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Inclusive Literacy Access for Students with Autism

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Abstract

Designing effective literacy interventions is a primary topic of importance in educational law, research, and practice (IDEA, 2004; International Dyslexia Association, 2020). The purpose of this article is to examine inclusive approaches to literacy instruction and reading comprehension for students with autism that in turn supports instructional access within inclusive general education classrooms. This conceptual framework for this article is teaching for a) inclusive mindset and pedagogy, rooted in social justice and with a presumption of competence for all learners and b) disability studies in education to welcome innate student variation and understand the structural elements that lead to marginalization in schooling. As applied to this article, these conceptual frameworks help in understanding how space can be made to widen the literacy instructional access for students with autism within inclusive general education. The connection between inclusive strategies and examples of practice connected to Universal Design for Learning principles are explored and connects these with effective and evidence-based practices for students with autism in the research. Expanding access to literacy experiences for students with autism ensures this research to practice praxis in inclusive general education classrooms.

Keywords: literacy instructional access; autism; inclusive education; disability studies in education; Universal Design for Learning; presume competence

*Note: It is important to note that the authors have purposefully used person-first language (e.g., student with autism, individual with autism) throughout this manuscript. While there is a lot of debate about person-first language and identity-first language (e.g., autistic student), this article models person-first language for educators as a way to remind them that the disability is one part of who the student is and that students are more than the disability label that they are often reduced to in schools that unknowingly marginalize and discriminate based on such labels. With this stated, the authors always encourage educators to respect all language preferences shared by students and/or their families.

Introduction

Since the inception of special education within United States public schools in 1975, separate learning spaces have been created for students with disabilities. While the Individuals with Disabilities Education Improvement Act (IDEA, 2004), the federal education law that ensures a free appropriate public education and provides special education and related services to eligible students with disabilities within public schools, calls for a continuum of services to be offered within special education, many guardians increasingly advocate for their children with disabilities to receive their education within inclusive general education classrooms with the use of supplementary aids and services (IDEA, 2004). For students with autism in public schools, national data shows that 91.6 % of students ages 5 through 21 served under IDEA are included within the general education classroom for some portion of their school day; broken down as 39.8% for 80% or more of the school day, 18.3% for 40% to 79% of the school day, and 33.5% for less than 40% of the school day (Department of Education, 2022, p. 57). While there is variation in how much physical access to general education students with autism experience in schools, the fact remains that the vast majority of students with autism spend some of their school day within the general education classroom, with some access to critical literacy curriculum, instruction, and peer experiences in inclusive general education classrooms.

Designing effective literacy interventions is a primary topic of importance in educational law, research, and practice (IDEA, 2004; International Dyslexia Association, 2020). This article provides a synthesis of the literature on literacy for students with autism and Universal Design for Learning, and responds to the identified need to ensure teachers are knowledgeable about a range of effective literacy practices and how these can be adjusted to meet the needs that students with autism have in inclusive general education classrooms. However, before the literacy specific research suggestions can be discussed, it is essential to first consider what is meant by inclusive educational approaches. In order for students with autism to be welcomed as true members of a classroom community, an inclusive conceptual framework is critical. Central to inclusion is the belief that all members of the classroom community have and add value to the space, regardless of their specific abilities (Causton & Tracy-Bronson, 2015). In inclusive classrooms, all learners are viewed as having strengths that can be harnessed within the teaching and learning process to support not only the individual child's learning, but to add to the overall learning of all students (Kunc, 1992). The point is not to change who a child is, to remediate

their deficits, or fix them, but instead to emphasize and build upon their strengths. In fact, this aligns with the intent of the law, as Congress stated, "Disability is a natural part of the human experience and in no way diminishes the right of individuals to participate in or contribute to society. Improving educational results for children with disabilities is an essential element of our national policy of ensuring equality of opportunity" (IDEA, 2004, §1400[c][1]). Inclusive education includes not only physical access to the general education classroom, but also meaningful access to classroom literacy content, curriculum, and learning experiences.

Conceptual Framework

The two frameworks that guide this article are a) inclusive education and b) disability studies in education (DSE). Inclusive education is the conceptual framework that is rooted in the principle of social justice, and it recommends that pedagogical practices be equitable and accessible to all students. DSE is the theoretical framework that provides the overarching position that centers the lived experiences of students with disabilities and understands the structural elements that lead to marginalization in schooling. As applied to this article, DSE provides the broad theoretical position and inclusive education is the conceptual framework that offers a pragmatic approach that puts theory into practice in schools. Together, they help in understanding how literacy instructional access for students with autism in the inclusive general education classrooms can be transformed to be more equitable, accessible, and inclusive.

Inclusive Mindset and Pedagogical Orientation

An essential element of enacting inclusive education is bringing a mindset that allows all students, including students with disabilities, access to the environment, a sense of authentic belonging, and the modifications, supports, assistive technology, and flexibility to use these tools to thrive with challenging academic learning experiences (Causton & Tracy-Bronson, 2105). These are the core values that become the tools needed within an inclusive toolbox to cultivate an environment that is welcoming, caring, and challenging for each learner.

