PRELITERACY DEVELOPMENT OF PRESCHOOL CHILDREN WITH VISUAL IMPAIRMENTS: SHARED STORYBOOK READING INTERVENTION

by

Stephanie Scholes

A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Education

Baltimore, MD
June 2019

© 2019 Stephanie Scholes
All rights reserved
Abstract

Children with visual impairments are vulnerable to preliteracy delays. Emergent literacy lags arise from developmental variation in oral language development and greater difficulty in attending to materials as directed by an adult. Delays in these areas impede the development of other preliteracy skills, such as print knowledge. Thus, children may present with deficits in preliteracy skills upon preschool entry. A needs assessment examined relevant factors in the context of a large school district. Results indicate that mean scores on preliteracy indicators from curriculum-based assessments for children with visual impairments are lower than those of their peers with normal vision. Likewise, preschool students with visual impairments exhibit lower levels of attention and engagement than their peers. This study examined the effects of a parent-implemented shared storybook reading intervention on emergent literacy skills or foundational skills by employing a mixed-method embedded single case research design based on principles of dynamic systems theory (Steenbeek, van Geert, & van der Steen, 2017). The intervention consisted of group instruction tailored to teach three parents of children with visual impairments shared storybook reading strategies then addressed individual implementation of these strategies through personalized, video-based coaching. Parents were interviewed regarding home literacy perceptions and practices pre-and post-intervention. Observations of shared reading using the SABR (Justice, Zucker, & Sofka, 2010) and momentary time sampling of attention were conducted ten times throughout the study. Child preliteracy scores from pre-and mid-year assessments of the district curriculum-based assessment were likewise compared. Of three children in the study, one child demonstrated substantial preliteracy gains in oral language on the district’s curriculum-based assessment. However, all three children increased their attention and engagement in shared storybook reading. Additionally, two of three child
participants increased their verbalizations during shared reading. All parents who participated demonstrated increases in their use of shared storybook reading strategies, viewed the intervention as valuable, and indicated that it helped them better engage their child, which they believed would lead to preliteracy growth. Triangulation of these factors suggests that this intervention was successful for all participants.

*Keywords*: Visual impairments, emergent literacy, preliteracy, shared storybook reading

Dissertation Co-Advisors: Dr. Christine Bischke and Dr. Camille Bryant
Dedication

This dissertation is dedicated to the many preschool children with visual impairments who impressed on me the necessity of examining their emergent literacy in the first place, and to their parents who advocate for them.
Acknowledgements

Although a dissertation is attributed to an individual, this dissertation would have been impossible without the collective support of the members of my doctoral committee and larger academic community, colleagues and supervisors in my district, and family members.

I need to thank my advisors, Dr. Christine Bischke and Dr. Camille Bryant, for providing their expertise, their feedback, their encouragement, and their time. Their new perspectives and questions facilitated my learning and their readiness to find flexibility in scheduling made my doctoral journey possible. I likewise thank Dr. Mary Ellen Lewis for her questions and willingness to adjust her schedule to make meetings with my committee possible. I would also like to thank the larger community of educators teaching in the Doctor of Education Program. Your probing comments and critiques enriched my learning in many ways. I would especially like to thank Dr. Paré-Blagoev for her confidence in me as a new doctoral student when I was not at all sure that I belonged in this program.

A second group that must be acknowledged consists of my coworkers and supervisors in my school district. To Brenda Van Gorder who believed in me and was willing to open doors to make my research possible. To Nannette Barnes who inherited this role when Brenda retired, yet has willingly stepped into the role. Finally, to Anne Murdock who loaned me her classroom for my study, shared her students, and most importantly walked through my doctoral journey with me as my friend.

