

# Planning and Implementing Effective Language and Reading Comprehension Instructional Techniques for Students with Autism Spectrum Disorder and Cognitive Disabilities

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This article provides practitioners with instructional techniques to support reading and language comprehension development for children who demonstrate slower growth, including those with autism and concurrent intellectual disability.

rs. Nolan is an elementary school special education teacher in a self-contained classroom. She teaches children with a variety of disabilities, including children with both autism spectrum disorder (autism) and intellectual disability (ID). Lately, she has been struggling with intensifying her reading instruction for some of her students who have not been responding to instruction, particularly for Hector, a 9-year-old boy with autism who has an IQ of 65. Hector is able to recognize a few irregular high-frequency words on a consistent basis but struggles to blend phonemes to sound out decodable words. Hector does not enjoy participating in reading instruction with the class and tends to severely withdraw, often hiding behind his hands or covering up with his sweatshirt.

Mrs. Nolan was excited when she heard about a reading program designed for children with intensive needs that included instruction in both decoding and language comprehension skills called *Friends on the Block* (Allor et al., 2022). The program included instruction in foundational reading skills as well as decodable books with embedded comprehension questions and activities and had been used with children from ages 6 to 13 with disabilities such as autism, ID, and Down syndrome. Mrs. Nolan liked that she was able to incorporate Hector's personalized reward system into the structure of the activities. Hector earned a sticker on his individual checklist each time he completed one of the activities that were part of the program's daily routines and at the end of the

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day he was able to trade the stickers in for minutes of free time on his tablet. She was also able to design her own decodable readers and incorporate some of Hector's favorite characters, like Spider-Man, following the style of readers in the program. After several weeks of participation in *Friends on the Block*, Mrs. Nolan observed that both Hector's reading fluency and attitude toward reading had

improved. During group reading time, Hector began to readily answer comprehension questions and became more engaged and responsive during instruction on foundational reading skills.

#### Reading Instruction for Children with Autism and Cognitive Disabilities

The ultimate goal of reading is to develop reading comprehension, as reading comprehension is necessary for success in life outside of school as well as almost all academic content areas (Castles et al., 2018). In school, a strong foundation in reading comprehension is necessary for children to see success in not only reading/language arts, but also in mathematics,

science, and social studies (Chiang & Lin, 2007). Outside of school, reading comprehension is necessary to successfully participate in tasks required for everyday life such as following written instructions, navigating directions, understanding safety signs, responding to emails, and more.

Children with autism and cognitive disabilities have unique behavioral and academic needs that should be considered when planning effective interventions. Reading comprehension research inclusive of children with autism is often limited to children with average or above average IQ (Conner et al., 2022; El Zein et al., 2016); however, according to the Centers for Disease Control and Prevention (CDC), 33% of children diagnosed with autism are also identified as having an ID (CDC, 2014, 2020). In this article, we review successful reading and language instructional practices for children who have both autism and ID and provide practical recommendations for teachers to incorporate these practices into everyday instruction. We provide examples from Friends on the Block, which is designed to address the unique needs of students with disabilities and we describe how teachers can incorporate these practices into instruction without Friends on the Block.

According to the simple view of reading (Gough & Tumner, 1986), both decoding and language comprehension skills are necessary for reading comprehension development. While children with ID have had historically limited exposure to decoding and language comprehension instruction, recent research suggests that children with ID respond positively to explicit, systematic, instruction in these areas

## **PAUSE AND PONDER**

- How can teachers support reading development for children with disabilities who have been previously unresponsive to reading instruction?
- How can language development be incorporated into instruction for beginning readers who have yet to master independent reading skills?
- What opportunities for embedding child interests already exist in your classroom?
- How can a strong focus on language development improve both reading and listening comprehension for children with disabilities?

when provided with instructional intensification. Instructional intensification such as repeated exposure, specific modeling, longer duration or more frequent dosage of lessons, and frequent cumulative review and practice, have all been found to be beneficial for students with ID when developing reading skills. Recent studies have found that students with ID, including ID and autism, can develop reading skills beyond just sight word memorization, including decoding and language comprehension skills (Afacan et al., 2018; Browder et al., 2008; Conner et al., 2022; Henry et al., 2022; Lemons et al., 2015, 2017).