Inclusive educators view each learner through a presumption of competence (Biklen & Burke, 2006) that values their presence, thinking, and contributions to the classroom. Presuming competence is a mindset, a starting place, and orientation that values each student as a human who thinks, with ideas about their life. This means inclusive educators hold the assumption that students with autism can and will learn to access literacy, read, and understand texts. They hold this belief, design materials and experiences that meet student needs, and intentionally look for

the moments that show evidence of student competence with literacy experiences. Research has demonstrated the best environment for students with autism to develop literacy skills is in the inclusive general education classroom with grade-level peers (Broderick & Kasa-Hendrickson, 2001; Chandler-Olcott & Kluth, 2009; Diehl et al., 2005; Kasa-Henderickson & Kluth, 2005; Kliewer & Biklen, 2001; Kliewer et al., 2004; Sonnenmeier et al., 2005).

Inclusive educators view learning through a constructivist lens whereby learners construct knowledge through their background knowledge, the interactions with general education peers, discussions facilitated by teachers, their experiences in the classrooms, grappling with a challenging activity and adjusting their existing knowledge base, and engaging in metacognitive reflection on their thinking and learning process (Baviskar et al., 2009). That is, teachers cannot simply transmit knowledge to students, rather their role is that of a facilitator or guide (Tam, 2000). The historical roots of constructivist learning theory come from the work of Dewey (1929), Bruner (1961), Vygotsky (1962), and Piaget (1980). Knowledge is constructed, meaning that knowledge is built upon other information, as students put together understanding in their own way. Olusegum (2005) explains that learning happens when "mental construction" occurs (p. 66). Learning is a dynamic and active process where students create their understandings, rather than passively taking in information, as they collaboratively engage in discussions, take part in learning experiences, and access texts. Learning is student-centered, in that it is process-oriented, interactive between students and teachers, and responsive to student interests and areas of need. Constructivism "encourages the construction of social content in which collaboration creates a sense of community, and that teachers and students are active participants in the learning process" (Tam, 2000, p. 51). Constructivist learning theory allows for teachers to use pedagogical practices that allow multiple entry points during the learning process, a range of learning tasks that can be adjusted based on learners' strengths and needs, and flexibility in the classroom while learners work within the same topic area. Thus, this creates space for multiple ways of learning that adjusts for students with a range of abilities.

Inclusive educators believe in students' ability to grow, access content, and demonstrate their learning in a multitude of ways, if provided with an inclusive learning environment that values belonging, safety, and incremental delivery of challenging content. Thus, their approach to inclusive classrooms includes their intent to instill a growth mindset, which communicates to students that learning, knowledge, and intellectual ability can be developed and get stronger over

time (Dweck, 1999; Dweck & Leggett, 1988; Yeager & Dweck, 2020). Research on mindsets show that individuals who possess a growth mindset are more likely to persevere when obstacles, difficulties, and challenges arise leading to continuous improvement, whereas those who hold a fixed mindset avoid challenges or stop before reaching their potential (Yeager & Dweck, 2020).

Inclusive classrooms are designed to be student-centered. This includes the physical structures of the classroom, such as flexibility in seating and furniture set-up to encourage collaboration. Students are given choices and preference for selecting the order of task completion (Causton & Tracy-Bronson, 2015). Learners work in collaborative groups, project-based learning happens frequently, and learning plans are tailored for specific student strengths and needs.

Community is the cornerstone of inclusive classrooms. Students have strong connections with one another, including knowing one another's strengths, interests, hobbies, and areas of needs, and this contributes to close-knit relationships that create a sense of belonging where all students feel safe, seen, included, valued, and respected within inclusive classrooms (Causton & Tracy-Bronson, 2015). When students feel this sense of safety and belonging in the classroom, an ethic of inclusion allows them to be available to learn.

In inclusive classrooms, learning experiences are designed with all students in mind from the onset. The mindset is grounded with a social justice framework where classroom environments are cultivated for all students (Sapon-Shevin, 2003), teachers draw on student strengths and funds of knowledge (Gonzalez, Moll, & Amanti, 2005), and critical thinking and agency are promoted. Teachers bring intentionality to identify possible inequities and power differences based on class, race, gender, ethnicity, sexual orientation, language, and disability (Cambron-McCabe & McCarthy, 2005), along with an understanding of the social inequities these systems of power and privilege produce (Hackman, 2005), and create equitable schooling spaces for traditionally marginalized students. The work of creating an inclusive classroom begins with the critical consciousness of the ways that schooling have historically been sites of inequity and marginalization for subsections of learners. Access to literacy for students with autism is a social justice issue because it confronts the inequitable education practices that limit and disadvantage students based on their communication, sensory, motor planning, and learning differences, preferences, styles, and needs. As the data shows, students with autism experience more segregation from general education than other students with disabilities (Department of

Education, 2023). Research demonstrates that time spent in the general education classroom is the best predictor for academic achievement, connected to grade level content standards in literacy and math. In other words, the more access students have to general education, the better they perform on grade level content (Cosier et al., 2013). Further, research demonstrates that self-contained placements, or special education classroom where many students with autism are educated for at least part of their school day, are connected to a range of distractions, meaningless curriculum, lack of instructional structure, decreased access to highly qualified teachers, and increased exposure to challenging behavior (Causton-Theoharis et al., 2011). With this social justice grounding, universally designing learning experiences, multiple means of action, representation, and expression are provided so students with a range of abilities, strengths, and backgrounds have logical and multiple opportunities to enter the learning. Specific student support, assistive technology, differentiated materials, and supplemental supports are purposefully infused into the learning experiences as options in a natural manner.