Finally, I am grateful for my family. I appreciate their tolerance of my increased stress and decreased availability. I particularly want to thank my mother, Cheryl, who read and edited many papers, conceptual frameworks, diagrams, and tables, and has been my sounding board through each phase of this dissertation.
Table of Contents

Abstract .............................................................................................................................................. ii
Dedication .......................................................................................................................................... iv
Acknowledgements ........................................................................................................................... v
List of Tables ...................................................................................................................................... xi
List of Figures ................................................................................................................................... xii
Executive Summary ............................................................................................................................ 1
Factors Behind Preliteracy Delays ................................................................................................. 1
Emergent Literacy in Context .......................................................................................................... 3
Parent–Child Reading Intervention ................................................................................................. 4
Applying Shared Storybook Reading Intervention to Children with Visual Impairments .......... 5
Chapter 1 ........................................................................................................................................... 7
Problem of Practice ......................................................................................................................... 10
Emergent Literacy in Preschool Children with Visual Impairments .............................................. 10
Individual Factors ............................................................................................................................ 12
Preliteracy Model ............................................................................................................................. 21
Emergent Literacy Environments ................................................................................................. 22
Home Literacy Environment ......................................................................................................... 23
School and Teacher Factors ......................................................................................................... 25
Conclusion ....................................................................................................................................... 29
Chapter 2 ........................................................................................................................................ 30
Introduction ................................................................................................................................. 30
Goals and Objectives ...................................................................................................................... 31
Methodology ............................................................................................................................... 32
Participants.................................................................................................................. 32
Measures ...................................................................................................................... 38
Procedures.................................................................................................................. 44

Results......................................................................................................................... 50
Research question 1. .................................................................................................. 50
Research Question 2 .................................................................................................. 51
Research Question 3 .................................................................................................. 54
Research Question 4 .................................................................................................. 56
Research Question 5 .................................................................................................. 64
Research Question 6 .................................................................................................. 68

Conclusions................................................................................................................. 71

Chapter 3 .................................................................................................................. 73

Theoretical Perspectives........................................................................................... 74

Emergent Literacy Interventions .............................................................................. 76
Person Characteristics for Evaluating Interventions............................................. 76
Preschool Teachers................................................................................................... 78

Shared Book Reading Intervention ...................................................................... 86
Orientation Toward Books ....................................................................................... 87
Attention .................................................................................................................... 88
Vocabulary ............................................................................................................... 89
Phonological awareness ......................................................................................... 90
Print Awareness and Alphabet Knowledge ....................................................... 91

Application to Children with Visual Impairments and Their Parents .......... 93
Parent Interventions for Children with Visual Impairments in Other Domains .. 94
Orientation Toward Books ...................................................................................... 96
Attention .................................................................................................................. 96
Vocabulary ............................................................................................................... 98
Phonological Awareness ......................................................................................... 98
Print Awareness ...................................................................................................... 99

Key Characteristics for Training Parents of Children with Visual Impairments .......................................................... 100
Type of Training .................................................................................................... 100
Extent of Training .................................................................................................. 101
Maintenance of Skills Learned .............................................................................. 102

Dynamic Systems Theory Intervention Research ............................................. 102

Conclusions ............................................................................................................ 104

Chapter 4 ................................................................................................................. 105
Purpose of Study .................................................................................................... 108
Intervention ............................................................................................................ 110
Method ..................................................................................................................... 111
Research Design .................................................................................................... 111
Process Evaluation .................................................................................................. 112
Participants ............................................................................................................. 115
Instruments ............................................................................................................. 116
Procedure ................................................................................................................ 122
Data Collection ....................................................................................................... 125
Intercoder Agreement ............................................................................................. 125
Data Analysis .......................................................................................................... 125
Conclusion .............................................................................................................. 127

Chapter 5 ................................................................................................................. 128
Outcome on Preliteracy Skills ............................................................... 129

Parent Strategy Use ............................................................................. 130
  Group Instructional Sessions ............................................................. 131
  Individual Coaching Sessions ......................................................... 131
  Parent Use of Strategies in Shared Reading Sessions ......................... 133

Relationship Between Parent Strategy Use and Child Behaviors .......... 139
  Parent-Child Interaction Within Recording Sessions ......................... 140
  Parent-Child Interaction Across the Intervention ............................. 152

