# Developmental Texts for Children with Autism:

# Creating a Safe Space in the Written World

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Abstract

Oral language skills impact the ability to comprehend what is read. Because autism is a language-based disorder, some students who have autism spectrum disorder (ASD) do not have appropriate literature-based learning resources. Typical books in elementary classroom can be confusing or even distressing for students with unique learning needs. An integrative studies approach is needed to solve this complex problem. Research from linguistics fused with developmental psychology lays the foundational needs for educational resources to be reimagined for this group of students. The design includes specifications on the size of the book, colored fonts, writing formats, language type (concrete and not figurative), and narrative text based in creative nonfiction. Recommendations include imbedding reciprocal teaching methods in the margins and include a preface and transitional pages that prime the student for the content that is to come. Beyond the design, a writer can create text that feels familiar to the reader and provides a safe space in the written word.

*Key words:* Autism spectrum disorder, reading comprehension, oral language skills, creative nonfiction for children, children's literature, Weak Central Coherence theory, Theory of Mind, elementary, special education

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## Introduction

Text is the written form of language; “it is perhaps not surprising that children with poor speech and language tend to have problems with literacy.” (Nation, Clarke, Marshall, & Durand, 2004, p. xv) Children with Autism Spectrum Disorders (ASD), have a language disorder or delay, problems with deciphering social norms, and a propensity to ridged thinking and behaviors. A child with developmental and/or language delays may have difficulty when they attempt to read and comprehend texts designed for typically developing peers. (Nation, et at., 2004) The reading materials within an elementary classroom are targeted to grade level and psychosocial development of a typical child. This creates a complex problem.

## Background

ASD is a condition that creates many barriers to learning, and this impacts their ability to access and master everything within the educational environment. (McIntyre, et.al., 2017) Many have difficulty managing how their senses take in information and process it, also known as sensory integration dysfunction. (Kutscher, Attwood, & Wolff, 2005) For example, a person’s vision may be distorted, which could impact the intake of the written word, or a page that has high-impact graphics designed to be as stimulating as electronic devices, could be overwhelming and contribute to chronic anxiety. Because autism affects 1 out of every 54 children in the US (Centers for Disease Control, 2020), a vast amount of research is needed not only on the biological causes and treatments, but how to positively impact those who are affected in order to live in their communities which begins with educational opportunities.

Geoffrey Waldon, a neurologist, developed The Waldon Method for facilitated learning for children with developmental delays such as ASD. He observed typically developing children and found they all follow the same pattern of motor function development as they learn about the self and how it interacts with the environment. He began teaching these developmental stages to children with ASD and created a program to teach children how to learn. Children with ASD need to learn how to learn; they don't learn by living life like most people (Solomon , Holland & Middleton, 2012, p. xv). It is important to meet the child where he or she is in terms of developmental stages when engaging in any learning and build sequentially from there. For example, an infant learns to grasp items, then learns to bang with them. Every step, no matter how simple it looks must be learned; it is important and critical for future development. (Solomon et al., 2012)

Motivation within children with ASD is different than typically developing children and therefore deficits can accumulate in wide ranging delays. Many, with ASD, do not have internal motivations to please, accomplish and learn, i.e. self-actualize. Therefore, behaviorists, parents and teachers often use reward systems to motivate children with ASD to complete learning tasks, whereas typical children have an innate desire to learn and to please others. Complex tasks need to be broken down into smaller steps, with each step being taught separately. (Parington, 2010)

Motivation and complexity are a problem in today's classroom; if a child with ASD is put in a learning situation that they don't understand, it is likely to produce anxiety which interrupts their ability to attend and learn. Frustration and anxiety may cause negative behaviors such as inattentiveness, acting out, increase in ritualistic behavior, and removing oneself socially (Kutscher et al.,2005). If a student is expected to answer questions after reading a passage that they do not comprehend or if they feel uncomfortable, they might push the book away and refuse

to try; internally, the feelings of anxiety have taken over their body and they no-longer feel safe. For example, D.J. Savarese, a non-verbal student with autism in elementary school, disliked how stories always had negative tensions driving the plot forward which created stress and anxiety for him. Then later years, when factual stories displayed inhumane treatment of enslaved African Americans or Native Americans, he reacted intensely; he had internalized the stories because they related to his personal traumas from earlier in his life. (E. Savarese & R. Savarese, 2012)

The study, The Scope and Nature of Reading Comprehension Impairments in School-Aged Children with Higher-Functioning Autism Spectrum Disorder, sought to determine the extent that language disorders contribute to impairments in reading. This study included students with ASD, a typically developing group and students displaying Attention Deficit Hyperactivity Disorder (ADHD), another neurological condition that impacts school performance. They found that higher-level language impairments and reading comprehension difficulties were only in the ASD group. Also, "This finding is consistent with evidence that problems with cognitive processes—e.g., verbal reasoning, inference, and narrative processing—and the apprehension of central meaning (i.e. coherence), contribute to some of the language problems associated with the ASD phenotype." (McIntyre, et.al., 2017, pg. 2852)

Teaching students with autism who have language delays that impact reading skills requires different techniques and materials than what is currently available. Therefore, interdisciplinary research is needed to develop literature-based learning resources that are designed to meet the developmental and sensory needs of elementary school-aged children with ASD. Since reading ability affects all areas of academia, strengthening these skills will impact school life entirely, and lead to a pathway of success.

**Integration**

Interdisciplinary studies occur in response to “the inherent complexity of nature and society”, the drive to tackle research where one discipline intersects with another, scientists’ desire to develop solutions to problems in society, and the addition of generative technologies which scaffold traditional single disciplines with their individual methods onto each other to create higher level solutions (Menken & Keestra, 2016, pgs. 34-40). Therefore, complex social issues are taken on by one or more researchers, working together within more than one discipline with the latest tools can propel the discovery of innovative solutions to the problems.

Due to the passage of the Individuals with Disabilities Education Act (IDEA) in 1975, school districts took on the least restrictive environment model. Children with disabilities who previously attended categorical classrooms, or other segregated schools, are now mainstreamed into general education classrooms. The classroom must be inclusive by making adaptations to traditional systems. The integration of students with multiple unique needs into a class of typically developing classroom makes providing an all-accessible classroom a complex problem. (R. Turnbull, A.Turnbull, Wehmeyer & Shogren, 2016)

Traditional classroom books are developed to support the pedagogy of reading and are based on the levels and preferences of typically developing children. Many students use and are successful with traditional books, however the type of reading materials that are currently available do not address the needs of atypically developing children. Many students with autism have a lower than grade-level reading ability; the current design and content of books may negatively impact a student’s ability to be a successful reader. A different approach is needed. Authors can be sensitive to the unique preferences that students with autism have, specifically the use of figurative language. (Vulchanova, Saldana, Chahboun & Vulchanov, 2015)

The academic discipline of developmental psychology provides insight into the biological differences and environmental needs of children with autism, and linguistics provides insights on how language acquisition and development impacts reading comprehension. Bringing linguistic and psychological insights to the pedagogy of reading to craft developmentally appropriate texts can meet the needs of children with ASD and other language-based disabilities.

**Disciplinary Insights**

To help understand how language disorders like those in autism (as studied in psychology) connect to literacy (as developed in education), here is a review of linguistic findings. Researchers in speech and language have found ties between language disorders and difficulty with academic success. Even children that haven't been identified as having a language impairment, nor have problems with phonology and decoding words (reading fluency), can have a language impairment impacting reading comprehension (Mclaughlin, 2011). A longitudinal linguistical study reports, "results provide strong evidence of a relationship between developmental language impairments and reading disabilities." (Catts, Hugh, Fey Marc, Bruce, & Xuyang, 2002, pg. 1152) "Severe speech and language disorders in young children, even after periods of intensive intervention, have a significant effect on later educational achievement even when children appear to be 'coping' in their educational settings." (Stern, Connell, Lee, & Greenwood, 1995)

An extensive study, Hidden Language Impairments in Children, went beyond the typical testing of children previously diagnosed with language delays; they screened 236 primary school students, and selected 22 control children and 23 children with poor reading comprehension. Both groups had produced phonetically accurate and fluent reading abilities and were matched at the same academic level. Researchers were able to determine that even if it appeared that they

could read well, that the students who scored low in reading comprehension received significant scores in various types of language impairments. “Speech and language delay in children is associated with increased difficulty with reading, writing, attention, and socialization…atypical language development can be a secondary characteristic of other physical and developmental problems that may first manifest as language problems” (Nation et al., 2004) such as autism spectrum disorders.