Disability Studies in Education

This article utilizes a disability study in education (DSE) theoretical framework that centers the lived experience of individuals with disabilities, and views disability not as a "condition to be cured but rather a difference to be accepted and accommodated" (Taylor, 2016, p. 1). Autism is traditionally viewed from a medical model perspective, where deficits and area of remediation are the main focus, positioning the student as needing to be fixed (Baglieri et al., 2011; Valle & Connor, 2011). A DSE framework considers how disability is situated within larger structural contexts of school and society, and considers systemic barriers for students with disabilities (Wilson, 2017). Within this article, instead of placing reading deficits within learners with autism and viewing them and their disability as being the barriers to becoming literate, the DSE framework provides an avenue through which to consider the larger structural barriers that prevent students with autism from having meaningful access to reading instruction, including the curriculum, how reading is being taught, how literacy skills are being assessed, and the lack of accommodations, modifications, and assistive technology used. Thus, it is critical to think beyond typical approaches to reading instruction to consider more inclusive ways to create meaningful access for a more diverse breadth of learners.

Because autism is so often framed and accepted from a medicalized perspective (Valle & Connor, 2011) within our society, teachers rarely question their own thinking about their

students with autism. Further, teachers are often overburdened with involvement of classroom matters, that stopping to understand the ways that the larger institutional school elements stigmatize and marginalize students with autism is not possible from a reflexivity standpoint. DSE provides the conceptual framework for critical reflection on institutional elements and classroom practices that impact and marginalize students with autism. Scholars note, "Given the importance of the role of teachers, introducing teachers to DSE concepts can assist them in understanding WHY inclusive opportunities are so important, and WHY our current system of education and overreliance on the medical model prevents students from accessing inclusive educational opportunities" (Cosier et al., 2016, p. 4). Through the use of a DSE framework, teachers can begin to see and unpack their own deficit-based perceptions about autism and begin to reconsider what educational opportunities can and should look like for students with autism.

As this article continues, it will first outline effective and evidence-based practices for supporting students with autism in their development of reading comprehension skills. Next, the principles of Universal Design for Learning (UDL) will be outlined. Then, strategies for supporting students with autism in literacy will be discussed. Finally, the authors offer educators reflective questions to consider to think through how to support students.

Literature Review

Before considering how to universally design reading comprehension instruction to support students with autism, it is essential to first understand what practices have been identified as either effective or evidence-based within the literature on literacy. Although a wealth of literature exists on the emergent literacy for neurotypical students, there continues to be a dearth of literature on the literacy development for students with autism (Davidson & Ellis Weismer, 2014; Dynia et al., 2014; Lanter et al, 2012). A systematic review conducted by Westerveld et al. (2015) concludes, "There is preliminary evidence to suggest that learning to read is difficult for many children with autism, and that difficulties with emergent literacy development, predominantly meaning-related areas involving oral language, are implicated. Existing research shows by school age, children with autism face difficulties with reading, particularly in terms of meaning-related skills" (Westerveld et al., 2015, p. 46). Thus, decades of research in reading intervention strategies have suggested many evidence-based reading comprehension strategies (Peng et al., 2023), such as main idea (National Reading Panel, 2000; Stevens, Walker, Vaughn, 2014), inference (Hall, 2016), text structure (Hebert et al., 2016),

retell (Reed & Vaughn, 2012), prediction (National Reading Panel, 2000), self-monitoring (National Reading Panel, 2000), and graphic organizers (Dexter & Hughes, 2011; Merkley & Jefferies, 2000). In Table 1, an overview of the evidence-based and effective pedagogical strategies for teaching reading comprehension to students with autism is provided.

Table 1

Evidence-based and Effective Pedagogical Strategies for Teaching Reading Comprehension to Students with Autism

Compare and Contrast Diagrams (Accardo & Finnegan, 2019; Carnahan & Williamson, 2013) Similarities and differences of two topics or ideas are recorded and analyzed. Common traits are written in an overlapping area and varying indicators are noted separately.
Cooperative Learning (Accardo & Finnegan, 2019; Kamps et al., 1995; Whalon & Hanline, 2008) Heterogeneous groups working toward a shared goal; examples include peer tutoring, think-pair-share, and other tasks that involve cooperative peer interaction. Instructional practices facilitate peer to peer interaction and are cooperative in nature.
Direct and Explicit Instruction (Accardo & Finnegan, 2019; Flores & Ganz, 2009; Roux et al., 2015) Planned and intentional instruction is focused on areas of specific instructional need. Instruction is delivered to directly to the student in targeted and explicit ways
Visual Supports, including Graphic Organizers (Accardo & Finnegan, 2019; Carnahan & Williamson, 2013; Dexter & Hughes, 2011; Kim et al., 2004; Knight & Sartini, 2015) Visual methods that assist students to relate concepts and internalize connections and meaning. Using visuals, including words, pictures, and organizers, to help make abstract concepts, topics, or vocabulary more concrete. Support tools provide multi-modal access to students about expectations, routines, task, etc.
Question Generation (Accardo & Finnegan, 2019; Hua et al., 2012) Questions are generated by the student and/or the teacher and previewed prior to reading a text. Instructional practice involving questioning that aids student monitoring of understanding content during reading.
Read Alouds