Moderators Influencing Shared Storybook Reading Intervention .......... 158

Parental Perceptions of Shared Storybook Reading Intervention .......... 159
  Effect of Intervention on Shared Reading ......................................... 160
  Value of Shared Storybook Reading Intervention ............................ 161
  Aspects of the Intervention to Retain and Possible Improvements ....... 162
  Analysis for Presence of Shifts in Parental Priorities ....................... 164

Discussion ......................................................................................... 165

Limitations .......................................................................................... 167

Implications for Research .................................................................... 168

Implications for Practice ...................................................................... 168

Conclusion .......................................................................................... 169

References .......................................................................................... 171

Appendix A .......................................................................................... 193

Appendix B .......................................................................................... 194

Appendix C Protocols ........................................................................... 197
  Teacher Survey on Visual Impairments .............................................. 192
  Family Survey of Reading and Writing Practices .............................. 196
Data Collection Template: SABR with modifications to child behavioral indicators ................................................................. 212
Momentary Time Sampling Data Sheet ................................................................. 214
Home Reading Log ............................................................................................. 215
Intervention Fidelity Observation Sheet ............................................................. 216
Intervention Fidelity Observation Sheet ............................................................. 217
List of Tables

Table 2.1 District-wide demographic information by year .............................................. 33
Table 2.2 Vision diagnosis information .................................................................................. 34
Table 2.3 Demographic information of preschool teachers .................................................. 38
Table 2.4 Aggregated descriptive statistics on CBA for preschool students ...................... 52
Table 2.5 Percentage of students scoring at or above the established program goal on CBA .... 53
Table 2.6 Comparison of attention and engagement of students with visual impairments and their peers with typical vision ................................................................. 55
Table 2.7 Frequency with which children are read to and the amount that they enjoy being read to ......................................................................................................................... 56
Table 2.8 Participation of preschool students in preliteracy activities by the number of activities or types of materials .................................................................................. 60
Table 2.9 Frequency of engagement in activities supporting preliteracy development ......... 62
Table 2.10 Prioritization of parental goals ............................................................................... 64
Table 2.11 Major concerns teachers would have if a student with a visual impairment were to join their class ........................................................................................................ 68
Table 2.12 Level of anxiety or calmness and hostility or receptiveness toward having a new student with a visual impairment ................................................................. 69
Table 2.13 Teacher responses when asked to identify the best educational placement for students with visual impairments ................................................................. 70
Table 4.1 Shared book reading techniques and their application to children with visual impairments ......................................................................................................................... 106
Table 4.2 Intervention timeline ................................................................................................. 124
Table 5.1 Raw CBA scores for children who participated in this intervention ......... 130
Table 5.2 Parent strategy use by recording session for each parent .................................. 135
Table 5.3 Comparative presentation of micro-level data ...................................................... 149
Table 5.4 Codes present in post-intervention parent interviews ........................................ 159
List of Figures

Figure 1.1. Conceptual framework depicting the relationship between factors contributing to preliteracy skill delays in preschool children with visual impairments .......................... 13

Figure 2.1 Teacher strategy use for facilitating emergent literacy ........................................ 57

Figure 5.1 Percentage of parents’ self-reported strategy use by category ............................... 137

Figure 5.2 Micro level interaction data on Parent 1 strategy use as it relates to Child 1 behaviors ........................................................................................................................................... 142

Figure 5.3 Micro level interaction data on Parent 2 strategy use as it relates to Child 2 behaviors ........................................................................................................................................... 144

Figure 5.4 Micro level interaction data on Parent 3 strategy use as it relates to Child 3 behaviors ........................................................................................................................................... 146

Figure 5.5 Parent 1’s use of supports and Child 1’s attention, engagement, and utterances 153

Figure 5.6 Parent 2’s use of supports and Child 2’s attention, engagement, and utterances 155

Figure 5.7 Parent 3’s use of supports and Child 3’s attention, engagement, and utterances 157
Executive Summary