## Comprehensive Reading Intervention: *Friends on the Block*

One intervention that uses a comprehensive and integrated approach for improving reading outcomes in children with autism and ID is Friends on the Block, a multi-component reading intervention designed to provide the support and practice necessary for early readers, particularly those with intensive needs, to develop foundational reading skills. In this article, we use examples from this intervention to describe how key strategies can be implemented with or without the program. Models and sample materials are available at no cost at friendsontheblock.com. The skills targeted through the intervention include basic strands within word recognition that are common to many evidence-based programs. This intervention also simultaneously addresses word reading and language development, so children learn to integrate and apply skills when reading. Each lesson is comprised of three predictable routines: (1) warm-up activities that introduce and practice foundational skills including alphabetic knowledge, phonemic awareness, and decoding strategies; (2) book reading accompanied by activities to promote comprehension (e.g., shared reading strategies,

comprehension questions; cumulative review of highfrequency decodable and irregular words within the books); and (3) learning games that incorporate cumulative review of key words and skills. While this predictable structure is specific to *Friends on the Block*, a similar structure could be incorporated into daily literacy routines for children using any research-based reading intervention or lesson structure.

As can be seen in Figure 1, the progression of skills addressed in *Friends on the Block* is integrated and reflects theory on the stages of development of word recognition (Ehri, 2020) which indicates that over time children develop complete processing of the letters within words; that is, they develop complete orthographic maps (i.e., spellings) of words. The books read by the children in *Friends on the Block* address multiple criteria including decodability, repetition of high-frequency words (both decodable and irregular words), familiar words and contexts, and syntax similar to spoken language. Language and comprehension are integrated into lessons from the very beginning of the intervention with word recognition and meaning explicitly integrated through book reading, consistent with the

# simple view of reading (Gough & Tumner, 1986). Special features to enhance meaning and allow for early integration of word recognition and meaning include (a) the sequence of words facilitated the writing of meaningful sentences that are similar to spoken language, as words were selected that are common in early spoken language (and early print) and that could be combined easily into sentences (e.g., I do not like \_\_\_\_\_. I want \_\_\_\_\_.) and (b) helper text that is read by the teacher, both of which are beneficial for children with autism. We theorize that this is particularly important for students with autism because it integrates early literacy with spoken communication. For example, the words in the books are also words that are commonly used with communication devices.

# Research on Effectiveness of Friends on the Block

*Friends on the Block* has been evaluated in special education classrooms and has demonstrated effectiveness for children with intensive needs including those with ID, autism, Down syndrome, and other developmental disabilities

Instructional Strand	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Irregular Words	a, do, I, like, not, want	dad, here, is, look, mom, see, the, where	are, at, happy, in, no, she, yes, you	good, help, play, there, to was	big, have, little, my, please, very, what	be, friend, give, go, he, her, it, me, on, so, thank, we, who, with, your	because, care, come, could, feel, first, of, how, next, said, should, take, too, why, would
Phonemic Awareness	orally blend the first sound and rime into a spoken word; identify the first sound in a spoken word		orally blend sounds into a word; identify the individual sounds in a spoken word	in Levels 4-7, students practice blending and segmenting words with letters			
Letter Sounds	c, f, p, m, s, t	d, j, n	b, g, h, l, r	ck, k, a	u	ch, th, w, x, y, z	i, o, sh, qu, v
Decodable Words				am, and, at, can sad	, dad, mad,	am, and, at, can, dad, fun, had, hat, mad, ran, run, sad, sun, up, us	big, did, got, him, if, in, it, mom, not, on, sit, stop, this, will, with
Language and Comprehension	develop lan	guage and com	prehension throug	h predictions, dis	cussion, and su	immarization of t	exts

#### Figure 1 Scope and Sequence: Levels 1–7

(Allor et al., 2014, 2018, 2020; Conner et al., 2022). Research on the effectiveness of *Friends on the Block* finds that children who participate in the intervention demonstrate growth in word reading, including both irregular and decodable words (Allor et al., 2018, 2020; Conner et al., 2022). Qualitative data support growth in language and reading comprehension. Specifically, teacher focus groups and video observations indicated that during sessions children discussed story events, answered literal questions, and participated meaningfully in language and comprehension activities (see Figure 2 for examples of observations). Family members echoed these findings, expressing high levels of satisfaction with progress and increased interest during shared book reading and independent reading at home. A randomized control trial study that includes a broad array of word recognition and comprehension measures is currently underway (see frien dsontheblock.com).

This paper outlines four key techniques incorporated in *Friends on the Block* that can be incorporated into everyday instruction with other research-based programs to help promote success for children with autism and ID: (1) routines and behavioral support, (2) relatable content and interests, (3) shared reading activities to promote language and listening comprehension, and (4) facilitation of the development of academic and social vocabulary. These four key techniques address both engagement and behavior needs and promote language comprehension of children with autism and ID. In the following sections, we describe each technique's proven effectiveness,