Developmental psychology is the discipline that studies autism. Because it is a spectrum disorder, the developmentally delayed traits in people vary to different degrees. The concept of theory of mind (when one can understand that another person has their own thoughts, desires and motives) is a commonly known deficit in the cognitive ability of those on the spectrum. (Hulme & Snowling, 2009) Another one is that some children with ASD have difficulty with language contexts such as irony, metaphors or similes. They think literally and concretely. (Kutscher et al., 2005) The first research-based method of teaching students by shaping their behavior is Applied Behavioral Analysis (ABA); a popular program that is used by behaviorists is the ABLLS-R—The Assessment of Basic Language and Learning Skills–Revised. ABA techniques can be combined with teaching strategies to improve reading ability. (Parington, 2010)

Five-year old children read at a level what “they would have understood at least two years earlier and is linguistically simpler than the language they use in everyday conversation.” (Solomon, 2012, pg. 192) This allows the reader to guess words and make sense of the information. Beyond speech and language interventions, there are a wealth of tools that teachers use to remediate deficits in reading processes of students. Reading Recovery and Literacy Lessons use research-based concepts to boost memory and cognitive processing. Specialists teach Literacy Lessons to students in special education, grades 1-4. (Readingrecovery.org, 2020)

Some school districts develop other Response to Intervention programs to support students in need with specific strategies targeting various needs of a student. Schools can create a safe space to learn and striving students can succeed in small group instruction. (Edutopia.org, 2020)

Therefore, the empirical findings of linguistics combined with knowledge in psychology will provide a solid framework to understanding the language challenges of students with ASD. With insights of how reading skills are taught, effective writing designs can create developmental texts that encourage proficient reading skill acquisition and hopefully develop a fondness and a safe feeling within the pages of a book.

## Literature Review

### Linguistics

Linguistics falls under the Humanities Discipline of Literature because language is produced by people. Culture is understood and appreciated by historians and other academics in part by the language both spoken and written. For instance, in current times, there is much written and talked about regarding autism. Compare this to a hundred years ago, where this disorder had not been discovered. Just this one subject shows a significant difference in how society is assessed in each of these different times. How language develops and how it is recorded, is the phenomenon that is focused on. (Repko & Szostak, 2017) Speech and Language Pathologists are experts that are consulted when deficits in language occur.

Epistemology is how the truth is known and how it can be proven. In Literature this has evolved over time. Currently, there is a pluralist view which combines the traditional modernist view (focusing on the text, or language production) with newer post-modernists views (include contexts of background, content and style). “Critical discourse analysis examines patterns in language use in order to uncover the workings of an ideology to see how it exerted control or

how it was resisted." (Repko & Szostak, 2017. pg. 49) In the Humanities, the receiver of the human product has their innate power to integrate the truth of the item/concept received. This is different than natural and social sciences where facts are the knowledge and integration is not necessary. Analysis of the words and visual media (pictures) by people or quantitative analysis by computers and examining the context of a work are the research methods employed. (Repko & Szostak, 2017) For this paper, four linguistic scholarly articles are explored.

Can You Tell It by The Prime? A Study of Metaphorical Priming in High-functioning Autism in Comparison with Matched Controls is from the International Journal of Language and Communication Disorders. This linguistic article focuses on pragmatic parts of language with students with ASD, specifically metaphors which commonly occur in spoken and written language. Two types of metaphor, novel and conventional, are processed differently. Conventional is a fixed or known saying, or idiom, and is retrieved like words. Novel uses an active process based on words and their meaning. Typically, people use their background knowledge which primes them for understanding the meaning of a metaphor, however, non-literal, dynamic interpretation is needed, as well. "Despite adequate language competence otherwise, there is still a developmental delay in our group of high verbal participants with autism seen in the parallel performance by the young adult group with autism." (Chahboun, Vulchanov, Saldaña, Eshuis, & Vulchanova, 2011) They suggest further teachings of figurative language for students with autism.

Figurative Language Processing in Atypical Populations: The ASD Perspective from the Journal of Frontiers in Human Neuroscience provides a clear explanation of how figurative language is processed by a listener. This includes idioms, irony, jokes and metaphors. "Adequate structural language competence, adequate semantic competencies and skills, vocabulary size,

inferencing skills, a developed conceptual system and knowledge base; information integration skills (context; evaluating plausibility and suppressing irrelevant information); mentalizing and understanding intentions" are necessary skills needed to process figurative language." (Vulchanova et al., 2015, pg. 8) If impairment occurs with any of these skills, understanding figurative language is also impaired. Findings show that children with ASD are unable to create a mental model of a concept they are reading; they are focused on the simple meaning of the words. Then they attempt to extract meaning that matches the speaker's intent. (Vulchanova, et al., 2015)

From the journal, Research in Autism Spectrum Disorders, All the World's a Stage: Evaluation of two Stages of Metaphor Comprehension in People with Autism Spectrum Disorder, (Chouinard & Cummine, 2016) they investigate whether metaphorical and nonmetaphorical processing of sentences occurred the same in those with autism as compared to typically developing peers. It explains the metaphor inference effect (MIE) which is the length of time in milliseconds that it takes to process and respond to a figurative language compared to literal language. "We found that people with ASD generated the literal and figurative meaning for metaphors similarly to controls, but had more difficulty inhibiting the unintended meaning than the control group." (Chouinard & Cummine, 2016, pg. 107) Having two images inside short term memory simultaneously is distracting.

The Effects of Explicit Instruction in Academic Vocabulary During Shared Book Reading on the Receptive Vocabulary of Children with Complex Communication Needs is an article from Augmentative and Alternative Communication. (Yorke, 2018) Some students with autism are non-verbal, however, they can communicate with tablet-like devices that use icons and categories. They select a series of pictures and press enter and the device speaks the words for

them. This article confirms that vocabulary development is causally related to literacy development. “As children read, they are exposed to new vocabulary. A substantial portion of vocabulary growth, particularly during the school years, occurs as a result of incidental vocabulary exposure during reading.” (Yorke, 2018, par. 3) To teach new skills on the device, an adult should state the goal, and use guided instruction to produce errorless learning; as the skill is mastered, instructional support is faded. This study showed that shared reading with explicit instruction, impacts the receptive knowledge and vocabulary. (Yorke, 2018)

**Psychology**

The academic discipline of psychology, which encompasses the specialties of developmental psychology and the pedagogy of reading, is discussed in this paper and is a social science which includes both nature and nurture within the human construct. The biological processes of the brain are impacted by the environment and vice versa. Psychology attempts to isolate factors to measure their impact on and gain understanding about the human condition through observations of behavior. In many instances, better understanding of cognitive processes creates paths to improve the quality of life. Human behavior is the phenomena or focus during research. (Repko & Szostak, 2017)

The epistemology of psychology is best understood by reviewing the methods that are used. When clinical trials are done, great care is taken to control all variables except the one that is being tested. This provides with more certainty of the findings which is what is known. “Generalizations about larger populations may be inferred from a representative sample population,” individual behavior can be inferred by the results of group study, and, “Humans organize their mental life through psychological constructs.” (Repko & Szostak, 2017, pg. 56) Qualitative observations of human behavior and recording descriptive information are the

primary post-modernist type of research in psychology. Natural science or quantitative approaches using statistical analysis of data and presenting this information in charts and graphs is a common modernist approach that psychologists use to manage the data that they collect. The first six scholarly reviews are based in psychology and focus on developmental findings of ASD; the subsequent nine resources are from education-specialized journals and focus on remediation.