(Accardo & Finnegan, 2019; Mims et al., 2012) Read alouds allowed students with disabilities to listen to text read verbally, think about what was being read, and develop fuller conceptual understanding.
Reciprocal Questioning (Accardo & Finnegan, 2019; Whalon & Hanline, 2008) Students are taught via self-monitoring and visual cues to ask and respond to questions with a peer using a story map framework.
Story Structure Maps and Character/Event Maps (Accardo & Finnegan, 2019; Stringfield et al., 2011; Williamson et al., 2015) Visuals that students are taught to use to help them make sense of specific elements of a text, specifically providing a visual outline for identifying story structure, characters and/or character development, and key events of a story.
Systematic Prompting (Accardo & Finnegan, 2019; Mims et al., 2012; Sam & AFIRM, 2015a) Systematic prompting is when the adults think through various prompts they could provide a student, often thinking from a least to most support perspective, and then use those supports in intentional ways, only providing the level of prompting that supports student success without over-prompting. Prompts can include a wide range of supports, such as pointing at a spot on the page or showing a visual or modeling what is expected of the student.
Multiple Strategy Approach (Accardo & Finnegan, 2019; Filderman et al., 2021; Peng et al., 2023) Any instructional method that brings together multiple effective and/or evidence-based practices to deliver instruction and create curricular access.

A number of meta-analyses have shown that using multiple reading strategies and comprehension intervention strategies is critical (Filderman et al., 2021; Peng et al., 2023; Scammacca et al., 2015). Scholars argue that "Reading comprehension strategies are helpful when used alone but are considered to be more effective when used together" thus "many reading intervention studies for students with reading difficulties have often adopted a multisensory approach tapping three or more strategies" (Peng et al., 2023, p. 5). In the review of effective pedagogical strategies for specifically teaching students with autism, Accardo and Finnegan (2019) also note the multiple strategy approach. Furthermore, these scholars argue,

"Professional development needs to move toward training teachers to be knowledgeable in using a pool of effective practices, and training teachers to be skilled in how to differentiate these practices appropriately to enhance comprehension instruction of individuals with autism spectrum disorder in the classroom" (p. 243). This article seeks to contribute to this need highlighted in the literature.

There is also a growing body of literature that supports inclusive general education classrooms as the best environment to educate students with autism to learn the necessary literacy skills for academics and lifelong literacy (Biklen & Burke, 2006; Broderick & Kasa-Hendrickson, 2001; Diehl et al., 2005; Farmer, 1996). Chandler-Olcott and Kluth (2009) point out, "The inclusion of students with autism labels has the potential to benefit their peers as well as their teachers" (p. 55). These scholars argue that including students with autism benefits everyone in the classroom by expanding conceptions of literacy, valuing multiple ways of classroom participation, focusing on instructional outcomes rather than activities, and positioning of teachers as inquirers (Chandler-Olcott & Kluth, 2009).

Infusing technology into literacy learning has been recommended as a strategy to increase student understanding of content. It can be used to enhance text comprehension in multiple ways, such as with virtual graphic organizers paired with explicit instruction and guided practice (Ciullo & Reutebuch, 2013), hypermedia vocabulary enhancement (Xin & Rieth, 2001), and student output of authentic written thoughts

Although much is still unknown about literacy development for students with autism (Chandler-Olcott & Kluth, 2009), this article contributes to the growing conversation by noting what is known about text comprehension for students with autism and reading difficulties (Filderman et al., 2021; Peng et al., 2023; Scammacca et al., 2015), the literacy lives of students with autism (Biklen & Burke, 2006; Broderick & Kasa-Hendrickson, 2001; Kasa-Henderickson & Kluth, 2005; Kliewer & Biklen, 2001), how everyone benefits when students with autism are included (Chandler-Olcott & Kluth, 2009), and what the research on Universal Design for Learning (CAST, 2023) states. Critically, it responds directly to the need identified to ensure teachers are knowledgeable about a range of effective practices and how these can be adjusted to meet the specific range of needs that students with autism have in the inclusive general education classroom (Accardo & Finnegan, 2019). The next section discusses pedagogical implication of

the effective and evidence-based practices for supporting reading comprehension for students with autism.

Pedagogical Implications

Teachers being knowledgeable about the effective reading comprehension practices for students with autism has been noted as an identified need in the literature (Accardo & Finnegan, 2019). This next section outlines some of the effective and evidence-based practices for supporting reading comprehension development in students with autism. Of vital importance are the brief discussions on inclusive approaches to each strategy that allow teachers to adjust these effective and evidence-based practices based on learner variability within inclusive general education classrooms.

