMLE, 2007). When students have media literacy skills, they can gauge the values, beliefs, philosophies, and ideas that influence media production and the consumption of broadcasted information (Cubbage, 2017; NAMLE, 2007). Therefore, adopting innovative approaches to teaching is critical for all students, especially for those with disabilities who always benefit from lessons developed based on NAMLE, universal design of learning (UDL), direct instruction (DI), socio-emotional learning (SEL), and culturally relevant pedagogy (CRP) principles (Dalton, 2017). The key to using multimedia in the classroom should be boosting learning opportunities by using relevant materials that encourage ASD learners' engagement with learning activities and ownership of their schooling and enable transferring information into practice in different settings and contexts (NAMLE, 2007).

# 3.3. The Role of Educators

Teachers' roles and responsibilities should involve facilitating meaningful learning that empowers ASD students. Educators can transform individuals and reform institutions to serve disabled people better using NAMLE's core principles. This can be realized when educators apply "NAMLE core principles to advance inclusion as a liberating practice" (Friesem, 2017a: p. 6). In this global disability rights movement era, being cognizant of varied cultures can limit barriers caused by discrepant expectations (Davidson, 2008; Sinclair, 2005). Cognizance of disability culture can help teachers tailor media tools and information to ASD learners' needs and abilities. It allows them to construct their meaning of the world without being restricted by educators' biases (Friesem, 2017b). This also enables their involvement in social and civic matters. This way, they can become active citizens who address their personal and societal problems (Sinclair, 2005). Integrating NAMLE competencies, UDL principles (i.e., multiple means of engagement, representation, and expression) (Dalton, 2017), DI, and SEL (Jones & Doolittle, 2017), and CRP (Ladson-Billings, 1995) concepts in lessons are essential in teaching students media literacy skills they can use to challenge harmful norms and myths about autism (Dalton, 2017; Wadley & Schutt, 2013). Some educators use critical media literacy practices as an inclusive practice in addressing disability (Green, Green, & Smooth, 2018; Siegel, 2017).

Each ASD child is unique, so physical spaces, learning materials, and devices should be set up to ensure that ASD students benefit optimally from learning activities and events (Cubbage, 2017; Dalton, 2017; Friesem, 2017a). In addition, support, technology, and learning materials should be tailored to their learning needs (Leach, 2017; Mims et al., 2012). Educators can also enhance ASD students' academic and functional skills by teaching appropriately targeted skills and content (Friesem et al., 2017). For example, educators may focus on media analysis, production, or both when teaching media literacy (Friesem, 2017b). In this regard, educators empower ASD people by creating media opportunities to access, analyze, evaluate, create, and act on media devices and messages to transform themselves and others and reform institutional practices and norms (Davidson, 2008).

Efficiency in teaching occurs when teachers use suitable media (e.g., computers, television, books, magazines, maps, and the internet) to facilitate and convey age-appropriate information in an organized manner that promotes critical thinking even on controversial and objectionable subjects. It also occurs when teachers and learners are competent in encoding and decoding information and understanding rules, regulations, and policies governing media use (e.g., copyright laws). Furthermore, effective teaching depends on teachers' pedagogical competencies with computers.

Educators must be competent in language content, pedagogical practices, and computer literacy to help ASD learners use oral language, especially regarding the proper pronunciation of words, grammar, and accurate vocal sound modulation. Appropriate and efficient language arts instruction for ASD requires dedicated and skillful teachers. Teaching ASD learners how to encode and decode information is critical in both their vocabulary development and their ability to comprehend messages and make meaning of them. ASD language acquisition and use depend on teachers' pedagogical competencies. For instance, although technology is a good teaching strategy, it may not naturally help with language acquisition or development, especially when computers generically pronounce words. However, educators aware of the different functionalities of computers can ensure that the information available to ASD students does not confuse them.

Depending on the lesson and students' readiness, media can be introduced before learning the concept, after a short overview of the lesson but before learning the concept, after learning the concept, or before and after learning the concept (Mateer et al., n.d.). When using media in a classroom, educators need to start small (e.g., start with familiar music or movie), provide clear links between the media and lesson to help students connect the information, consciously choose the media, where appropriate use subtitles for all audio and visuals materials, learn to select and operate educational and assistive technologies to meet the learning style (i.e., needs, interests, or preferences) of diverse learners; in addition, they should evaluate the lesson, assess students' learning, and maintain integrity and fair use of media resources to role model appropriate behaviors (Mateer et al., n.d.).