In the Journal of Applied School Psychology, A Preliminary Investigation of Evidence-based Interventions to Increase Oral Reading Fluency in Children with Autism (Reisener, Lancaster, McMullin, & Ho, 2014) examines if the research regarding methods to improve reading fluency in students with ADHD, learning disabilities, and behavioral issues extends to those with ASD. Fluency is the rate of correct words read out loud in a specific amount of time. Even though this was a small study (four participants), the evidence points to yes, the ASD group also benefits from repeated readings intervention. Listening passage preview was also tested but was not as successful as the latter. Both are recommended for use in the classroom. (Reisener, et al., 2014)

Dyslexic, Delayed, Precocious or Just Normal? Word Reading Skills of Children with Autism Spectrum Disorders is from the Journal of Research in Reading. (Asburg & Dahlgren Sandberg, 2012) The goal of this study was to determine if poor, normal or above level readers who have autism are the same or different than typically developing peers in a small sample of students in Sweden. A concern that the students with ASD might also have dyslexia, was debunked, as they do not have the same type of phonological processing skills. They found that poor reading comprehenders with ASD aligned with poor reader comprehenders without ASD, and that there is "nothing ASD-specific in the relation between word reading and reading-related skills," meaning that it is a language-based problem. (Asberg & Dahlgren Sandberg, 2012 pg.

28) However, they acknowledge that longitudinal studies are needed to examine causality. (Asberg & Dahlgren Sandberg, 2012)

Narrative Comprehension in 4-7-year-old Children with Autism: Testing the Weak Central Coherence Account is from the International Journal of Language and Communication Disorders. (Nuske & Bavin, 2011) This article explores the functions within the brain called The Weak Central Coherence theory, which suggests that students with autism process information locally (details oriented) instead of globally (extracting main idea and inference ability). They are unable to connect to any background knowledge that they may know about a subject. They remember each part of the narrative separately and do not join the meaning behind the words together. “The children with autism seem to have failed to employ global processing to integrate contextual clues and content knowledge into a conceptual framework of understanding. Lack of such integration leads to impaired comprehension in communicative contexts.” (Nuske & Bavin, 2011, pg. 116)

Comprehension of Novel Metaphor in Young Children with Developmental Language Disorder from the journal, Autism & Developmental Language Impairments. (Bühler, Perovic, & Pouscoulous, 2018) This study compared children with developmental language disorder (DLD) with age matched peers and with younger language level matched peers. They found that the children with DLD were on par with the younger language level matched peers when it comes to processing metaphors. They were able to confirm these results with other studies and concluded not being able to understand metaphors, is a language-based problem, and not a symptom of their clinical diagnosis. This is consistent with other studies that show that difficulty with figurative language is not the result of having autism, but of having a language delay. However, not being able to understand these speech contexts, increases their poor ability in socialization. “For this

reason, clinicians might want to target under-standing of figurative language alongside traditional treatments of children with DLD." (Bühler et al., 2018, pg. 8)

Unpicking the Developmental Relationship Between Oral Language Skills and Reading Comprehension: It's Simple, But Complex from the journal, Child Development (Lervåg, Hulme, Melby-Lervåg, & Melby-Lervåg, 2018) states that the relationship of listening comprehension and reading comprehension is connected. The simple view of reading is a commonly held theory 30 years that there are two parts to reading comprehension: word decoding and language comprehension. When one has deficits in word decoding, comprehension is compromised. However, when decoding is ameliorated, then comprehension may take place. But for some, pulling the meaning of the words they decoded isn't possible because listening comprehension is poor. "We found that variations in listening comprehension were almost entirely explained (95% in the final model) by a factor defined by vocabulary, grammar (syntax and morpheme generation), verbal working memory, and inference skills. (Lervåg, 2018, p.1833) Therefore, improvements in language skills have a direct effect on reading comprehension.

In the study, Ameliorating Children's Reading-comprehension Difficulties, from the journal, Psychological Science (Clarke, Snowling, Truelove, & Hulme, 2010), students who are good decoders, but have poor reading comprehension skills, were divided into three groups to test intervention strategies. One group worked with primarily written texts; one group worked with oral language and one group received both strategies. The results showed that two groups improved, the combined group and the oral language group, with the latter improving the most. In addition to reading comprehension improvements, oral language skills and vocabulary also improved. They determined that the development of oral language skills is critical to the ability to comprehend the words that are read. "We speculate that these children developed some

enhance metacognitive skills as a result of the language intervention and that these skills resulted in greater engagement with language learning and possible the more active use of a range of strategies…that support vocabulary learning and reading comprehension." (Clarke et al., 2010, pg. 1115) Since reading is consequential to educational success, this finding is of real significance.

Reading Comprehension and Autism in the Primary General Education Classroom is from the journal, Reading Teacher. (Nguyen, Leytham, Schaefer Whitby, & Gelfer, 2015) This article brings reading comprehension techniques to the general education curriculum, because with the prevalence of autism, most teachers will encounter these students in their classrooms. He provides five steps to incorporate into lessons: "access and build background knowledge, create mental images, make connections, engage in consistent discussions, and summarize understanding." (Nguyen et al., 2015, pg. 73) Embracing these strategies into educational materials will serve those with variant cognitive styles. (Nguyen, et al., 2015)

Reading Comprehension Intervention for High-functioning Children with Autism Spectrum Disorders is from Australian Journal of Learning Difficulties. (Wooley, 2016) As an educator, Gary Woolley looked beyond decoding and language comprehension to metacognitive processes in this journal article. He examines issues such as Theory of Mind and mental modeling of what students with autism read. He explains that typical readers have developed skills on their own such as re-reading and making connections to themselves (their schema) to determine what the text is saying. Students with autism have a number is deficits that block this level of processing, such as poor executive functioning, lack of monitoring the meaning of the words that they read and not self-correcting when necessary. He recommends strategies such as mental modeling, Question-Answer-Relationship (QAR), think aloud discussions and

cooperative learning in small groups with peers. He goes on to say, " It should be emphasized that meaningful reading is more likely to succeed in a relatively safe learning environment where reading comprehension skills are explicitly taught and appropriate feedback focuses on three cognitive levels of processing within a learning context where active experimentation and student initiative are valued and encouraged." (Wooley, 2016, pgs. 52-53)

Developing Reading Comprehension Skills in High-functioning Children with Autism Spectrum Disorder: A Review of the Research, 1990-2012 is from Reading & Writing Quarterly. (Senokossoff, 2016) This educational review provides a chart that identifies the participants, setting, design of study, and results of 19 studies that were conducted on students with autism with regards to their reading skills. Being able to compare them is helpful in making connections. More importantly, they point out:

> Teachers may not be identifying comprehension difficulties that their high-functioning students with ASD are experiencing because they are distracted by the social and emotional issues that these children exhibit. Also, some teachers may fail to recognize when children do not comprehend because they are reading fluently.(Senokossoff, 2016, pg. 242)

They also fear that reading comprehension is not being taught explicitly, even though it is being tested. (Senokossoff, 2016)

Thinking Aloud: Effects on Text Comprehension by Children with Specific Language Impairment and Their Peers is from the International Journal of Language and Communication Disorders. (McClintock, Pesco, & Martin-Chang, 2014) This article acknowledges that students with specific language impairment (SLI) have an increased risk of having reading comprehension difficulties which impact them throughout their school years. While typical

developing students read, the construction phase is when ideas about the text begin to stir in the mind which produces inferences about the text. Then during integration, working memory keeps the information providing the chance to refine inferences as the text continues. They make a representation of the text and inferences, however, for students with SLI, background knowledge and working memory may be reduced causing the process to break down. The think aloud procedure is to "refer to verbal reports of thoughts during or immediately following a task" in discussions with a teacher or high-level peer. (McClintock et al., 2014, pg. 639) These can be implemented after each sentence or passage to tap into make connections that improve comprehension. (McClintock, et al., 2014)