Figure 2

Student	Age I(	) Level	Book Title		
Ellie	9 42	2 3	Max Learns to Play Hide and Seek		
*First time	*First time reading the book, previewing the pictures with teacher*				
S: [pointing of the second sec	ng to picture]	Bed! Bed!			
		U	book in the bed. [turns page]		
			's in the closet!		
		-	r here? [points to other page]		
		of the bathtub	-		
		k he is going t	o take a		
S: Take a					
T: [flips pa					
			<pre>! [makes sleeping motion with hands]</pre>		
-	ame are they p				
S: Hide an	<i>id seek!</i> [First	time reading	; this book]		
them.		re is Mom? are is she? Page	Play," whispered Mom. But, Max Here you are. I see you. es student gets excited about		
		book, she the pio gesture	tudent previews the pages of the e demonstrates enthusiasm about ctures through her expression, es, and tone. She makes her own ections to the text, exclaiming "bubbles!"		

provide examples from *Friends on the Block*, and explain how teachers can incorporate these techniques into daily instruction using their existing instructional materials.

## **Routines and Behavioral Supports**

When planning interventions for children with autism, it is important to consider routines that support positive behaviors. Children with autism often display disruptive behaviors that can limit engagement and participation in education settings (Kaat & Lecavalier, 2013). The design of Friends on the Block promotes success and engagement through clear routines, explicit modeling/scaffolding, and many visual supports, all of which can often prevent, reduce, or eliminate problem behaviors in children with disabilities (Coyne et al., 2001), including those with autism (El Zein et al., 2014; Knight et al., 2015). The books provide children with practice reading words in connected text and extensive repetition of high-frequency irregular and decodable words. The instruction is systematic and explicit and also incorporates immediate error correction that is delivered throughout instruction, which has been found effective for children with disabilities (Coyne et al., 2001), including those with autism (Knight et al., 2015) and helps to minimize potential child frustrations when reading. For example, the corrective feedback pattern that immediately corrects errors, scripted in Friends on the Block, is the "I do, we do, you do" model, which addresses child errors as soon as they occur during instruction, providing immediate support. The learning games included in Friends on the Block have also been well received by the children, supported by focus groups of parents and teachers. During focus groups, it was revealed that children enjoyed playing the learning games and that the games, designed to reinforce lessons, were highly motivating even when used as a classroom reward for good behavior in addition to being used as part of the daily lessons. This is important for all struggling readers (National Reading Panel, 2000), but specifically needed for students with autism who may require additional supports, including repeated exposure to information, to develop skills (Conner et al., 2022).

#### How to Use Routines and Embed Behavior Supports

While the predictable routines and behavior supports that make up *Friends on the Block* are embedded within the intervention, these routines can be integrated into instruction with other programs. The pattern of (1) brief warm-up routines, (2) shared book reading, and (3) learning games could either be fully or partially replicated (e.g., add a brief warm-up of explicit instruction in a small number of highimpact target skills, along with more extensive practice of skills during games later in the lesson; see the sample lesson plan in Figure 3). In addition, explicit modeling and immediate corrective feedback can, and should, be built into any instructional routine for a child with ID, as both of these supports have been found effective for students with disabilities, including autism and/or ID (Conner et al., 2022; Coyne et al., 2001; Knight et al., 2015). The visual supports that are embedded into Friends on the Block are incorporated into the intervention through many different avenues, including student book illustrations, graphic organizers, and learning games, all of which can be added into any lesson with simple adaptations. Many of these activities are provided at no cost on friendsontheblock.com and can be replicated by teachers or used alongside other books or lessons that are already being used by teachers in their classroom routines.

To support the behavior of students with ID and autism, teachers will likely need to embed behavior or reward systems into instruction. Positive behavioral interventions, including those with both tangible and intangible rewards, have been found to help prevent or minimize behaviors that interfere with classroom instruction for children with autism (Neitzel, 2010). For example, teachers can create checklists of the activities and award children check marks that can count toward stickers (tangible) or breaktime (intangible) for completing each activity. Those check marks or stickers can later be traded for a reward. The learning games themselves can also be used as a intangible positive behavior reinforcer that also provides additional skill practice. In addition, teachers can use comforting props that are reinforcers for the children (such as comic book or animal toy figures) which can be available to children during story time when they are reading with the teacher. This incorporation of graphic organizers, props, or other visuals is beneficial for children with autism, as found in literature reviews of comprehension supports for children with autism from both El Zein et al. (2014) and Knight and Sartini (2015).

