



TECHNIUM
SOCIAL SCIENCES JOURNAL

Vol. 38, 2022

**A new decade
for social changes**

www.techniumscience.com

ISSN 2668-7798



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Reading Comprehension and Literacy Instruction for Students with Autism Spectrum Disorder

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Abstract. This research focuses on strategies for reading comprehension and engagement for students with ASD. There are few studies about the reading comprehension and word decoding of students with autism. Research indicates that only two studies investigated strategies to improve reading comprehension among these students. For example, a study of Reading Comprehension Profiles of High-Functioning Students on the Autism Spectrum (2012) found that using anaphoric cueing or asking students to define pronouns after they have been used in reading has been proven effective in improving reading comprehension. In another study, Children With Autism Spectrum Disorder and Literacy Instruction: An Exploratory Study of Elementary Inclusive Settings (2001), researchers found that reading comprehension improved when general education students were taught to use reciprocal questioning. This type of questioning allows students to ask the teacher questions about the reading so that students can demonstrate understanding. Further, using this strategy with general education students increased the number of questions generated, the responses to questions generated, and the responses to questions when using a story map.

Keywords. Reading Comprehension, Literacy Instruction, ASD, Autism Spectrum Disorder

Introduction

This study addresses strategies and activities that Autism Spectrum Disorder (ASD) teachers use to improve their student's reading comprehension and engage them in reading activities. Autism Spectrum Disorders include Autism, Asperger syndrome, childhood disintegrative disorder, Rett syndrome, pervasive development disorder, and not otherwise specified (NOS). The methodology of the research was designed as a multiple case study. The setting of the study was in the classroom rather than in the clinic. This research was conducted to study elementary classrooms from kindergarten, third grade, and fifth grade.

The No Child Left Behind provisions of the Elementary and Secondary Education Act (ESEA) of 2001 and the Individuals With Disabilities Education Improvement Act (IDEA) of 2004 require that all children receive evidence-based reading instruction consistent with the findings from the National Reading Panel (NRP) based on their study called, Children With Autism Spectrum Disorder and Literacy Instruction: An Exploratory Study of Elementary Inclusive Settings, (2001). The 2000 NRP study report recommended that state and federal policies and laws, such as ESEA and IDEA, follow the five essential components of reading

designated by the NRP, which are “phonemic awareness, phonics, oral reading fluency, vocabulary, and comprehension strategies” (Whalon & Hart, 1). The report of the 2000 NPR study indicates that children with ASD benefit from reading instruction consistent with the NRP recommendations. The study confirmed that ASD children required strategies to support text comprehension and to promote their verbal contributions to academic difficulties around the text (Alnemr, 2022). Observations that revealed that children with ASD often needed outside support during classroom activities prompted researchers to seek self-engagement in literacy-related activities (Children with Autism Spectrum Disorder and Literacy Instruction: An Exploratory Study of Elementary Inclusive Settings, 2011). Findings from a study, Reading Comprehension Profiles of High-Functioning Students on the Autism Spectrum (2012), reveal that considering reading comprehension for ASD students instead of the sole ability to read is important for their educational journey to help them ease through life development including career path and quality of life.

Researchers assume that ASD teachers follow the five components of the NRP as well as Computer-Based Intervention (CBI) strategies. CBI employs technology for both vocabulary and text comprehension instruction. Specifically, CBI includes independent work which is used as a support tool for teachers of children with Autism. A study, A Systematic Review of Strategies and Computer Based Intervention for Reading Comprehension of Children with Autism (2013), suggested that CBI helps children with autism work independently on the computer as a substitute for one-to-one teacher instruction. The same study showed an increase in the student learning rate, improved attention, and social behavior (Alnemr, 2022). However, the study also found a negative impact on CBI used by children with ASD. By working alone with the computer students with ASD tend to have limited interaction with their teachers. Previously, study findings that identified the five NRP-recommended elements of reading instruction (phonemic awareness, phonics, oral reading fluency, vocabulary, and comprehension strategies) were based on studies of reading instruction for students without disabilities. It has been suggested by professional educators that these strategies can also be effectively used for children with disabilities, but still little is known about the use of these strategies for children with autism in current times. Researchers are exploring the specific approaches to addressing the five NRP-recommended elements of reading instruction for students with disabilities including ASD. Moreover, some researchers are beginning to examine how the five NRP-recommended general components or elements of reading instruction can be combined with CBI strategies to help students with autism improve their reading comprehension and stay engaged in the classroom (A Systematic Review of Strategies and Computer-Based Intervention for Reading Comprehension of Children with Autism, 2013). However, further study is needed to identify the most effective ways of adapting the NRP-identified elements of reading instruction and CBI strategies to increase ASD students’ reading proficiency. Reading research has already confirmed a strong link between language development and reading development, but research has also shown that language development is one of the major challenges for ASD students (Whalon & Hart, 2015). Further study is needed to determine how teachers of ASD students adapt what is known about effective reading instruction for general education students in ways to help improve language development challenges that impact the reading development of ASD students.