Educators can enhance ASD students' learning by combining different strategies (e.g., UDL, SEL) to support social and emotional skills and critical thinking skills through class activities such as simulated job interviews, analysis of presidential debates, writing letters to legislatures or educational leaders, or developing a video campaign on the rights of ASD people that can be posted on You-Tube for public consumption (Festa, 2017; Leach, 2017; Probst, 2017; Siegel, 2017).

Multiple teaching strategies that adopt direct instruction, technology, and multimedia can support ASD learners' acquisition of different functional, social, physical, communication, and academic skills necessary for participation in school and community. Helping students with ASD learn to read social cues is important, and multimedia can help educators personalize learning materials to teach and enhance appropriate behaviors. Technological tools with enhanced features are proper for teaching different skills to ASD learners. ASD learners can be taught to respond to varying emotions by integrating multimedia graphics with text about people's feelings, such as smiley-type icons of sad, happy, and crying faces.

Besides, computer-based intervention can be used to support children with ASD acquire different functional, social, physical, and academic skills, such as reading, comprehension, and writing skills, in more appropriate nontraditional learning environments because traditional learning settings and teaching styles may be stressful and distractive to ASD students who are sensitive to specific environments due to noise, colors, light, or odors. Visuals and texts enhance people's memory. Graphics and texts in colored form and on computer screens with appropriate layouts can help ASD students learn better and acquire comprehension and reading skills. With MLE, educators can educate ASD students about varied subjects, including civic education via multimodal means, such as graphic novels, and engage them in identifying, understanding, and addressing social issues. With graphic novels on various topics, educators can create varied opportunities for ASD and neurotypical students to learn different skills, including engaging in rhetorical analysis, asking questions, evaluating information (audio or visuals), and manipulating technology.

Computer-based programs with different capabilities, such as fonts, colors, audio, and graphics, can support ASD learners gain skills whose absence would otherwise limit their relations and functionality in the school and broader community. Individuals with ASD respond well to certain colors that stimulate their memories. For example, green, blue, and dark yellow positively affect their memories and motivate them. Learners, especially ASD students, are affected by visual design shapes and colors. Educators should choose multimedia that enables multiple features to design programs that allow educators to create materials with strong and positive effects on ASD students.

#### 3.4. The Role of the Public

The public is a critical player in the autism awareness and empowerment of ASD people. Increased global representation of ASD in media requires MLE for the people. Different media techniques that glue the audience to them include explicit and implicit fallacies (Ressa, 2021). Since misconceptions can be challenging for viewers to discern, consumers of media information should be aware of media biases, especially about disability information, as in the case of films with ASD individuals or characters (Ressa, 2021). Critical literacy ensures the public can sieve every information into fact and propaganda. MLE equips the public with the skills to discern media content, identify and differentiate, and sort out myths from truths (Ressa, 2021). It allows consumers to counter the dominant knowledge of autism common in the mainstream and social media. The masses are disabused through counter-discourse and counter-cultural practices and make people allies of people with ASD. Collaborations help dismantle hegemonic normative practices, promote inclusive education, and build communities in schools and globally that value neurodiversity. Through education, people with ASD are empowered, making it possible for nations to achieve UN Vision 2030 (United Nations, n.d.c).

# 4. Conclusion

MLE benefits society; however, the disability community, including ASD people, is less targeted. As a result, they are deprived of opportunities that would otherwise revolutionize their lives in school and community. Since learners with ASD exhibit multifaceted challenges, MLE provides educators with appropriate means of teaching them academic and functional skills for the school and community. Addressing personal and environmental difficulties requires an all-inclusive approach where educators create multifaceted learning settings that allow community interaction sensitive to ASD individuals' social, physical, language, emotional and educational needs and reciprocal to nondisabled peers and adults.

Educators should promote the inclusion of ASD students in their classes and emphasize the complete integration of MLE competencies in their lessons to enhance learners' critical thinking. Teachers with limited competency in any area, such as literacy education approaches, will likely struggle with instruction. This predisposes ASD learners to more literacy problems that would impede their education progress, especially when the early learning window is not appropriately used to nurture necessary educational and functional repertoires. Therefore, MLE should be implemented early to prepare ASD learners for life. MLE involves reading comprehension, writing, and dealing with graphics and visuals in different media forms with different technologies. Hence, it is essential to design different information guided by UDL Principles, NAMLE Competencies, SEL, DI, and CRP. These are the best approach to enable teaching and learning that fit the needs and learning styles of different ASD learners in and outside of school.

# **Conflicts of Interest**

The author declares no conflicts of interest regarding the publication of this paper.

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