# Relatable Content and Incorporation of Interests

Embedding the interests of children with autism into intervention contexts has been found to increase effectiveness and response to intervention (El Zein et al., 2016). For this reason, it is important that children can relate to the books they read through their interests and familiarity with the characters, content, and themes. Teachers need to carefully select books, keeping the interests of children in mind

#### Figure 3 Sample Level 4 Lesson Plan Overview

#### Step 1: Warm-Up Activities (5-8 minutes)

- Begin lesson with very brief routines to explicitly model and practice a few key skills.
- Model and provide corrective feedback, using the I, We, You routine

Objective	Activity/Routine
Orally blend phonemes into a word.	Say the Word: Teacher says sounds one at a time (e.g.,
	/sss/ /aaa/ /t/). Student says the word (e.g., sat).
Say the sounds in a spoken word.	Say the Sounds: Teacher says a word (e.g., sat).
	Student says sounds one at a time (e.g., /sss/ /aaa/ /t/).
Fluently say the most common sound	Say the Letter-Sound: Teacher points to printed letters
for taught letters.	one at a time. Student says the most common sound.
Sound out and read short vowel	Sound It Out: Teacher prompts the student to say the
words with taught letters. (e.g., and,	sounds of a printed word one at a time and then say
am, can, dad, sad)	the word as a whole.
Fluently pronounce taught irregular	Read It: Teacher points to a word. Student says the
words. (e.g., good, play, there, was)	word.

#### Step 2: Book Reading (10-15 minutes)

- Select books related to student interests with familiar content and settings.
- If book selected is to be read by the student, prepare supplemental *helper text* to be read by the teacher that provides background knowledge, brief explanations of key vocabulary, and sentences that model use of key vocabulary.
- If book selected is to be read by the teacher, prepare simple sentences that can be read by the student. These should relate to the book, but be simple enough for the student to read with limited support from the teacher. These may be placed on sticky notes.
- Prepare questions that will foster conversation and reinforce vocabulary.

Objectives	Read and Discuss Routine		
Make oral predictions about text.	Briefly preview vocabulary and encourage the student		
	to make predictions about the book. Model, as needed.		
Read text made up of taught irregular	Teacher reads <i>helper text</i> and student reads <i>student</i>		
words and decodable words.	text. Teacher corrects word recognition errors quickly		
	using the I, We, You routine.		
Discuss text and vocabulary words	Stop periodically to prompt student to discuss the		
when prompted by the teacher	book, modeling expanded responses, and encouraging		
	the student to repeat the teacher's model.		

#### Step 3: Learning Game (5-10 minutes)

Select a learning game or two to practice skills the student has not yet mastered.

• Model and provide corrective feedback, using the *I*, *We*, *You* routine.

Objective	Learning Game		
Fluently read target high-frequency	Word Bingo with high-frequency decodable words		
irregular words and words with	(e.g., and, am, can, dad, sad) and high-frequency		
taught letters/patterns.	irregular words (e.g., good, play, there, was)		
Apply various skills in the context of	Scavenger Hunt: Teacher provides a clue (e.g., find		
a book.	the word <i>was</i> ) and the child finds the clue (word <i>was</i> )		
	in the book and reads the sentence with that word.		

as much as possible. For example, Friends on the Block includes multiple books per level covering a variety of familiar and relatable topics, so children and teachers can decide the order in which the books are read based on preferences. When participating in Friends on the Block, children also may not read all books on a level, depending on how guickly mastery is reached. The Friends on the Block books incorporate specific vocabulary chosen to facilitate understanding and describe story settings that are familiar to children, which may support children with autism in making their own connections to books and can increase comprehension and understanding (Henry & Solari, 2021). Each student book includes a list of target words along with a story starter that supports the student in making predictions about the story. Qualitative video data from the initial studies of Friends on the Block found increasing levels of engagement and cross-textual connections as children progress throughout the intervention (Conner, 2020). Children in these videos demonstrate a fondness for certain characters, like the reoccurring dog named Max, and make enthusiastic comments and personal connections when they encounter those characters throughout the books. See Figure 2 for an excerpt of a child who becomes excited when reading a book about Max the dog playing Hide and Seek.

#### How to Select and Adapt Books with Relatable Content and Incorporate Interests

There are several ways that teachers can make books more personal for children with autism and or ID. Teachers can purposefully choose stories that have familiar content or take place in a relatable setting, such as the playground, school, or anything else the teacher knows would be familiar to the child. Teachers can also create cover sheets for books used in the classroom that include key highfrequency and decodable words, as well as story starters to help activate background knowledge, which is beneficial for children with autism (see Henry & Solari, 2021). Teachers can also add helper text to books that may be difficult to comprehend, making the content more accessible. The children read text as it is written, and the teacher reads new helper text that provides the children with additional information that will aid in comprehension. For example, if a book is about a circus, the teacher may add helper text (read by the teacher) that describes a circus and then the student reads text as usual. Similarly, if the child has a favorite book the teacher reads aloud, the teachers may write simple sentences related to that book that the child can read-aloud. These sentences may be in the form of thought or speech bubbles helping students to connect written and spoken language.