Text Structure Strategies for Improving Expository Reading Comprehension is from The Reading Teacher. (Roehling, Hebert, Nelson, Bohaty, & Bohaty, 2017) "This article presents practical applications of research-based strategies for using text structures to improve students' expository text comprehension." (Roehling et al., 2017, pg. 71) It is written by the expertise of educators for all students. They list five text structures for nonfiction texts: simple description, compare and contrast, sequence, cause and effect, and problem and solution. Specific examples of graphic organizers and note frames show which tools students can use to arrange information in a visual way to organize it to understand and remember it. (Roehling, et al., 2017)

Detective Questions: A Strategy for Improving Inference-making in Children with Mild Disabilities is from Intervention in School and Clinic. (Jiménez-Fernández, 2015) The skill of making inferences from text is difficult for students with learning disabilities or autism is discussed. A strategy of asking detective-style questions is explained step by step with concrete examples and is an enjoyable process for the students. The three steps are: teaching the concept of inference, asking differentiating questions like a detective, and looking for clues for hidden

meanings. This method can be adjusted for various grade or reading levels and can be scaffolded to assist with learning the process. (Jiménez-Fernández, 2015)

Facilitating Reading Comprehension for Students on the Autism Spectrum is an article from Teaching Exceptional Children. (Gately, 2008) Susan Gately, Ph. D., is a Professor and Special Educational Consultant. In this article, she provides background on ASD, highlighting the challenges that impaired language has on figuring out the real world and the meaning of texts about the world. "To obtain reading comprehension, students must understand the author's vocabulary, style of writing, and story structure as well as character's social experiences and how these contribute to the development of motivations, goals, and actions within a story setting." (Gately, 2008, par. 5) She goes on to explain that these students then fixate on details and have difficulty connecting the meaning together. She explains strategies of "priming background knowledge, picture walks, visual maps, think-alouds, and reciprocal thinking, understanding narrative text structure, goal structure mapping, emotional thermometers, and social stories." (Gately, 2008, par. 7) Social stories help the reader understand character's emotions. Thought bubbles can convey the character's thoughts to readers who have trouble knowing that others have thoughts differing then their own Theory of Mind. (Gately, 2008)

Adapting an Evidence-based Reading Comprehension Strategy for Learners with Autism Spectrum Disorder is from Intervention in School and Clinic. (Whalon & Hart, 2011) This educational article shows how question-generation strategy instruction can "be adapted for students with autism. One method, Question and Answer (QAR) has a framework of "in the book" and "in my head" questions which are declarative and inferential respectively. Prompt cards can be developed targeting specific types of questions to meet the specific goals that students have. "Teachers may also consider using theme books or books from a series for

introducing the QAR framework. This will allow students to become familiar with the context/structure of the texts and allow them to focus their attention on learning the new strategy." (Whalon & Hart, 2011, pg. 202)

The Impact of Multimedia Graphic and Text with Autistic Learners in Reading from Universal Journal of Educational Research (Omar, & Bidin, 2015) examines the common theory that those with autism can learn better with tablets and computers. They found that because students with autism can distinguish between colors before words, having effective use of color can be helpful in comprehension and maintaining attention. Some colors provide motivation, while others cause visual sensitivities. The way that information is organized makes a difference so a person with autism can easily see what is the most important. Graphic organizers, anchor charts and visual maps provide a visual way to make connections to self and other words in the texts. Visual support for text includes the use of rounded fonts; they have more space between the letters. The optimal size of fonts is identified. The evidence supports the use of multimedia in supporting reading comprehension for learners with autism. (Omar, & Bidin, 2015)

This paper is pulling strengths from these 19 sources between two academic disciplines, linguistics and psychology, which have unique epistemologies, assumptions and methods. It is important to use Common Ground Theory to integrate these research findings. They may have specialized terms or use the same terms with different meanings. (Repko & Szostak, 2017) In integrative research it is important to determine the commonalities between the disciplines and any conflicts that exist. To remedy the conflicts, common ground can be obtained by adding insight from other disciplines, adjusting terminology or re-organizing concepts. With effective communication, integration and common ground can be achieved to solve complex social problems. (Menken & Keestra, 2016)

The articles that are sourced for this paper largely use language that matches in word and meaning. Theory of Mind (ToM) is cited in both Linguistic and Psychology and is consistent in meaning in both disciplines. One theory, however, in psychology, reference is made to the Weak Central Coherence theory (Nuske & Bavin, 2010), where in the subgroup of reading pedagogy, this phenomenon is sometimes called Surface-level Processing. (Wooley, 2016) Both terms are referring to local cognitive processing as opposed to higher-level or global processing. Another difference found is in linguistics: Specific Language Impairment is now called Developmental Language Disorder (DLD) and both notable exclude autism or other neurological disorders within its definition which is "a child who has selective difficulties in mastering language." (Buhlur et al., 2018, par. 1) However, since one of the factors that designate autism is a language delay or disorder, findings from DLD research is applicable; they restrict their research to DLD participants only to keep erroneous errors in check.

In linguistics, the delivery of speech and language intervention services are performed by a Speech and Language Pathologist in either private practice or school settings. Whereas, reading interventions based on psychological research are provided by Teachers and Reading Specialists, as well as Aides and Paraeducators under their direction, in the school setting. All reviewed peer-reviewed articles with research trials included control groups, and extreme effort was made to eliminate erroneous errors. Common ground is found by having the explicit technical data based on brain function from linguistics integrate with the findings about human behavior that psychology research reveals. The combined insights point to which of the many reading pedagogy recommendations to incorporate in literature-based learning resources for students with autism. Therefore, the Common Ground technique of organization is used by careful study

among these disciplines showing their common goal: the improvement of personal skills. Thorough collection of likeminded data provides that best findings and strategies will emerge.

## An Interdisciplinary Solution

What features are needed for elementary literature-based learning resources for students with autism? It starts with language. As Lervag, Hulme, and Melby-Lervag summarize in their 2018 research article: “Our results suggest that interventions that also focus on a broad set of oral language skills, including grammar, syntax, narrative skills, and inference making are most likely to be effective in helping children to develop adequate reading comprehension skills.” Oral language impacts written language in that comprehension is based on the lexicon that one learns in speech acquisition. However, text can offer exposure to even more vocabulary and expand spoken language. It is reciprocal. (Yorke, et al., 2018) Designing a format and crafting text that supports integrating oral skills with the words on the page is the main goal. (Clark, et al., 2010)

Much focus in this research paper is on reading comprehension, but word decoding, and fluency should be examined as well. The simple view of reading is that comprehension of the written word is based on word decoding (ability to read the word) and listening comprehension (oral language skill). Problems with word decoding can impact reading comprehension, because if the word in unknown, the meaning is also unknown. With intervention (phonics training) in word decoding, reading comprehension is improved for some students. (Clark, et al, 2010)

One concern is whether students with ASD are comorbid with dyslexia. In 2012, a study by Asberg and Dahlgren Sandberg sought to determine if the rate of being a poor decoder was any different than typically developing (TD) peers, and if dyslexia (a neurological learning disability) played any role. Their findings showed that reading (decoding and fluency) abilities were consistent between both groups. Specific tests were done that target traits of dyslexia, but

the findings were concluded that the rate of dyslexia in both groups were the same. For students with ASD who were in the range of being poor word readers, the cause was determined to be poor receptive vocabulary (oral skills) and not autistic symptomology or dyslexia. (Asberg & Dahlgreen Sandberg, 2012)

Beyond decoding words is reading fluency or the ability to orally read text with expression, rate and phrasing matching grade level expectations. A study in 2014 by Reisener, Lancaster, McMullin and Ho determined that for students with or without ASD that need fluency interventions, listening passage preview (text read by a teacher) and repeated readings (by the student) worked well to improve fluency. Therefore, looking at the simple view of reading (decoding and listening comprehension equals reading comprehension): students with ASD are on par with TD peers; therefore, listening comprehension is the component that is missing for students with ASD who have difficulty understanding what they read.