The term visual impairment indicates that limitations in an individual’s functional vision, even with the use of glasses, impact the development or performance of expected tasks (Individuals with Disabilities Education Improvement Act (IDEA), 2004). Research suggests that 40-60% of students with visual impairments read below grade level (Craig, Hough, Churchwell, & Schmitt, 2002; Fellenius, 1999; Herzberg, Rosenblum, & Robbins, 2017). Similar challenges have been found in markers of reading fluency including reading speed (Craig et al., 2002; Douglas, Grimley, Hill, Long, & Tobin, 2002), accuracy, (Bosman, Gompel, Vervloed, & van Bon, 2006; Tobin & Hill, 2012), and comprehension (Douglas et al., 2002; Tobin & Hill, 2012). Literacy for individuals with visual impairments increases likelihood of employment (Musgrove & Yudin, 2013). Discrepancies in literacy skill development for children with visual impairments are particularly troubling because they arise early (Kulp et al., 2016) and tend to grow over time (Douglas et al., 2002; Lusk & Corn, 2006b; Tobin & Hill, 2012). In the early childhood years emergent literacy challenges include receptive and expressive language delays (Reynell, 1978), print awareness delays (Kulp et al., 2016), and phonological awareness delays (Tobin & Hill, 2012). It is hypothesized that addressing emergent literacy challenges in preschool may improve later literacy outcomes.

Factors Behind Preliteracy Delays

Emergent literacy delays stem from developmental differences and mismatches between the child’s needs and the environment. Differences in social communication for children with visual impairments, including reduced interaction and vocalization, begin during infancy (Rogers & Puchalski, 1984) and impact literacy in two ways. First, communication differences and missed visual cues lead to incomplete understanding of word meaning impeding language
development (McConachie & Moore, 1994). For example, parents speaking to other people in
the environment will reference objects that the child with visual impairments does not see.
Consequently, the child hears labels for objects, but does not receive the simultaneous contextual
cues necessary to assign meaning or generalize meaning and the child develops incomplete
concepts. Oral language difficulties can lead to phonological awareness challenges as early
language scores are associated with later phonological awareness (Flax, Realpe-Bonilla, Roesler,
Choudhury, & Benasich, 2008).

Second, social communication in infancy is related to later social engagement (Salley et
al., 2016). Infants and toddlers with visual impairments initiate less frequently with their mothers
(Rogers & Puchalski, 1984). When they interact with their parents they are more likely to
vocalize negatively and demonstrate negative affect (Rogers & Puchalski, 1984), which may
impact a parent’s effort to sustain interaction. Thus, preschool aged children with visual
impairments often demonstrate attention challenges (Tadić, Pring, & Dale, 2009). The ability to
attend is important to emergent literacy as it relates to interest in literacy (Baroody & Dobbs-
Oates, 2011) and development of preliteracy skills, particularly print-related skills (Sims &
Lonigan, 2013; Walcott, Scheemaker, & Bielski, 2010).

The literacy environment is also critical to the development of emergent literacy for
preschool children with visual impairments. In the home, young children with visual
impairments are less likely to choose the books read to them than typically sighted peers (Craig,
1996; Marvin & Mirenda, 1993) and may not relate to books in the same way (Craig, 1999). In
the school setting children with visual impairments may experience reduced opportunity to learn
due to teachers’ lack of strategy use, such as providing braille or tactile books (McDonnell et al.,
2014), and inaccessible literacy supports, such as braille labels positioned where children cannot
Emergent Literacy in Context

Preliteracy skill delays as described above have been observed in preschoolers in a large urban/suburban school district in the western United States. A needs assessment conducted spring 2017 examined the preliteracy performance of preschool children with visual impairments and their peers with typical vision on district curriculum-based assessments, and factors contributing to these scores. This included momentary time sampling to consider the attention and engagement of children with visual impairments in preschool activities; surveying preschool teachers regarding literacy environments and their understanding of visual impairment and appropriate strategies use; and surveying parents regarding literacy interest of preschool children with visual impairments, and literacy environments at home.

Existing data and results of newly administered measures were analyzed using descriptive statistics, t-scores, and emergent coding to ascertain themes. This analysis indicated that for the previous four years, data from children with visual impairments were below their data from typically sighted peers in emergent literacy areas of the district’s curriculum-based assessments including oral language, phonological awareness, alphabet knowledge, and book knowledge/print awareness. Classroom observations of preschool children with visual impairments found that these children attended to and engaged in teacher directed activities significantly less than their peers with typical vision. Despite this, parents reported that children with visual impairments asked to be read to just slightly less than their typically-sighted peers.