The style of the readers in *Friends on the Block* is easily replicable, and teachers can choose to create their own storybooks covering topics that are of particular interest to the child. For example, teachers can create their own book in which they change the characters to be family members or favorite television or comic book characters of the children, subsequently increasing attention during instruction. By linking to these favorite characters, children may be better able to make connections to books or extend conversations during reading by asking questions about the characters or making additional observations about the stories. See Figure 4 for images of the relatable content and characters in the *Friends on the Block* books.

When he began working with *Friends on the Block*, Hector had minimal reading skills. After experiencing initial growth in response to the program, his progress began to plateau. To continue reading growth and promote engagement with the program, Mrs. Nolan created her own books mimicking the *Friends on the Block* readers that incorporated Hector's favorite comic book character, Spider-Man. Through these books, Hector had additional exposure to words that he was still mastering, including practice with all other words and sounds he had mastered in previous levels.

# Shared Reading Activities to Promote Language and Listening Comprehension

For children with autism, shared reading activities foster language and listening comprehension through targeted instruction in vocabulary, making connections, direct observations, and more (Henry & Solari, 2020; Whalon, 2018; Whalon et al., 2015, 2016). Shared reading activities can help improve oral language, which is linked to reading comprehension in children with autism (Lindgren et al., 2009; Ricketts, 2011). Friends on the Block incorporates shared reading activities with discussion questions specifically designed to stimulate conversation about the text, rather than to assess comprehension. Furthermore, questions are of varying complexity so the teacher can select more complex questions as the child progresses. See Figure 5 for images of the intervention that include specific instructions about how to create shared reading questions as well as an excerpt of dialogue from a video in which a child demonstrates their listening and language comprehension through responses to a series of in-text questions asked by the teacher. Story starters are also included with each book to support comprehension by setting expectations about the meaning of the story. Video data of child/teacher interactions depict growth in



Figure 4 Relatable Content/Incorporation of Interests

these areas through conversations about the books (see Figure 2 for examples).

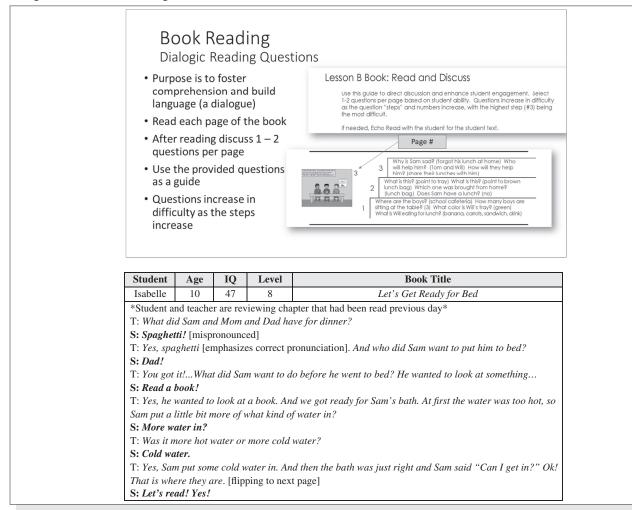
# How to Create Meaningful Shared Reading Activities

Teachers can use techniques to create their own lists of questions, varying in complexity, to accompany any book. As teachers use these questions to engage students in discussion, they can provide opportunities for expansions to support expressive language development (see Flynn, 2011 for details). An expansion is when the teacher either models an elaboration to a child response or provides the opportunity for the child to expand upon their own answer. For example, one story from *Friends on the Block* depicts a reoccurring character who is afraid of a dog; this is a place in the story where the teacher has an opportunity to have the child who is reading expand upon

feeling afraid. If the child were to respond to a question about how the character feels by stating "Pam is scared," the teacher could provide opportunity for expansion by saying, "Yes, Pam is scared. Why do you think Pam is scared?" or "Yes, Pam is scared. She is scared of Sam's dog, Jazz." Teachers can follow this model and find appropriate places for expansion during any read-aloud.

There are several other techniques that teachers can use to promote oral language during book reading. Teachers can create one or two questions that are asked before the story, instruct the child to think about the answer during the joint read-aloud, and debrief at the end of the book. For example, the books included in *Friends on the Block* each have a short sentence on the inside cover that tells the child what the story will be about. These sentences provide the opportunity to activate background knowledge, discuss new vocabulary words, and discuss predictions about what may happen in the story. Teachers

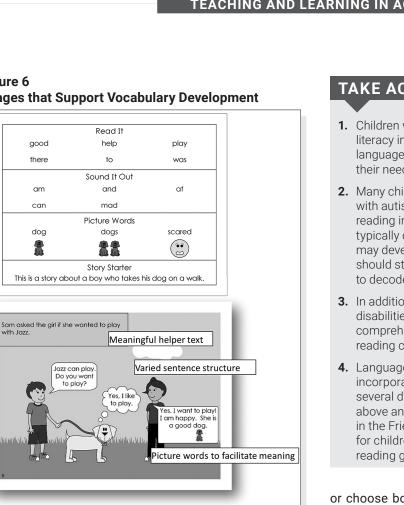
#### Figure 5 Images of Shared Reading Activities



can create a list of questions that accompany a book, or they may prefer to write specific questions on stickers or sticky notes and place them on corresponding pages as a reminder to stop and ask a question that is associated with a specific event or character. Personal reading questions can also help children make personal connections to their own culture or heritage. For example, a story about a birthday party where the characters are baking a cake might prompt a discussion about desserts and other food specific to the children's cultural backgrounds and that they bake with their families.