Compare and Contrast

Using compare and contrast charts have been identified as an effective research based practice to support reading comprehension for students with autism (Carnahan & Williamson, 2013). This included Venn diagrams to outline similarities and differences between two topics, that has two overlapping circles, one circle for each topic under consideration. In the overlapping area, traits that the two ideas have in common are identified and recorded. The differences are written on each side to note varying traits.

There are a multitude of ways that compare and contrast diagrams, charts, and learning experiences can be accommodated to better fit the needs of students with autism. For a student who has difficulties with the fine motor movement required for handwriting, pre-made visuals and words can be made available. The task is differentiated by adding a list of pre-created visuals and words that can be affixed. To make this more challenging, distractors or nonsense choices can be added. This takes the task that is difficult for some students with autism, handwriting, out of the learning experience to focus on the compare and contrast thinking work using visuals.

This can also be altered to fit learning needs by making the compare and contrast chart on a large chart paper. This will transform the individual sheet into a gross motor activity with a content focus. Students can use large markers to note their words. Another option is that words can be typed by students, then printed on sticky notes, then affixed to the large chart paper. Students physically move their bodies to add descriptive words to the chart. With this bodily kinesthetic adjustment, it gets it off the paper, instead asking students to physically stand and move around while thinking about the content to add to the compare and contrast chart.

Visual Supports, including Graphic Organizers

Visual supports, including the use of graphic organizers, have been identified as an evidence-based practice for supporting students with autism. Furthermore, they have been identified as an evidence-based practice that specifically support reading development in students with autism (Accardo & Finnegan, 2019; Carnahan & Williamson, 2013; Knight & Sartini, 2015; Sam & AFIRM, 2015b). Visual supports as a category can encompass a wide range of different supports within it, but at their core they provide concrete clues that provide access to students about expectations, content, schedules/routines, the task at hand, and so forth. Visual supports help take the abstract language or concept, and makes it more concrete for learners with autism. For example, a schedule that contains words and pictures can help make the plan for the day more transparent for a student with autism and help them feel more prepared to engage with each component of their school day. Creating a visual checklist for reading workshop helps students with autism see the flow of literacy tasks and allows them to self-monitor progress by indicating completion throughout learning. In these ways, the visual schedule and checklists support routine and structure that some students with autism need.

Graphic organizers serve as another form of visual support, as they provide a visual layout for students to engage with topics that breaks down the larger task and helps them to zero in on key components. When thinking about reading instruction, visuals can be used in many ways to support understanding and instructional components, such as in combination with words to help make concepts from text more concrete, provided via a graphic organizer to help a student chunk down and organize their thinking, or to represent parts of a text to think through story sequencing or other plot elements. Graphic organizers can be adjusted in terms of number of elements to focus on, size (e.g., size of boxes, on the regular size paper or on a large paper), how students record responses (e.g., handwriting, word box clues, typing), and format (e.g., on paper, with index cards, digitally).

Cooperative Learning

Research indicates cooperative learning is an evidence-based practice to support reading comprehension for students with autism in the classroom (Accardo & Finnegan, 2019). Cooperative learning means creating heterogeneous groups focused on collaborative learning and completing a shared goal. Any type of groups learning together, peer tutoring; instructional

practices that focused on cooperative peer interaction, such as think-pair-share, were included in effective reading comprehension strategies (Accardo & Finnegan, 2019).

In inclusive classrooms, cooperative learning provides students with autism peer interaction with neurotypical peers. Instructional practices can be modified to include specific learner needs.

For a Graffiti Brainstorm cooperative learning experience, students collaboratively write their responses to a content prompt. For some students with autism, handwriting an authentic thought quickly is a challenge. Instead, have three options pre-typed for a student with autism to select from and add to the group ideas.

Think-pair-share can be adjusted to think-ink-pair-share to ensure a student who does not speak is able to participate with a peer. Provide the prompt, have students record their ideas, then pairs exchange their written ideas. Instead of verbally sharing ideas, each partner would read what was written. This allows students to "ink" or record their ideas in a way that is individualized based on their needs, such as through typing, selecting from three choices written on labels, circling from a statement bank, or handwriting. For sharing, students can read their thought out loud or have their digital communication device read the thought. The adjustment for this think-pair-share allows for adequate wait time to process and produce an authentic thought, change in writing format, and change in output method for reading thoughts in order to adjust the cooperative learning task to meet individualized needs that neurodiverse learners have.

Question Generation

Question generation is another reading comprehension practice that has been shown to be effective for students with autism (Accardo & Finnegan, 2019; Hua et al., 2012). At its core, question generation emphasizes having pre-developed comprehension questions that are previewed prior to reading a text, which helps the student attend to elements of the text in order to answer the questions. Hua et al. (2012) studied the effects of students previewing teacher generated comprehension questions.