Proposed Study

It is important to address the relationship between reading and language development for children with ASD. There is not enough existing research to understand how individuals

with different characteristics and types of ASD respond to reading instruction and develop as readers. Some studies (Williamson, Carnahan, & Jacobs, 2012) have shown that a number of ASD students successfully decode, but struggle with language and reading comprehension. One such study revealed that students with ASD who are able to read frequently have difficulty interpreting meaning from text (Children With Autism Spectrum Disorder and Literacy Instruction: An Exploratory Study of Elementary Inclusive Settings, 2011). Some researchers have focused on how this population of learners experiences learning in the context of a natural learning environment, but such studies have not focused specifically on the process of teaching ASD students to read given the challenges of language development overall for these students. Much of the ASD research has been centered on the causes of Autism and how ASD children's brains work in relation to psychology rather than how children with ASD engage with and respond to literacy and reading instruction. In that respect, there is a shortage of studies. ASD learners struggle with literacy acquisition due to several factors including limited exposure to systematic comprehension instruction that accounts for the ASD student's underlying challenges with language and language development.

The purpose of this case study was to analyze and collect data within a special education classroom environment to explore how ASD students engage in and respond to daily reading instruction. This qualitative case study was conducted in an elementary school that offered resource room settings for students with ASD. The study focused on the strategies ASD teachers use to help students with ASD to engage in reading instruction and respond to the teacher. Of particular interest for this study were the strategies that ASD teachers use to address reading comprehension since comprehension is the most common area where ASD students' reading performance breaks down. For example, although some ASD students may be skilled decoders and verbal demonstrators in reading, struggle to understand the meaning of reading the text. This finding points out how overall difficulties with language development might influence reading development. The purpose of this study includes an exploration of the strategies that ASD teachers are using to overcome language development challenges that interfere with ASD students' reading development in the area of reading comprehension.

The following overarching research question guided this study: What strategies do ASD teachers use to help students with Autism Spectrum Disorder engage in reading instruction and respond to the teacher while becoming better readers? Additionally, this study explored the following sub-questions:

1. How do the teachers help students understand the reading instructions better and comprehend what they are reading?
2. How do teachers address language development issues that interfere with ASD students' reading comprehension?
3. What student behaviors do the ASD teachers look for to determine if ASD students are engaging and learning from the teacher's strategies?
4. How are teachers using CBI strategies to improve reading comprehension with ASD students?
5. How do teachers help students with ASD reach their grade-level expectations of reading?

Study Significance

This study presented a better understanding of techniques that teachers, researchers, and parents can use to help ASD students to be more engaged in reading instruction and improve reading comprehension. This study looked at a group of elementary ASD students as they

interact in classroom activities where ASD teachers are employing specific strategies to teach reading to this population. The findings from this study can be helpful to professionals working with the education of ASD students in a variety of aspects and environments. If a child is able to decode text and understand it, the child is reading. Understanding written text while reading broadens opportunities to learn and improve communication with others (A Systematic Review of Strategies and Computer-Based Intervention (CBI) for Reading Comprehension of Children with Autism, 2013). For ASD students, the struggle to understand written text may deprive them of consequential benefits. Future methods will give students with Autism Spectrum Disorders the freedom to have the same opportunities as general education students.

Methodology

The methodology chosen for this research was related to reading and the relationship between students with ASD and teachers. The methodology was chosen due to its ability to be appropriate to determine what strategies ASD teachers use to help students be engaged in reading instruction and respond during the reading subject period of the classroom. To ensure that methodology can help answer questions posed by the researcher, this qualitative research was composed of multiple case studies by interviewing teachers in the classroom setting with ASD students to understand the strategies for reading comprehension. In order to reach a conclusion, a case study proved ideal for the researcher to receive first-hand answers to questions and classroom information. For a case study, the researcher needs to choose a site in which to study components such as programs and processes (Creswell, 2007).