# **Facilitating Vocabulary Growth**

Vocabulary (i.e., the meanings of individual words) knowledge is important for all children to develop language comprehension and is especially important to target for children with disabilities, including those with autism and ID, as vocabulary knowledge is directly associated with their reading growth (Sevcik et al., 2019). One way that Friends on the Block supports vocabulary knowledge is by including "helper text" read by the teacher in addition to the text that is read by the child. This helper text adds more context to the story to facilitate comprehension and vocabulary growth. Explanations of key vocabulary are frequently included in the helper text. Vocabulary development is also promoted in Friends on the Block through discussion about the stories as teachers provide children with opportunities to practice using story vocabulary during shared reading activities (discussed above). As this intervention is designed for children with low language, the vocabulary words included in the helper text and supported with pictures are often basic words, such as "scared" or "dog" (see Figure 6).



#### Figure 6 Images that Support Vocabulary Development

## How to Facilitate Vocabulary Growth

The vocabulary structure of Friends on the Block can be easily replicated by teachers with a variety of books. Teachers may add their own helper text to any books they have access to and incorporate those modified texts into their lessons. Teachers may also add student text, made up of words the children are learning to read, to more complicated books they currently use during read-alouds. These simple sentences may be placed on sticky notes, so the teacher reads the text in the book and the students read the simple text on the sticky notes. Teachers can be purposeful about modeling specific vocabulary during shared reading activities and provide children with the opportunity to practice using those words in spoken language. Figure 6 points out key vocabulary features on a page from a Friends on the Block book that teachers can either use when creating their own books or look for when choosing books for their students.

As mentioned, the books from Friends on the Block are easily replicable, and teachers may choose to create their own books that incorporate Friends on the Block features. When creating or choosing books for instruction, teachers can incorporate appropriate high-frequency irregular words

# **TAKE ACTION!**

- 1. Children with intensive needs should have access to literacy instruction, including both word reading and language comprehension instruction, designed to meet their needs.
- 2. Many children with intensive needs, including children with autism and ID, can respond positively to word reading instruction, but at a slower rate than their typically developing peers. Even though these children may develop decoding skills at a slower rate, they should still be provided with ample opportunity to learn to decode.
- 3. In addition to word reading instruction, children with disabilities should also be provided with language comprehension instruction, which is also necessary for reading comprehension success.
- 4. Language comprehension instruction can be incorporated into everyday routines for all children in several different ways, as outlined in the manuscript above and supported by the instructional routines in the Friends on the Block intervention, designed for children who demonstrate slower than average reading growth.

or choose books with appropriate high-frequency words that are repeated throughout the text as well as decodable words. In addition, creating helper text is a way to further support vocabulary development as helper text can include words children have not yet learned how to read, thereby enhancing the meaning of the story through oral language.

# Summary

Friends on the Block key features: (1) behavior supports, (2) relatable content/incorporation of interests, (3) shared reading activities for explicit language and listening comprehension, and (4) facilitation of vocabulary development have been associated with improved engagement and comprehension for elementary-aged children with autism and concurrent ID. Teachers can feasibly embed these four features into their daily instruction with a few purposeful modifications, as described. These key techniques can be replicated by any general or special education teacher who is seeking resources for children with autism and ID, including those who have not previously been responsive to reading instruction, regardless of that child's irregular word knowledge or decoding ability.

As Hector progressed through the more advanced levels of the Friends on the Block program, he was consistently able to decode short words and recognize many

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high-frequency irregular words. Hector also became a much more engaged and confident reader than he previously had been, participating fully in lessons and discussing the stories. Mrs. Nolan observed that he was more engaged during shared reading activities in not only oneon-one but small-group lessons. Mrs. Nolan contributed this success that Hector was experiencing to his participation in *Friends on the Block*, designed to meet the needs of children with autism and ID, like Hector.