In inclusive classrooms, question generation can be used to support learners with autism in reading comprehension acquisition. For example, students could be provided in advance on a color-coded graphic organizer, and students could highlight areas of the text that help answer each question using the same color as the question. Another idea is that students could pre-read comprehension questions and place post-it notes in the text, marking which question the passage

aligns with. Furthermore, students could work in a collaborative Google Doc to generate questions about a text prior to reading, work together to categorize into similar question types or topics, and then share text-based findings to demonstrate comprehension competence in relation to the questions they developed.

Read Alouds

Read alouds were found to be an effective instructional practice for students with autism to enhance reading comprehension (Accardo & Finnegan, 2019; Mims et al., 2012). This included interactive read alouds, as well as read aloud in small groups. This meant that the teacher read the text aloud, stopping at various points as a checkpoint to facilitate students' monitoring of reading comprehension.

In inclusive classrooms, there are many ways to make read alouds interactive and to facilitate peer to peer social interaction around the comprehension of the text. For example, after reading a portion of the text, students work in heterogenous cooperative learning groups to plan and act out what happened, building purposeful movement and discussion to aid reading comprehension. This allows students with autism multiple opportunities to talk about the setting, characters, and the details contained in the events. It provides scaffolded interaction between students with autism and neurotypical peers.

Many read alouds include stopping to ask literal comprehension questions. This instructional format is a challenge for some students with autism because of the need to organize thoughts and produce a spoken response. Response cards allow students the flexibility of choice to respond to content related questions. For example, three different words and pictures can be noted on response cards. Students can select which card is accurate and hold it up to indicate their response.

Reciprocal Questioning

Research argued students with autism exhibit strengths in word recognition skills needed for decoding, and have difficulties in reading comprehension (Carnahan & Williamson, 2013). Reciprocal question involves students generating and asking questions about a text they read, with the goal of creating a context of shared responsibility, reciprocation, collaborative thinking, and comprehension of the text. This strategy helps students develop comprehension by taking turns asking and answering questions, focusing on the process of language and comprehension learning. The strategies in this research provided a systematic way for students

with autism to practice formulating a question on a text and responding to a question in collaboration with a peer (Whalon & Hanline, 2008). Students were provided with visual prompts to monitor their comprehension, a story board with visuals that prompted them to pick a story element and a question word, then to generate a question verbally for a pair.

Systematic Prompting

Systematic prompting is an evidence-based practice for supporting students with autism in the classroom, including in the area of reading comprehension (Accardo & Finnegan, 2019; Mims et al., 2012; Sam & AFIRM, 2015a). When implementing systematic prompting in the classroom, prompts can include a wide range of supports that are used to intentionally support the student in learning new skills and knowledge. Within any team implementing systematic prompting for a student with autism, a key component of this support is for the team to have a continuum of potential prompts pre-planned for use, ranging from minimal support, such as a gesture or visual, to more intensive support, such as modeling or tapping the student on the shoulder to capture their attention and give directions. When using systematic prompting, it is important for the adults supporting a child with autism to use the "just right" support that allows the student to be successful without providing more support than was needed. It is also essential to be thinking through how to fade the use of prompts or to move towards least invasive prompting modes and how to support both independence and interdependence as the child engages in the learning task (Leach & Duffy, 2009).

Research notes how critically important access to literacy is for students with autism, thus, understanding the pedagogical design elements to effectively teach students with autism in the classroom is important. In the next section, universal design for learning is explored, including the research backing and how access to literacy instruction can be expanded.

Universal Design for Literacy Learning

Universal design for learning (UDL) provides a framework for teaching and learning that accounts for learner variability and reduces barriers by ensuring access and participation in meaningful learning experiences through designing flexible instruction from the beginning, incorporating digital and assistive technologies, and building upon brain research (CAST, 2023). The overall intention is to remove academic barriers by determining the engagement, learning, and access needs of a range of learners and providing multiple ways for these to be addressed. The foundation for UDL is from the learning sciences, cognitive psychology, and neuroscience

(CAST, 2023). This brain research focuses on the networks present during learning tasks: recognition network (the "what" of learning), strategic network (the "how" of learning), and affective network (the "why" of learning) (CAST, 2023). Capp (2017) reported through a meta-analysis of literature that UDL is an effective teaching methodology that improves the learning process for all students. Three areas to consider when designing are multiple means of engagement, multiple means of representation, and multiple means of action and expression. Multiple means of engagement accounts for the variability in neurology, culture, preference, background knowledge, and collaboration styles. Multiple means of representation accounts for variability in the ways that learners perceive, learn, and ascertain new information. Multiple means of action and expression allows for differences in how learners convey thoughts and responses, communicate, and complete tasks. The point is that the learning environment proactively accounts for student variability in malleable ways, potential barriers are eliminated, and options are built in from the onset. UDL is responsive to learner needs and eliminates barriers to access for students within inclusive classrooms. In relation to literacy barriers that are often present for students with autism, this might include the ability to verbally read the words on the page in a traditional text, writing a comprehension response using a pencil, or showing understanding by verbally contributing to a class discussion. Often the ways that teachers ask students to engage in literacy tasks are barriers to engagement and the learning process for students with autism. In this article, UDL is the justifying framework to outline pedagogical strategies that account for the complex literacy needs for individuals with autism. These classroom practices take into account the variability in neurodiversity, preference, communication style, demonstration of competence, and unique needs that students with autism may have that impact literacy instruction.