The researcher is knowledgeable of the field of the special education system and knows some information about different strategies and activities that help students with special needs to be more effective in the classroom. The researcher has some experience teaching students with ASD and is interested in understanding the strategies that help ASD students to be engaged in a specific subject—in this case, reading.

The Setting, Participants, and Instrumentation

It was important that the researcher was familiar with the area in which the schools were located, so schools were chosen locally in relation to the researcher's location. Teachers, ranging in age from 22-65, from different classrooms in public school districts served as participants. All ASD teachers from all elementary school grades were considered as potential participants, however, those who teach early elementary students with ASD were preferred. These subjects were provided with maximum information about the research as compared to subjects who did not fit the criteria mentioned. To gain access, the researcher asked for written and verbal permission from the principal to approach teachers who were willing to work with the study. The researcher also contacted professionals such as social workers that would be able to contact teachers on behalf of the researcher.

Once the researcher verified that a teacher met the study criteria and that teacher agreed to complete the consent process, the researcher accepted the teacher as a potential participant in the study. From the pool of qualified teachers who indicated that they were willing to sign the consent, and thus, participate in the study, the researcher selected the final two potential participants based on the maximal variations. The factor the researcher considered for maximal variation was student grade levels in the teacher's classroom. Upon receiving signed consent from two qualified teachers, the researcher ended the recruitment process and sent thank-you notes to teachers that responded afterward.

Data Collection Method

To collect data, the research relied on interviews with the teacher. The interviewer asked teachers how they work with students with ASD during reading subjects, what strategies they use to help students be engaged, and what assessments they use to access the students' reading comprehension. The interviewer also included audio-recorded discussions of the examples and artifacts the teachers use to help describe how they teach reading comprehension to ASD students.

Data Analysis, Process, and Procedures

Once the data was collected from the interviews, the researcher interpreted it by following the inductive method for data analysis (Reeves, 2014). The journals, tables, recordings, field notes, and feedback from other professionals made up the data for analysis. To store data, the researcher typed the notes electronically, saved the data, and ensured that the equipment was working properly. After collecting information from interviews about strategies to aid the reading process for students with ASD, the researcher looked for patterns and themes such as *reading comprehension strategies, use of CBI, evidence of engagement, and engagement strategies*. Results are reflective of the date the researcher collected interviews and examples or artifacts of the teachers' work. The researcher decided how to represent the data in a poster presentation. Initial transcripts include notes, writing in margins, reflective passages in notes, a draft of the summary sheet on field notes, codes and memos, note patterns, and frequency of code. The inductive analysis approach was used to describe, classify, compare, and interpret transcript data into codes and themes (Reeves, 2014). The analysis determined information about what the researcher expected to find before the study, surprising information that the researcher did not expect to find, and information that is conceptually interesting or unusual to the researcher.

Trustworthiness

The researcher considered the four components of trustworthiness: validity, reliability, objectivity, and generalizability (Designing Qualitative Research, 2015). The researcher provided a detailed explanation for each step of the interview to the interview participants. The researcher took time before and during the study to answer any participant questions in regard to interview and observation protocol, ethics, relevance to the setting and participants, content being recorded, persons permitted to view the study, and confidentiality. Matters of relationships between the teachers, students, and researchers are important for building trustworthiness within the community of the research. The researcher must judge himself or herself constantly during the study and adapt his or her methods if needed. For an authentic study, the researcher closely considered the relationship of the study with potential biases in any way and modified the study process as appropriate. Finally, the researcher ensured that the participants' input was accurately reported to ensure the validity of the results. This included the responsibility of analyzing the data in a logical manner that coordinated with the teachers' responses and classroom behaviors (Reeves, 2005). The interviews took place at a location selected by the interviewee that afforded safety and security for both the interviewer and the interviewee as well as complete privacy for the interviewee. To ensure that the data collected was a full and rich rendition of participants' experiences, the researcher provided each participant with a full transcription of their interview with an invitation to add to or further develop the conversation through added text.

The total time required of each participant was approximately 45 minutes to respond to the interview questions. Once the researcher transcribed the interview, participants were given one week to add or further develop the conversation. The overall length of approval for this study is one year.