Global or in-depth processing is needed to tie meaning to words, either spoken or written. In 2011, Nuske and Bavin researched the Weak Central Coherence theory which assumes that students with ASD focus on letters and words (local processing) instead of retrieving the overall meaning which needs global processing. They found that they "lack 'hierarchical structure' in the schematization of events, instead encoding each instance separately." (Nuske & Bavin, 2011, pg. 114) Then, a deeper metacognitive level is the engagement based on executive functioning, which is enhanced by such interventions as think alouds, QAR, and mental modeling is teaching students to question how their knowledge connects to the text. Feedback from educators strengthens this process of improving their working memory. (Wooley, 2016)

Since students with ASD have limited working memory and processing skills, analyzing figurative language on the fly is especially difficult. Notice the use of figurative language in the

previous sentence that might have caused confusion or delayed processing for someone with autism. Discussion persists on how the autistic brain processes figurative language. Some studies suggest that a child who is 6 years old with a language delay, is unable to decipher it because of the language delay itself. (Vulchanova et al., 2015 & Buher, 2018) Whereas, another study has found that even high-functioning middle grade students process it slower than typically developing peers. (Chouinard & Cummine, 2016) A different processing pattern is suggested because "linguistic abilities, nonetheless show a delay in metaphorical processing, supporting the hypothesis that metaphorical reasoning requires skills beyond general structural language skills." (Chahboun et al., 2017) Therefore, in literature-based learning resources for younger readers, figurative language should be avoided, and more emphasis should be placed on other interventions. But, because metaphors, jokes, idioms, etc. are fluid in spoken and written language which impacts the ability to fit in socially, training on their meanings and functions could be included for upper elementary students. (Bulher, 2018)

Part of figurative language that is difficult, is managing the meanings and sometimes the dual meaning of words. In 2010, Clark, Snowling, Truelove and Hulme completed a study with one of the groups receiving a heavy degree of vocabulary intervention. This group performed with the best improvements in reading comprehension, and their expressive language scores improved as well. They determined, "that specific reading-comprehension difficulties reflect (at least partly) underlying oral-language weaknesses that can be effectively ameliorated by suitable teaching." (Clark et al., 2010 pg. 1106) Shared reading between an educator and a student improves learned vocabulary. "Shared book reading is beneficial as it provides repeated exposure to rich verbal interactions that are often beyond the child's current language abilities, opportunities for partners to scaffold language development, and a context for extended periods

of joint attention." (Yorke et al., 2018, pg. 288) In books, vocabulary words can be listed in the preface for priming (Nuske, 2010) and at the bottom margin of each page with a phonetical representation and a short definition.

After careful integration of linguistical data with developmental psychological findings (word decoding, fluency, mental processes, figurative language and vocabulary), format can be combined with introductory evidence of the behavioral and sensory symptomology of autism to design literature-based texts. The sample book in Appendix B is targeted to third and fourth graders who have a reading level of first or second grade. It is 6 by 9 inches and presents in the landscape position with a spiral spine on the left, short side. For familiarity, this is chosen to reflect how students often view a tablet. (Omar, 2015) A spiral spine allows for one page to be shown at a time, with the others folded behind, since two pages can be overwhelming for some. It also allows the book to lay flat on a table without holding the page open. Some students have busy bodies and have difficulty holding onto a book without losing the page. "A problem or inefficiency in the vestibular system may cause difficulty with balance, coordination, and motor planning" along with dysfunction in the proprioceptive system which causes inconsistent ability to sit still and attend to belongings. (Godwin Emmons & McKendry Anderson, 2005, pg. 35)

The article from Omar and Biden, The Impact of Multimedia Graphic and Text with Autistic Learners in Reading was targeting reading from tablets, however, several factors can translate to books. They recommend a white background with black letters with preferred colors to be yellow, blue and green which is based on cognitive theory of multimedia which hold attention. Fonts should be rounded to provide space between the letters, such as Arial, Comic Sans, Verdana, Helvetica, Tahoma, or Trebuchet. When pictures and texts being used by children with ASD, the size of the fonts needs to be between 10 and 14; and 16 for words only. (Omar &

Biden, 2015, pg. 994) If ebooks or other texts on devices are desired, additional details are available in the article for further research.

Building on the design aesthetics of the words, educational supports will provide clarity of the text. The preface will have a story map which provides a brief synopsis and a sense of order. (Gately, 2008 & Senokossoff, 2016) Pictures that relate to the story can provide priming of background data that is used to tie pieces of the story to the memories in the mind. This helps tie aspects of the story to themselves which helps with understanding as the story is read. (Nguyen et al., 2015) In the lower right corner, a pause-and-think icon can prompt the student to stop and think about what they read. If they are doing a shared reading, they can discuss their thinking to promote inferencing and predictions. (Gately, 2008, & McClintock, Pesco & Martin-Chang, 2014) The subject of the stories should align with real-life circumstances, which will have a better chance of connecting to their lexicon and reinforce understanding Theory of Mind (ToM). Characters should be authentic, i.e. animal should act like animals and people should be realistic; themes and plots should be real with fantasy or make-believe avoided.

To further enhance understanding, developing a way to support mental modeling is ideal. (Nguyen et al., 2015) A set of comic strip-like panels can be at the bottom of some pages which supports the story as written above in typical sentences. The panels can display the actions, show dialog, or contain thought bubbles to show how the character is thinking. (McClintock, Pesco & Martin-Chang, 2014 & Senokossoff, 2016) An emotion thermometer graphic can display the level of emotion the character is feeling. This will promote their understanding of another person's feelings or (ToM). (Gately, 2008)

Summarizing a story is an effective way to reinforce what a student has read. Students with autism tend to focus on words separately, so helping them see the causal relationships is

important. (Nguyen, 2015) Social Stories can be an effective method to reinforce ToM and demonstrate how to summarize at the same time. The story needs to be in first person and written as if the student wrote it. This excerpt is from the draft book, The Aquarium in Appendix B:

> I just read Tim visits the aquarium. He saw fish, turtles, frogs, sharks and rays. He did not want to touch the rays. I know this because felt like running, but he said, "No thank-you" when the expert said he could pet them. I am glad that he chose to just watch and then go find the frogs. The frogs helped him stay calm.

Any part of the story that may need further explanation can be explored in a Social Story. (Gately, 2016) This would appear right after the narrative CNF story.

A Transition Page titled, What's Next, will help the reader understand the flow of the book and will occur between the sections. It would also be included in the table of contents. Since students with ASD tend to have difficulty with transitioning from one activity to another, having a designated page to simply say what is next, will help them prepare for the next section. It will act like a preface to the next section introducing any new vocabulary or support inferencing. (Gately, 2016 & McClintock, Pesco & Martin-Chang, 2013)

Including a traditional nonfiction section that relates to the topic of the interview based on Common Core Standards can be explored at a deeper level. For non-fiction texts about science-based facts, graphic organizers help students who are visual learners make sense of the information. (Gately, 2016; Nguyen et al., 2015; Omar & Biden, 2015) Providing a series of boxes, circles and lines with information arranged within them, can reinforce the relationships the concepts from the reading have with each other. (Example in Appendix A) Another method of displaying visual cues is color coding signal words that appear in the text. Coordinating with notes in the margin will support learning several text structures: compare and contrast: i.e. "same

as, similar(ly), both, have in common…different, in comparison, in contrast, however, but, on the other hand;" sequencing: i.e. "First, second, third…initially, preceding, before, next, then, finally, now, following, after;" cause and effect: i.e. "because, as a result, outcome, so thus, consequently, leads to, is caused by, if…then, produces, therefore." (Roehling, 2017, pg. 73) A writer can have a character that is known as a researcher who nonfiction presents the information to the reader. This character will appear in the entire series to promote familiarity and the reader will learn to know what to expect.

Another form of nonfiction is creative nonfiction (CNF). Lee Gutkind is known for bringing this genre to the fore front with the magazine that he launched in 1993 targeting adult readers. It is defined as "True stories, well told," and "Storytelling techniques more familiar with fiction, although it adheres to the rule that they be true stories." (Williams & Gutkind, 2011) This writing style can be adapted for children's literature, and since it is based on real-life situations, students with autism can better relate to it. Information from the interview and the traditional nonfiction section can be combined into a CNF story that will present typical problems that are relatable, like becoming afraid when asked to do something that is scary.