Home literacy environments for preschool children with visual impairments indicated that although print learners have access to print books and materials, braille learners had little access to braille. Parents of preschool children with visual impairments also demonstrated different
priorities, i.e. communication and self-help, than parents of preschool children with typical vision who prioritized learning to read and write. These findings suggest that parents of preschool children with visual impairments are not as focused on and insufficiently prepared to meet the preliteracy needs of their children with visual impairments.

Teachers similarly struggled to understand visual impairments. Thirty-one teachers responded to a teacher survey of attitudes and understanding of visual impairments. Of these respondents those with current students with visual impairments were most likely to feel calm and receptive toward having a student with visual impairments in their class and were best able to identify appropriate strategies for teaching these students. Teachers who had previously taught a student with visual impairments, but who were not currently teaching one, responded to survey questions like those who had never taught a student with visual impairments. This suggests that instruction provided to teachers relative to visual impairments has greatest value when a student with visual impairments is simultaneously in their class.

**Parent-Child Reading Intervention**

Results from the needs assessment verified preliteracy skill delays and suggested that an intervention could be undertaken with the child’s teacher or the child’s parent. Interventions targeted to preschool teachers, although effective while the child is in that preschool class, are ultimately a less effective use of time as the preschool child is with their parent more than they are in preschool and will have a more lasting relationship. Thus, this intervention focused on teaching parents ways to help develop literacy for their children.

Few literacy-focused interventions have been conducted with parents of preschool students with visual impairments (Erickson & Hatton, 2007a). Emergent literacy interventions focused on parents of preschool children with typical vision have broadly fit two categories:
home visits (Mathis & Bierman, 2015; Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011) and shared storybook reading interventions (P. J. Cooper et al., 2014; Sim, Berthelsen, Walker, Nicholson, & Fielding-Barnsley, 2014; Whitehurst et al., 1988). Interventions consisting of home visits showed limited or no impact on language and literacy (Mathis & Bierman, 2015; Sheridan et al., 2011), while most shared storybook reading interventions have been found to improve emergent literacy skills. Evidence suggests that shared storybook reading interventions may improve: orientation toward books (Hardman & Jones, 1999), attention (P. J. Cooper et al., 2014), vocabulary (Whitehurst et al., 1988), phonological awareness (Sim et al., 2014), print concepts (Justice, Skibbe, McGinty, Piasta, & Petrill, 2010; Sim et al., 2014), and alphabet knowledge (van Bysterveldt, Gillon, & Moran, 2006). These areas are noteworthy as they correspond with areas that children with visual impairments often experience delays.

Developing an effective intervention depended on aligning successful shared storybook reading intervention strategies with the needs of parents of children with visual impairments and their children. Although empirical literature suggested that shared storybook reading interventions for typically sighted children could take many forms, successful interventions for parents of children with visual impairments often include the opportunity to connect with other parents of children with visual impairments (Leyser & Heinze, 2001) and consideration of the unique needs of the parent-child dyad (Beelmann & Brambring, 1998). This suggested an intervention with both group and individual instruction experiences.

**Applying Shared Storybook Reading Intervention to Children with Visual Impairments**

The present study, utilizing a mixed method embedded single case design, used both group instructional sessions and individual coaching sessions to facilitate parent learning of shared storybook reading strategies appropriate to the needs of their child. Three mother-child
dyads participated in four group instruction and individual coaching sessions focused on shared reading strategies to develop engagement, build language skills through dialogic interaction, increase book knowledge, and foster print awareness.