It is critical to examine evidence-based and effective reading comprehension strategies and consider the ways in which literacy access can be expanded for students with autism in inclusive classrooms. Table 2 makes the connection between inclusive strategies, examples of practice connected to UDL principles, and connects these with effective and evidence based practices for students with autism in the research. Expanding access to literacy experiences for students with autism while ensuring this research to practice praxis in inclusive classrooms is imperative.

Table 2

Inclusive Strategies Connected to UDL and Literacy Research

Inclusive Strategies	**Examples in Practice connected to UDL**	**Research Connections to effective/evidence based practices**
Transform the teaching approach to infuse a hands-on and multi-sensory method to learn the content.	Multiple means of engagement • Provide choice in which sensory modalities students can select to demonstrate their comprehension of sequencing events in the story (e.g., provide tactile manipulatives that represent sections of a story that students can sequence in a visual graphic organizer or story map). Multiple means of representation • Customize the colors of the objects or graphic organizer depending on the level of support a student needs. • Provide explicit prompts for each step in a sequential process for selecting a multi-sensory object and sequencing, both in written and audio prompt directions. Multiple means of action and expression • Provide a variety of physical manipulatives to match students' sensory preferences.	**(**Accardo & Finnegan, 2019; Knight & Sartini, 2015; Carnahan & Williamson, 2013; Sam & AFIRM, 2015b; Stringfield et al., 2011; Williamson et al., 2015)

	• Provide alternatives to marking the graphic organizer with handwriting.	
For students who have a challenge with expressive communication by articulating words, ask comprehension questions aligned with grade-level content and provide multiple choices for the student to demonstrate content knowledge. Comprehension: Provide digital book with visuals or audio story and give opportunity to access reading materials independently: Work on comprehension, give choices to indicate comprehension. (Students do not need to "read aloud" for us to believe that they have read. Then give	Multiple means of engagement • Allow the student to use alternatives to handwriting, such as typing on a laptop, iPad, or label maker (to print and affix to a recording sheet). • Build in choice of responding to comprehension questions by touching choices with a single word, a statement, or visual diagrams or photographs. • Allow the student to decide whether there should be 2, 3, or more choices to select from when indicating understanding. • Give the student the choice to read aloud or read to themselves. Then, work to assess their comprehension to determine understanding and areas for growth. Multiple means of representation • Provide the content question in multiple formats, such as in writing, in audio, and in writing with visual supports. • Guide information processing and push to move beyond literal comprehension to inferential comprehension that uses the student with autism's authentic thoughts.	(Accardo & Finnegan, 2019; Mims et al., 2012)

opportunities to show evidence.) Ask students to read text independently and then ask a comprehension question with opportunity to type authentic response, select from two choices, choose from limited, multiple choices.	Multiple means of action and expression • Provide alternatives for physically interacting with materials to demonstrate comprehension–provide a sticker to place on the correct answer, a highlighter, or choices on an AAC device. • Provide a range of choices (see above) that nudge allow students with autism to demonstrate full range of conceptual thinking, rather than regurgitation of information.	
Presume that a student is capable of decoding, whether or not they have the verbal speech to demonstrate it in traditional ways, and look for alternate modes through which they can show their decoding abilities. (Reframe this as a web of decoding competency; in other words, not being able to speak does not automatically equate to not being able to decode. Decoding is an internal process that many	Multiple means of engagement • Provide multiple options for students to choose from to show their decoding skills and abilities (do not require students to read out loud in order to engage in comprehension tasks). Multiple means of representation • Provide the content question in multiple formats, both in writing, in audio, and in writing with visual supports. Multiple means of action and expression • Provide students with hands-on methods, such as letter cards, to manipulate and demonstrate decoding competency in non-spoken modes.	(Accardo & Finnegan, 2019; Mims et al, 2012; Sam & AFIRM, 2015a)

students with autism can do efficiently and with ease.)	• Provide receptive, instead of expressive, modes for demonstrating decoding skills and abilities. • Ask students to complete an action on a specific sound, diagraph, consonant cluster. Ask the student to take a glance at the page and put their finger on a specific consonant cluster. Engage in the text by asking the student to use highlighting tape to indicate a word, point to a word with a certain sound, point to a certain sight word).	
In completing tasks, adjust the output modality. (Reframe that handwriting does not need to be superior to typing or choice making.) Design alternative methods to complete graphic organizers (Type and print out portions to add to graph organizer spaces, have choices on labels, use digital versions that allow typing)	Multiple means of engagement • Give students the autonomy to select modes of written expression that work best for them in the given moment in time (and recognize that their choices might change with each opportunity). Multiple means of representation • Provide access to the writing prompt or graphic organizer task in multiple formats: written, read aloud, and in writing with visual supports. Provide a digital graphic organizer so the size, color, and contrast between the background and text can be customized.	**(**Accardo & Finnegan, 2019; Knight & Sartini, 2015; Carnahan & Williamson, 2013; Sam & AFIRM, 2015b)