Building on this concept, a writer could have a character that interviews people and tells their story. This character and format can recur in the entire series which allows the student to be familiar with the series and feel more comfortable with it. The conversation can be included in the book in the style of an interview or script: i.e. Alex: Where did you go last week? Since students with ASD have trouble connecting the meaning of words together in typical text because of executive function deficits, (Wooley, 2016) this format would allow them to know who is speaking the words instead of waiting for the common *he or she said* at the end of a sentence. Their short-term memory can focus on the content of *what is said*. Then, the interviewer

becomes a storyteller, and tells the story from the interview in typical narrative fashion or CNF. This allows for repeated exposure to the same content similar to re-reading exercises described as stimulus control interventions. (Reisener, 2014)

To provide additional learning opportunities, Question and Answer Relationship (QAR) strategies which are either *in the book* or *in my head* questions would appear after each section to support a student developing their own questions and connections while reading. In the book questions are easily found by looking back to the text. In my head questions involve linking information from the text to themselves. (Whalon, 201, pg. 196) Framing questions as if the student was a detective and was tasked with finding the hidden meaning (making connections, causal relationships and inferences) from the story might be intriguing for students. (Jimenez-Ferandez, 2015) A section in the back commonly called, backmatter, can have activities for the students and resources for adults. The activities will have I spy-type illustrations and fun games. Adding a mostly blank page with the prompt: *My thoughts about this book*; or *I would tell the author…*, allows the student to express their imagination.

The Notes to Adults page will have recommendations on how to best support the student like simple instructions about picture walks, Think alouds and scaffolding. (Gately, 2015 & Whalon, 2011) Another would be to encourage the student to read the text many times. (Clark et al., 2010 & Reisener, et al, 2014) The most important would break down the steps on how to ask the student questions and to discuss what was read. (Clark et al., 2010, Jiminez-Fernandez, 2015 & Nguyen et al.) Additionally, it would encourage visiting the authors website for further resources and would have a link to upload student's page that they created. This builds on connections to others and builds social skills.

## Conclusion

The key to bringing the interview, CNF story, and nonfiction together are the skills of an author. The information discovered in this research is technical and extensive, but the writer will create an intriguing narrative centered on personal growth hidden in an interesting subject and present it to the reader while being enhanced by graphics and teaching methods embedded in each page. Activities for students and information for adults will develop reading skills while supporting social skills. A graphic organizer in Appendix A shows the four main parts of a book template with the elements that may be used in the books of a complete series. The author will choose what strategies work with each text created; however, the basic template is the same.

The storyboard draft of *Tim Went to the Aquarium* is provided in the appendix B. Alex the Storyteller is the main character who interviews Tim. Alex has his friend, Jordon the Researcher, present the nonfiction information. Then, Alex writes a story. Both Alex and Jordon appear gender neutral and are recurring characters; this allows students to identify with them (pronouns are not used.) These two characters will remain constant within the series and can explore dialog with various people about an unlimited number of topics including STEAM, social sciences, and history. High-interest subjects will draw the reader in, while other topics will expose students to new concepts which increase their exposure to experiences and expand their vocabulary.

By integrating linguistics with developmental and educational psychology, and then organizing it into functional remediation with a specific template, the complex problem of not having literature-based learning resources for students with ASD is solved. With authors crafting real-life stories told by a familiar character using concrete language, students who have autism will improve their reading skills, understand the human condition just a little bit more, and have a safe place in the written world.

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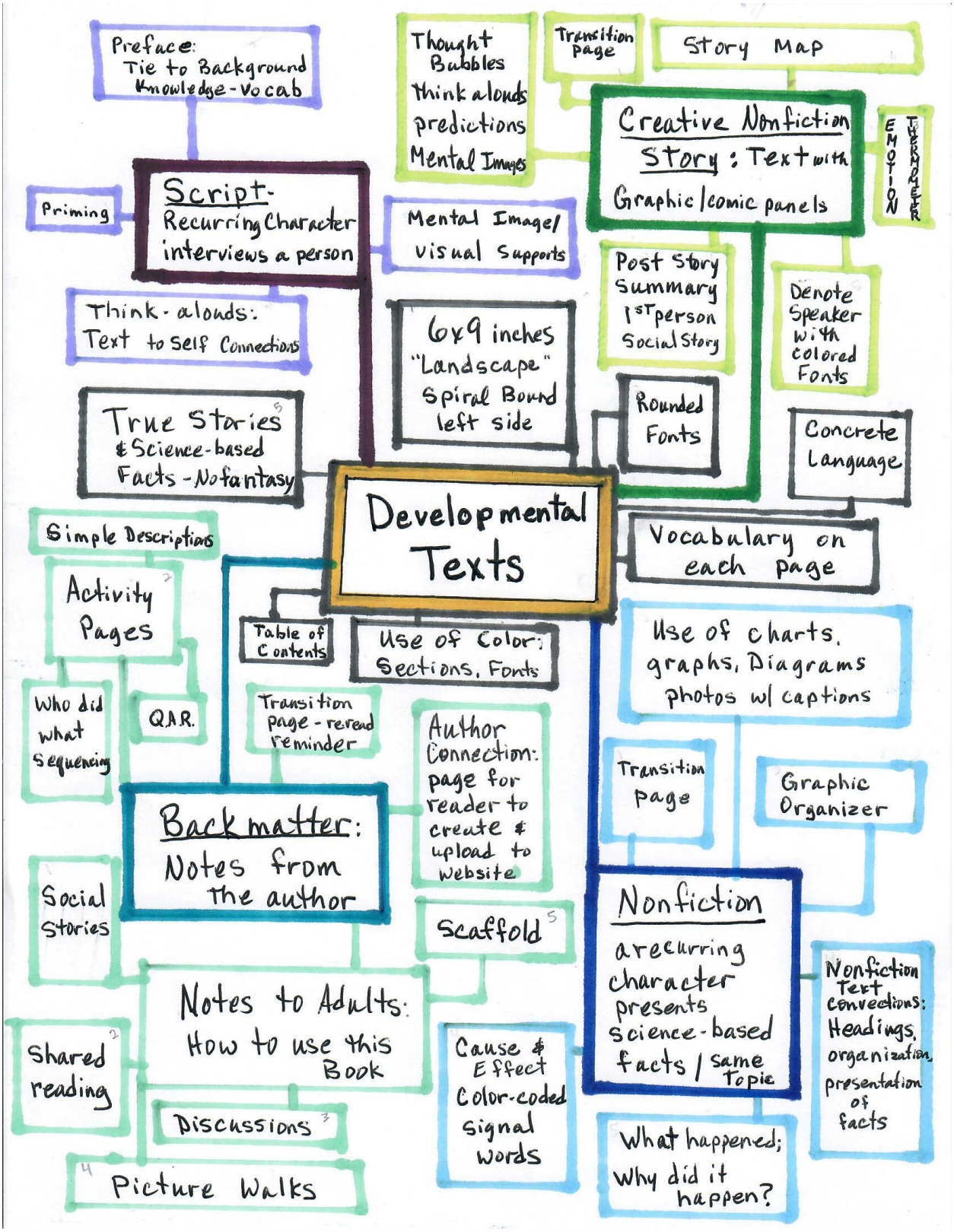
Appendix A


Developmental Texts
Preface: Tie to Background Knowledge - Vocab
Thought Bubbles
think alouds
predictions
Mental Imags
Transition page
Story Map
Creative Nonfiction Story: Text with Graphic/comic panels
EMOTION THERMOMETER
Priming
Script- Recurring Character interviews a person
Mental Image/ visual Supports
Post Story Summary 1st person Social Story
Denote Speaker with colored Fonts
Think-alouds: Text to self Connections
6x9 inches "Landscape" Spiral Bound left side
Rounded Fonts
Concrete Language
True Stories & Science-based Facts - No fantasy
Simple Descriptions
Vocabulary on each page
Activity Pages
Table of Contents
Use of Color: Sections, Fonts
Use of charts, graphs, Diagrams photos w/ captions
Who did what Sequencing
Q.A.R.
Transition page - reread reminder
Author Connection: page for reader to create & upload to website
Transition page
Graphic Organizer
Back matter: Notes from the author
Social Stories
Scaffold
Nonfiction areccurring character presents science-based facts / same Topic
Nonfiction Text connections: Headings, organization, presentation of facts
Notes to Adults: How to use this Book
Shared reading
Cause & Effect Color-coded signal words
Discussions
What happened; Why did it happen?
Picture Walks

Appendix B

The Aquarium **DRAFT**: April 2020

Draft Notes:
This does not include all information, illustration or photos. Non-fiction section to be developed based on headings. Look-back and Detective questions will be developed.
Online resources will be developed.
Sample photos were taken by me at The National Aquarium in Baltimore, MD.