Study Delimitations

The researcher was contacted by a teacher willing to participate in the study but was unable to include her as a participant because her teaching experience did not meet the requirement. A remarkable difference in experience between the two teachers served as another obstacle that impacted the study. Originally, participants were required to have at least two years of experience teaching students with ASD. However, due to the difficulty of finding willing participants, the researcher chose to include a teacher highly experienced in working with students with other learning disabilities but with only one year of experience working with students with ASD (participant #1): an experience which proved comparatively different to participant #2's several years of experience with this target student group.

Findings

The researcher initially intended to base the analysis on data collected from interviews with three teachers, however, given the teachers' availability and capacity to meet the requirements, the researcher chose to work with two ASD teachers from the same elementary school. Participant #1, a teacher, met the criteria with two years of ASD experience further enhanced by many years working with students with various learning disabilities. Participant #2, brought several years of ASD experience to the interview.

In terms of preliminary findings, the researcher was able to answer the study's research question. By employing the inductive method to unpack themes and sub-themes, overall questions, and sub-questions, the researcher identified the following major themes: Reading comprehension strategies; engagement strategies; use of CBI; and evidence of learning and engagement. Under reading comprehension strategies the researcher identified the following sub-themes: Use of interesting materials; repetition; use of CBI programs; background knowledge-brainstorming; think-aloud; dramatic effect; reciprocal teaching; and retelling-after. Sub-themes under engagement strategies include the use of visual schedules; artifacts used to calm-bring focus; and interaction with students. The researcher found the following sub-themes related to the use of CBI: Use of technology; use of technology and traditional resources; and shaping techniques. Finally, sub-themes related to evidence of engagement and learning include strategies for targeting engagement and visual clues that engagement is taking place. Given all the data collected, analyzed, and compared the researcher ultimately discovered four key findings. First, the interviews showed that participant #2 focused more on reading comprehension strategies while participant #1 emphasized interaction with students and a focus on student behavior, enhancing her engagement discussion by highlighting the use of artifacts, such as the wiggle seat and rocking chair, to bring her ASD students calm and focus. Second, it was discovered that both participants used the System 44 Reading Program and each took the time to list the specific subjects addressed, which include phonics, decoding accuracy, fluency, spelling, and comprehension. Third, both participants noted the importance of visual schedules. Participant #1 added that visual schedules work "all day" while participant #2 added to the discussion of visual schedules the effectiveness of routine. Fourth, in teaching a lesson, both participants addressed engagement and suggested that without it, reading comprehension could not take place.

Table 1:

Presentation of Field Test Findings

THEME	ILLUSTRATIVE QUOTE	PARTICIPANTS
A. Reading Comprehension Strategies	"One thing that I do is trying to keep it high interest ...kids usually have something that they really like ...something that they're actually wanting to participate [in]."	#1
B. Engagement Strategies	"I have learned that in working with students with Autism, (visual) schedules and routines are essential."	#2
C. Computer-Based Intervention	"We use ' System 44 ' and that's another reading-based intervention; curriculum-based intervention, too... It does decoding, fluency, vocabulary, spelling, and then comprehension... addresses every aspect of reading. "	#1
	"I use the System 44 Reading Program ...[it's] a phonics based/visual based program given in small chunks ...which according to research, is essential for students with Autism."	#2
D. Evidence of Engagement	"Well with the kids I have right now they're either on or off, right? So it's pretty easy to tell whether they're with me because...they don't make eye contact but they're following the direction or at least moving toward following the direction."	#1

Table 2:

Sub-Themes A-B

SUB-THEME	P #1	P #2
Theme A: Use of Interesting Materials (engaging subject matter in books)	x	
Repetition (student reads, we read, quiz) (teacher does/we do/student does)	x	x
Use of Programs (CBI, Read Naturally, 44 Reading, Fast Forward)	x	x
Build Background Knowledge/Brainstorm (share personal stories, ask questions)		x
Think-Aloud (teacher models and suggests strategies)		x
Dramatic Effect (oral/visual techniques/pantomime/dramatic readings)		x
Reciprocal Teaching (students as teacher/teacher does/we do/student does)		x
Retelling-After (teacher teaches about subject/student draws picture, presents...)		x
Theme B: Spacial Strategies Targeting Engagement (students in close proximity to activity)		x
Interactive Strategies Targeting Engagement (checking-in/model/request feedback)	x	
Visual Clues Indicating Engagement (eye contact, direction taken or will be taken)	x	x