	Multiple means of action and expression • Provides the student with options for how to complete any written task: either with handwriting, using typing, or selecting choices. Multiple options include typing, pasting teacher-selected visuals, pasting choices that are printed on labels, or other means to complete the task and demonstrate their understanding. • Provide digital version of the graphic organizer that allows for typing of authentic responses.	
A goal is to go beyond picture communication to spelling a word, typing a phrase, to eventually typing a sentence. Scaffold the writing tasks to slowly build up the student's skills. The aim is that the student with autism is able to write or type an authentic statement.	Multiple means of engagement • Provide students with choices on how they would like to engage in writing. • Allow opportunities for students to type authentic words and thoughts; this might be paired with pictures and choices at the onset. Multiple means of representation • Provide the content question and/or prompt in multiple formats, both in writing, in audio, and in writing with visual supports. Multiple means of action and expression • Provide students with multiple options for how to share their written communication: have picture cards,	(Accardo & Finnegan, 2019; Stringfield et al., 2011; Williamson et al., 2015)

	digital programs to type, sentence starters, fill in the blanks, and other options available to support them in writing. • Ensure to offer options in types of assistive technology (e.g., type of digital device depending on assignment and needs, keyboards, colors on the buttons on keyboards, slant boards for positioning).	
Provide choices for idea development to help make the task more concrete.	Multiple means of engagement • Providing students with choice provides both support and student autonomy. Multiple means of representation • Provide the content question and/or prompt in multiple formats, both in writing, in audio, and in writing with visual supports. Multiple means of action and expression • Provide different ways that students can make choices in terms of idea development: multiple choice options, pulling idea cards from a particular space, having a menu of options with sentence starters available for the student to select from, and so forth.	(Accardo & Finnegan, 2019; Stringfield et al., 2011; Williamson et al., 2015)

Reframe that illustrating only includes drawing, for young learners—instead it can be a digital drawing, searching for images online to arrange, or using a digital creation program.	Multiple means of engagement • Provide choice for how students create visuals, and the space for them to make ongoing selections about how to represent their thinking visually. Multiple means of action and expression • Give students multiple options to select from when asking for visual creation; allow them to choose from traditional paper/pencil drawing/visual representation tasks, to creating online visuals with pictures they find, to labeling a diagram, or any other idea for how a student might best be able to share thinking visually. When labeling the picture is the writing expectation, allow for labeling the illustration using mailing labels with teacher-written choices or print out typed response.	(Accardo & Finnegan, 2019; Flores & Ganz, 2009; Roux et al., 2015)

Reimagining Literacy in Inclusive Classrooms

Reimagining literacy involves translating evidence- and effective-based research for reading comprehension practices for students with autism and designing access for all within inclusive classrooms. Table 3 outlines inquiry questions that support aligning instructional practices with evidence-based practices that support all learners within inclusive classrooms. Embedded within these are theoretical underpinnings of inclusive education, social justice, and disability studies in education to allow teachers practice ways to reflect and infuse their values into their pedagogical practice.

Table 3

Reflective Questions to Ensure Research to Practice in your Inclusive Classroom

What are your pedagogical and ethical commitments to issues of social justice and equity as an educator? How are you centering disability, equity, and justice in your classroom? Where is there room for growth?
What classroom practices and learning tasks unknowingly marginalize students with autism? How can I universally design instructional experiences, placing disability at the forefront of the design process?
How do I currently view students with autism? Is there anything I am rethinking at the moment? How might that carry over into classroom practice?
How does this instructional practice connect to evidence-based practice?
How does this contribute to the student's social connection, sense of belonging, and sense of identity in the classroom?
What can you see about a student with autism when you focus on their skills and abilities, as opposed to what they cannot (yet) do?
Does this instructional practice contribute to or detract from that student's inclusion and the inclusive classroom?
How might the learning experience unknowingly exclude the student with autism?
Does the strategy exclude the student with autism physically, socially, communicatively, academically?
What are the strengths and cons of this particular instructional strategy?
If creating choices for completion with a student with autism in mind, can they be made available to the whole class?

The mindset needed is one of continual inquiry, in a way that reflective practice propels learning improvement. Inclusive educators develop a continual reflective practice on the ways in which students with autism have access to rich literacy experiences and these instructional moments are designed from the onset with their specific strengths, interests, intelligences, and areas in need in mind.

The intention is for educators to move from performative commitments of inclusion to designing authentic inclusive opportunities that align with effective-based practices in order to ensure access and progress in learning for students with disabilities at the margins. Building

upon the conceptual framework, access to rich literacy experiences is one that involves presuming competence (Biklen & Burke, 2006) to include students with autism within the rich literacy and reading comprehension experiences that take place in inclusive general education classrooms. It involves understanding the classroom structural elements that are barriers and unjustly marginalize students with autism (Baglieri et al., 2011) and putting disability at the center of the lesson design process. This DSE infused inclusive educational stance allows educators to make adjustments to classroom tasks that allow students with autism multiple modes of literacy learning and comprehension output.

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