The book is 6 x 9 inches with spiral binding so it can lay flat on a table and folded back for 1 page at a time, if 2 are overwhelming.

The Aquarium:
With Alex the Storyteller
And Jordon the Researcher

By Nancy Roop

Book

Cover: Minimalist graphics, photos, illustrations

Attention grabbing, but not overwhelming.

Table of Contents



What's Next:

Alex will interview Tim.

Alex will ask some questions.

They will talk about a trip to the aquarium.

*Think in your head:* What animals might live there?

in ter view quest ions a quar i um

Minimalist images/illustrations

Vocab words will have dots between syllables Page: 1

Interview

Alex: Where did you go last week?

Tim: I went to an aquarium. It was cool.

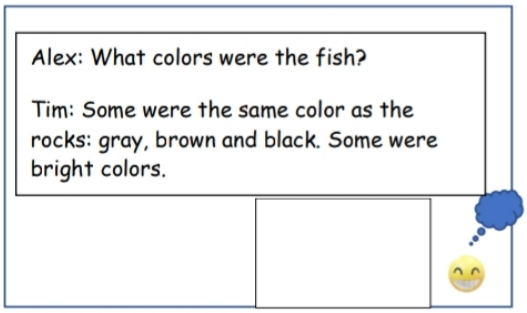
Alex: Were the tanks big like a house or small like a tv?
Tim: They were big like a house.

2 Comic drawings: two people talking w/ bubbles Page: 2

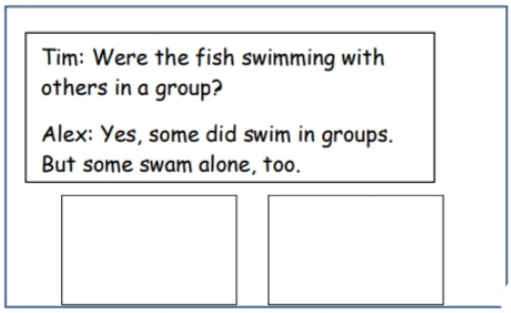
Drawing of a large aquarium; and a small one Page: 3

Nancy Roop; Developmentaltexts.com

The Aquarium **DRAFT**: April 2020




Illustrations of both types of fish Page: 4




2 / 9

Illustrations both types of swimming Page: 5

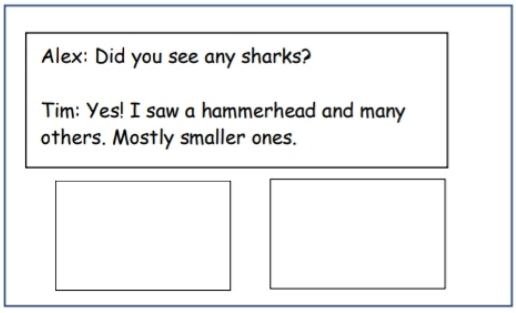
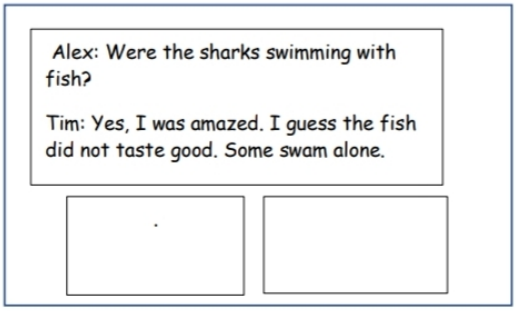



Illustration of hammerhead & small ones Page: 6




Illustrations of sharks swimming alone & with fish page: 7

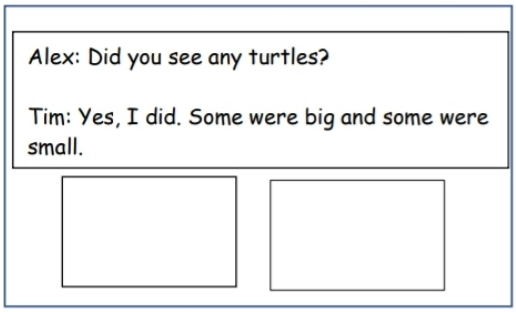



Illustration of both types of turtles Page: 8

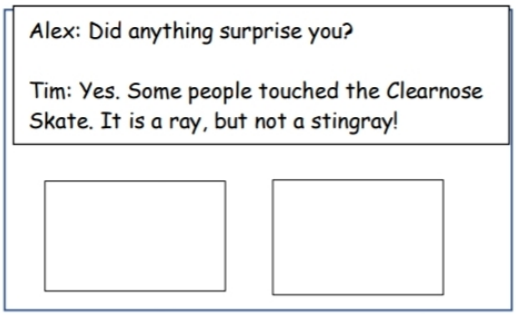



Illustration of people touching the stingrays Page: 9

Nancy Roop; Developmentaltexts.com

The Aquarium **DRAFT**: April 2020 ____

Alex: Did people get in trouble for touching the ray?

Tim: No, because the sign said it was ok.

**Petting Area:**
An expert will help you. Be gentle!

1st box: Alex and Tim; 2nd box sign Page: 10

Alex: Tell me more about that please.

Tim: The tank was only three feet tall. An expert said to use two fingers and lightly touch their back.

Illustration: people standing by tank; two fingers & ray; 11

Alex: Did you try it?

Tim: No way! I did not want to. I just watched for a while. Then I went to see the frogs again.

Illustration of Tim afraid; calm with frogs____ Page: 12

Alex: Were the frogs swimming with the fish?

Tim: No. They had their own place. There was some water, but also dirt, rocks, trees and plants.

3 / 9

_____ Page: 13

Alex: Thank you for telling me about your visit to the aquarium!

Tim: You are welcome! You should go some day.

2 Comic drawings of two people talking Page: 14

**What's Next?:**

*Think in your head...*

| | | | |
|---|---|---|---|
| I have seen fish. | Yes | or | No |
| I have seen sharks. | Yes | or | No |
| I have seen rays. | Yes | or | No |
| I have seen turtles | Yes | or | No |
| I have seen frogs | Yes | or | No |

Alex asked his friend, Jordon to do research on these animals.

Page: 15

–

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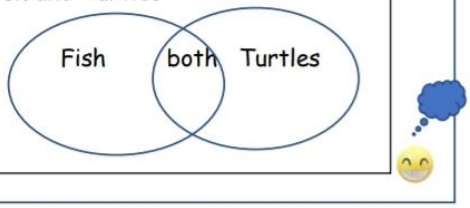
Fish:

Facts, photos, Page: 16

Turtles:

Facts, photos Page: 17

Compare & Contrast:
Fish and Turtles




List of characteristics in each section Page: 18

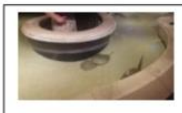
Frogs:

Facts, photos Page 19

Sharks:

Facts, photos, Page: 20

Rays:



Facts, photos Page: 21

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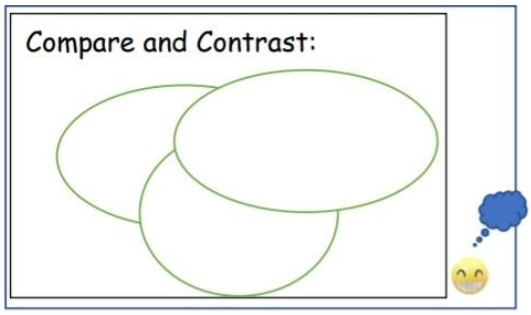