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#### REFERENCES

- Afacan, K., Wilkerson, K. L., & Ruppar, A. L. (2018). Multicomponent reading interventions for students with intellectual disability. *Remedial and Special Education*, 39, 229–242.
- Allor, J. H., Cheatham, J., & Al Otaiba, S. (2022). Friends on the block.
- Allor, J. H., Gifford, D. B., Jones, F. G., Otaiba, S. A., Yovanoff, P., Ortiz, M. B., & Cheatham, J. P. (2018). The effects of a textcentered literacy curriculum for students with intellectual disability. American Journal on Intellectual and Developmental Disabilities, 123, 474–494. https://doi.org/10.1352/1944-7558-123.5.474
- Allor, J. H., Mathes, P. G., Roberts, J. K., Cheatham, J. P., & Otaiba, S. A. (2014). Is scientifically based reading instruction effective for students with below-average IQs? *Exceptional Children*, *80*, 287–306. https://doi.org/10.1177/0014402914522208
- Allor, J. H., Yovanoff, P., Al Otaiba, S., Ortiz, M. B., & Conner, C. (2020). Evidence for a literacy intervention for students with intellectual and developmental disabilities. *Education and Training in Autism and Developmental Disabilities*, 55, 290–302.
- Browder, D. M., Ahlgrim-Delzell, L., Courtade, G., Gibbs, S. L., & Flowers, C. (2008). Evaluation of the effectiveness of an early literacy program for students with significant developmental disabilities. *Exceptional Children*, 75, 33–52. https://doi.org/10.1177/00144 0290807500102
- Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest*, 19, 5–51. https://doi.org/10.1177/15291 00618772271
- Centers for Disease Control and Prevention (CDC). (2014). Autism and Developmental Disabilities Monitoring Network Surveillance Year 2010 Principal Investigators. Prevalence of autism spectrum disorder among children aged 8 years - autism and developmental disabilities monitoring network, 11 sites, United States, 2010.

Morbidity and Mortality Weekly Report: Surveillance Summaries, 63, 1–21. https://doi.org/10.15585/mmwr.ss6706a1

- Centers for Disease Control and Prevention (CDC). (2020). National center on birth defects and developmental disabilities. Centers for Disease Control and Prevention.
- Chiang, H., & Lin, Y. (2007). Reading comprehension instruction for children with autism spectrum disorders: A review of the literature. Focus on Autism and Other Developmental Disabilities, 22, 259–267. https://doi.org/10.1177/10883576070220040801
- Conner, C. (2020). Making the case for the systematic observation of language and reading: A reading comprehension measure inclusive of students with disabilities. [Doctoral dissertation, Southern Methodist University]. Department of Teaching and Learning Theses and Dissertations.
- Conner, C., Allor, J. H., Al Otaiba, S., Yovanoff, P., & LeJeune, L. (2022). Early reading outcomes in response to a comprehensive reading curriculum for students with autism spectrum disorder and intellectual disability. *Focus on Autism and Other Developmental Disabilities*, 108835762211379. https://doi.org/10.1177/10883 576221137905
- Coyne, M. D., Kame'enui, E. J., & Simmons, D. C. (2001). Prevention and intervention in beginning reading: Two complex systems. *Learning Disabilities Research & Practice*, 16, 62–73. https://doi. org/10.1111/0938-8982.00008
- Ehri, L. C. (2020). The science of learning to read words: A case for systematic phonics instruction. *Reading Research Quarterly*, 55, S45–S60. https://doi.org/10.1002/rrq.334
- El Zein, F., Solis, M., Lang, R., & Kim, M. K. (2016). Embedding perseverative interest of a child with autism in text may result in improved reading comprehension: A pilot study. *Developmental Neurorehabilitation*, 19, 141–145. https://doi.org/10.3109/17518 423.2014.915893
- El Zein, F., Solis, M., Vaughn, S., & McCulley, L. (2014). Reading comprehension interventions for children with autism spectrum disorders: A synthesis of research. *Journal of Autism and Developmental Disorders*, 44, 1303–1322. https://doi.org/10.1007/s10803-013-1989-2
- Flynn, K. S. (2011). Developing children's oral language skills through dialogic reading. *Teaching Exceptional Children*, 44, 8–16.
- Gough, P. B., & Tumner, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7, 6–10. https://doi. org/10.1177/074193258600700104
- Henry, A. R., Conner, C., Zajic, M. C., & Solari, E. J. (2022). Feasibility and initial efficacy of an adapted telepractice listening comprehension intervention for school-aged children with autism. *Journal of Autism and Developmental Disorders*, 1–11. https://doi. org/10.1007/s10803-022-05474-6
- Henry, A. R., & Solari, E. J. (2020). Targeting oral language and listening comprehension development for students with autism spectrum disorder: A school-based pilot study. *Journal of Autism and Devel*opmental Disorders, 50, 3763–3776. https://doi.org/10.1007/ s10803-022-05474-6
- Henry, A. R., & Solari, E. J. (2021). Developing social knowledge to support reading comprehension in elementary children with ASD. *Teaching Exceptional Children*, 54, 306–314. https://doi. org/10.1177/00400599211022021
- Kaat, A. J., & Lecavalier, L. (2013). Disruptive behavior disorders in children and adolescents with autism spectrum disorders: A review of the prevalence, presentation, and treatment. *Research in Autism Spectrum Disorders*, 7, 1579–1594. https://doi.org/10.1016/j. rasd.2013.08.012
- Knight, V., Sartini, E., & Spriggs, A. D. (2015). Evaluating visual activity schedules as evidence-based practice for individuals with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 45, 157–178. https://doi.org/10.1007/s10803-014-2201-z
- Knight, V. F., & Sartini, E. (2015). A comprehensive literature review of comprehension strategies in core content areas for children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 45, 1213–1229. https://doi.org/10.1007/s1080 3-014-2280-x