Table 3:

Sub-Themes C-D

SUB-THEME	P #1	P #2
Theme C: Use of Technology (Fast Forward, Read Naturally, System 44 Reading Program)	x	x
Use of Technology & Traditional Resources (blend of CBI and graphic organizers)	x	x
Shape/Shaping Techniques (complex tasks broken down to more basic details)		x
Theme D: Visual Schedules (routines essential to students on track; great all day)	x	x
Use of Artifacts (rocking chair, wiggle seat, sleeve, vest, etc., soothe, bring focus)	x	
Interaction with Student (call on student directly, watch over shoulder at work)	x	

Conclusions

In preparation for continuing the study, the researcher reflected on and considered the study's research question, methodology, participant criteria, recruitment process, and data collection protocol. Given the preliminary findings of the study as conducted the researcher would not change the overall research question because it covered all the bases and resulted in logical outcomes. Because the limited number of willing and qualified participants caused some challenges to the data collection the researcher would expand the recruitment process to include more participants from different schools and districts. In going forward with this study the researcher plans to contact a larger number of potential candidates. Because the multiple case study process proved appropriate for identifying effective reading comprehension and engagement strategies for students with autism the researcher would not change the study protocols or procedures.

Key Learnings

By using the qualitative multiple case study to gather data about reading comprehension and engagement in ASD classrooms, the researcher learned that this model offers effective organizational strategies that helped her prepare for all aspects of the research process. For example, by using this process the researcher felt prepared with interview questions upon arrival and knew what course of action to take at each step of the process. Through conducting participant interviews the researcher recognized that the study moved beyond books and journal articles to a more humanized, personalized experience resulting in more people-centered insight and understanding. For example, the study benefited from firsthand experience details provided about calming and focus techniques available to ASD students through the use of classroom artifacts including the wiggle chair, sleeve, and rocking chair. Likewise, the interview results revealed interesting and compelling similarities and differences between participants' observations, priorities, and classroom strategies.

References

[1] Alnemr, M. (2022). Academic Learning Strategies for Students with Autism. *International Journal of Novel Research in Education and Learning*, 9(6), 10–13.

- [2] Alnemr, M. (2022). Improving Reading Comprehension in Kids with Special Needs. *Eximia Journal*, 5(552-557).
- [3] Alnemr, M. A. (2022). Profiles of Phonological Awareness Skills in Young Children with Autism Spectrum Disorders, Language Impairment, and Their Typically Developing Peers. *Journal of Positive School Psychology*.
- [4] Alnemr, M. (2022). The Strategy Chain: Combining Strategies to Maximize Reading Comprehension Effectiveness for Students with Autism Spectrum Disorder. *Eximia*, 5(1), 600-610. <https://eximiajournal.com/index.php/eximia/article/view/190>
- [5] Åsberg, J., Kopp, S., Berg-Kelly, K., & Gillberg, C. (2008). Reading comprehension, word decoding and spelling in girls with autism spectrum disorders (ASD) or attention-deficit/hyperactivity disorder (AD/HD): Performance and predictors. *Int. J. of Language & Comm. Disorders International Journal of Language & Communication Disorders TLCD*, 45, 1-16. doi:10.3109/13682820902745438
- [6] Creswell, J. (2007). *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (3rd ed., pp. 69-70, 97-102, 145-210, 236-238). Thousand Oaks, California: Sage Publications.
- [7] Khowaja, K., & Salim, S. (2013). A systematic review of strategies and computer-based intervention (CBI) for reading comprehension of children with autism. *Research in Autism Spectrum Disorders*, 1111-1121.
- [8] Marshall, C., & Rossman, G. (1989). *Designing Qualitative Research* (6th ed., pp. 43-60, 141-149). Newbury Park, California: Sage Publications.
- [9] Reeves, P. (2011). Trustworthiness. *Instructor's Notes*, 1-3.
- [10] Whalon, K., & Hart, J. (2010). Children With Autism Spectrum Disorder and Literacy Instruction: An Exploratory Study of Elementary Inclusive Settings. *Remedial and Special Education*, 243-255. doi:10.1177/0741932510362174