Compare Sharks, Rays and Frogs Page: 22


Facts; photos Page: 23


Facts; photos Page: 24


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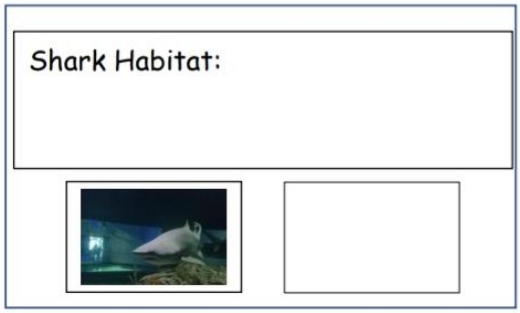
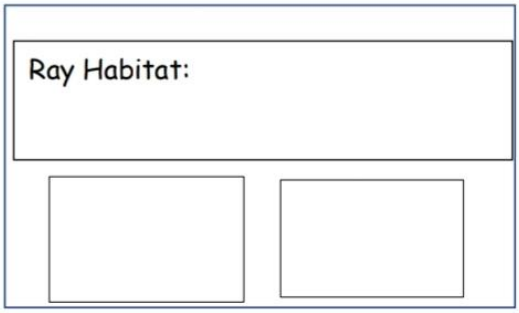
Facts; photos Page: 25




Facts; photos Page: 26




Facts; photo Page: 27

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**Look Back:**
- Fill in the blank
- Questions: simple descriptions
- I wonder statements

Info and photos _____ Page: 28

**Nonfiction Features:**
- Fact-based information
- Headings and subheadings
- Photographs with captions

____ Page: 29

**Nonfiction Summary:**
TBD

**Outline:**

Examples of nonfiction text conventions Page: 30

**What's Next:**
Alex combined the dialog from the interview and the facts from Jordon's research and wrote a story.

Predictions:
I think the story…
I think Tim will….

Page: 31

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Tim Visits an Aquarium

By Alex the Storyteller

Stor y tell er: someone who tells or writes a story.

Illustration of Alex holding a book (in top box). Page: 32

One day, Tim went to The National Aquarium. He was so excited because he likes animals that live in the sea. Many of the tanks were ten feet tall and twenty feet wide.

Creative Nonfiction story with Illustration Page: 33

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Some of the fish swam in schools or groups of the same fish. Other fish swan on their own. Some of the turtles had long necks that could reach between the rocks to search for food.

Illustrations of animals. Page: 34

He was surprised to see frogs because they live in the water for only part of their life cycle. Their tanks had both water and land with trees and plants.

Illustration of Alex surprised looking at frogs. Page: 35

There were so many kinds of sharks. He saw the Hammerhead Shark first. He was swimming with other hammerheads. Some smaller sharks were swimming with fish and other creatures.

Illustration of Hammerheads and Other sharks. Page: 3

He saw some stingrays swimming with the sharks. He also saw another kind of ray call the Clearnose Skate. The Clearnose Skate was in a special exhibit where visitors could touch them.

Illustration: shark; and clearnose skate Page: ____ 37

Tim was very afraid when the animal expert asked if he wanted to touch the Clearnose Skate. In his mind, he felt the urge to scream and move away. He thought to himself. I could run or I can take a deep breath and say, "No thank you!"

Alex is feeling scared.

Emotional Thermometer; Illustration of deep breath Page: 38

Tim chose to say, "No Thank you!", then decided that visiting the frogs would be better. On the way to the frogs, Tim saw some more fish and turtles. He was very happy to see one of the frogs sitting in a tree looking like a yellow leaf.

Alex is feeling calm.

Illustration of Alex calm looking at frog in tree. Page: 39

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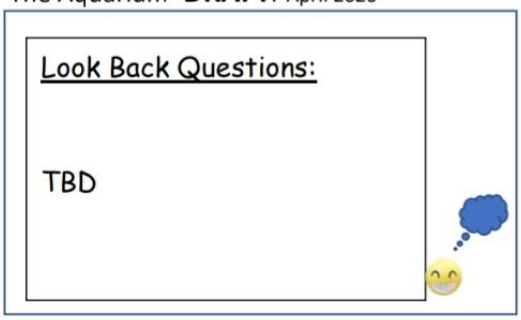
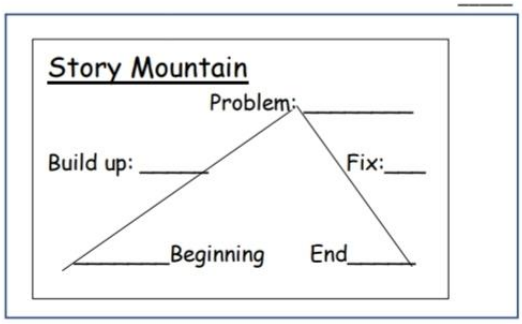
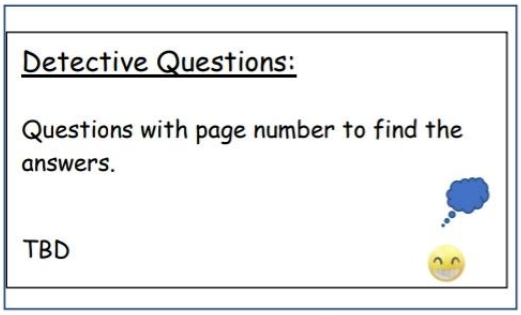


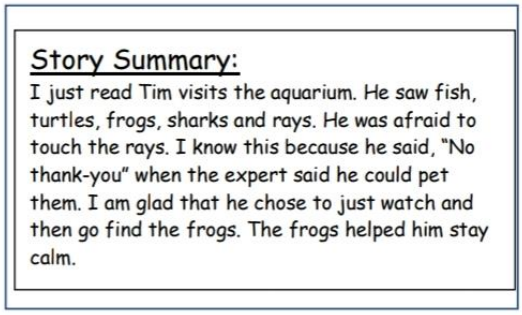

Look Back-simple description; Page: 40



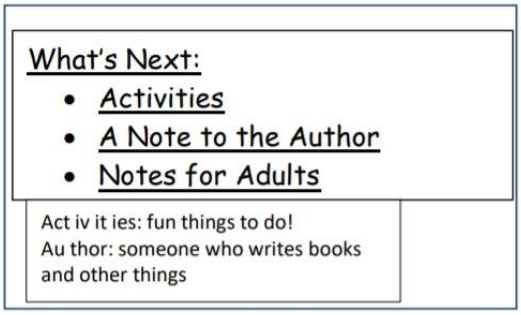

Parts of the story will be included Page: 41



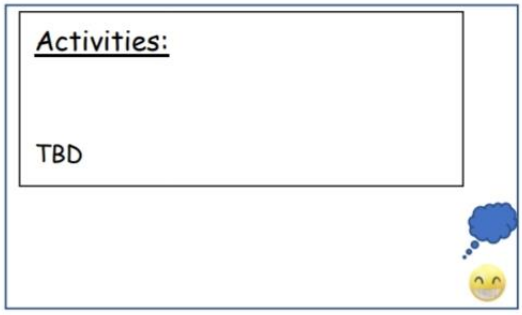

Comprehension-based, inference making Page: 42




Written like a Social Story Page: 43




Page: 44




Activities: Seek and Find; games; Page: 45

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A Note to the Author
I want the author to know …

Draw or write.

Page is left blank for reader to complete. _____ Page: 46

Notes for Adults:

Ways to use this book

- Shared Reading
- Discussions
- Scaffolding
- Connect Online
  - Submit Note to Author
  - Additional Resources

Each bullet has a paragraph description.
Inside back cover____ Page: 47

Alex is a fifth grader who likes to interview people. Alex's friend, Jordon, like to do research. Then, Alex writes a story based on all the information collected. This book is about visiting an aquarium.

Teaching methods are embedded throughout. Along the way, there are pause and think icons—a chance for the reader to make connections to themselves. Before each new section, a transition page about what's next prepares the reader for what is to come. Activities and resources, too!

Back Cover:
includes illustrations of Alex and Jordon working together.

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