- Lemons, C. J., King, S. A., Davidson, K. A., Puranik, C. S., Al Otaiba, S., Fulmer, D., Mrachko, A. A., Partanen, J., & Fidler, D. J. (2017). Developing an early reading intervention aligned with the down syndrome behavioral phenotype. *Focus on Autism and Other Devel*opmental Disabilities, 32, 176–187.
- Lemons, C. J., King, S. A., Davidson, K. A., Puranik, C. S., Fulmer, D., Mrachko, A. A., Partanen, J., Otaiba, S. A., & Fidler, D. J. (2015). Adapting phonological awareness interventions for children with down syndrome based on the behavioral phenotype: A promising approach? *Intellectual and Developmental Disabilities*, 53, 271–288. https://doi.org/10.1352/1934-9556-53.4.271
- Lindgren, K. A., Folstein, S. E., Tomblin, J. B., & Tager-Flusberg, H. (2009). Language and reading abilities of children with autism spectrum disorders and specific language impairment and their first-degree relatives. *Autism Research*, 2, 22–38. https://doi. org/10.1002/aur.63
- National Reading Panel (U.S.) & National Institute of Child Health and Human Development (U.S.). (2000). Report of the National Reading Panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. U.S. Department of Education.
- Neitzel, J. (2010). Positive behavior supports for children and youth with autism spectrum disorders. *Preventing School Failure: Alternative Education for Children and Youth*, 54, 247–255. https://doi. org/10.1080/10459881003745229
- Ricketts, J. (2011). Research review: Reading comprehension in developmental disorders of language and communication. *Journal of Child Psychology and Psychiatry*, 52, 1111–1123. https://doi. org/10.1111/j.1469-7610.2011.02438.x
- Sevcik, R. A., Barton-Hulsey, A., Walters, C., & Romski, M. (2019). Reading interventions for individuals with intellectual and developmental disabilities: A review. *International Review of Research in Developmental Disabilities*, 57, 81–118. https://doi.org/10.1016/ bs.irrdd.2019.08.001
- Whalon, K. (2018). Enhancing the reading development of learners with autism spectrum disorder. Seminars in Speech and Language, 39, 144–157.
- Whalon, K., Hanline, M. F., & Davis, J. (2016). Parent implementation of RECALL: A systematic case study. Education and Training in Autism and Developmental Disabilities, 51, 211–220.
- Whalon, K., Martinez, J. R., Shannon, D., Butcher, C., & Hanline, M. F. (2015). The impact of reading to engage children with autism in language and learning (RECALL). *Topics in Early Childhood Special Education*, 35, 102–115. https://doi.org/10.1177/0271121414 5655

#### **MORE TO EXPLORE**

- Friendsontheblock.com—The website for Friends on the Block, described in the manuscript. This website includes research, video blogs, reports, and case studies as well as free example materials, including ebooks, instructional routines, and games.
- Building Vocabulary and Early Reading Strategies (Eager BVERs)—A language comprehension intervention designed to support early developing readers. Information for the intervention can be found in the following publications:
  - Solari, Henry, McIntyre, Grimm & Zajic (2020).
  - Henry & Solari (2020).
  - Henry, Conner, Zajic, & Solari (2022).
- Flynn, K. S. (2011). Developing children's oral language skills through dialogic reading: Guidelines for implementation. *Teaching Exceptional Children*, 44, 8–16. https://doi.org/10.1177/004005991104400201
- There are many online resources, such as Canvahttps://www.canva.com/-that teachers can use to create their own books/readers.
- Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade– What Works Clearinghouse–Practice Guide–https:// ies.ed.gov/ncee/wwc/PracticeGuide/21

The following podcasts all contain information about reading development, language development, and include episodes that specifically focus on children with different abilities:

- The SLP now Podcast—https://blog.slpnow.com/ask/
- Science of Reading: The Podcast—https://amplify.com/ science-of-reading-the-podcast/
- SeeHearSpeak Podcast—https://www.seehearspe akpodcast.com/