Comparison of pre- and mid-year curriculum-based assessment scores revealed that one child made modest gains in oral language and alphabet knowledge and two children made minor gains in oral language, without appreciable growth in other preliteracy areas. Analysis of the mothers’ use of shared storybook reading strategies in video-recorded shared reading sessions showed that following instruction parents increased their use of shared storybook reading strategies. Simultaneous to increases in parent strategy use children increased attention and two children increased their vocalizations during shared reading over the course of the intervention. In their answers to qualitative interview questions parents indicated that the intervention was worthwhile as it made reading easier and more effective for their children. Based on these findings shared storybook reading may be an effective intervention for improving emergent literacy for preschool children with visual impairments.
Chapter 1

Reading is a priority in the United States. Although traditionally taught in schools, the report, A Nation at Risk (National Commission on Excellence in Education, 1983), brought the importance of this to the forefront by demonstrating weaknesses of the educational system of that time. This national focus has been perpetuated in more recent legislation, such as the No Child Left Behind Act of 2001. This and subsequent legislation has mandated that schools focus on and succeed in teaching children to read (Every Student Succeeds Act of 2015, 2015).

Children with disabilities are not exempt from this instruction. In the OSEP Dear Colleague Letter on Free and Appropriate Public Education, Yudin and Musgrove (2015) expressed the expectation that all children, including those with disabilities, make progress in the curriculum for their grade. This curriculum includes instruction in English Language Arts comprising reading, writing, and language development (Utah State Office of Education, 2013).

The expectation that all children receive instruction in reading and writing includes children with visual impairments. The Individuals with Disabilities Education Improvement Act (IDEA, 2004) defines visual impairments as “an impairment in vision that, even with correction, adversely affects a child’s educational performance. The term includes both partial sight and blindness”. This definition hints at the variability in visual ability of children with visual impairments but does not explain the extent of variability that exists in children with visual impairments. Visual impairments take many forms. Impairment can involve near or distance acuities, visual fields, contrast sensitivity, or the brain’s ability to integrate visual input with other sensory and cognitive abilities (Colenbrander, 2003; Dutton, 2002). All these challenges may impact functional vision across settings. Some individuals experience challenges with more than one of these problems, which may impede their progress in developing literacy.
As a result of these challenges, it is expected that children who are blind or visually impaired be provided instruction in braille unless it is determined by educational teams working with the child that braille instruction is not appropriate (Musgrove & Yudin, 2013). Further, the team must consider both current and future needs of the child in making this determination. These legal mandates not only appear in the IDEA Part B regulation 34 CFR §300.324(a)(2)(iii) (IDEA, 2004) but were reiterated in the OSEP Dear Colleague Letter to this effect (Musgrove & Yudin, 2013).

Unfortunately, empirical evidence suggests that children with visual impairments tend to struggle with reading in any media. In Fellenius’ (1999) study using a Swedish sample of 88 nine-year-old children, 59% of the students with visual impairments read below the level of most of their peers with typical vision in either print or braille. Similar reading challenges were reported by Herzberg, Rosenblum, and Robbins (2017) in a survey of 84 teachers of students with visual impairments (TVIs) age 6-18 from the United States and Canada. These teachers reported that 47.9% of students learning print and braille were performing below grade level in print and 73.6% were performing below grade level in braille. Of 50 students with reported print reading rates, 88% were reading less than 75 words per minute reading. Braille reading rates were even slower, 82% of students were reading less than 50 words per minute in braille. These reading rates are much slower than those expected for typical children (Lusk & Corn, 2006). Similarly, Craig, Hough, Churchwell, and Schmitt (2002) found that 40% of braille readers and 42% of print readers with visual impairments read below grade level. Some studies have tried to suggest that students were not delayed in reading, yet when controlling for age and reading ability, students with visual impairments show reading delays when compared to students without visual impairments (Bosman et al., 2006; Edmonds & Pring, 2006; Gompel, van Bon, &
Schreuder, 2004a, 2004b).

Reading delays in students with visual impairments have been found in reading speed, reading accuracy and, frequently, in comprehension (Douglas et al., 2002; Lusk & Corn, 2006b; Tobin & Hill, 2012). This is significant as fluent reading, a marker of reading competence, has been characterized as “oral translation of text with speed and accuracy” (Fuchs, Fuchs, Hosp, & Jenkins, 2001, p. 239). All studies that have considered reading speed have found the majority of students with visual impairments read at speeds below those expected for their age, regardless of whether the student was reading print or braille (Bosman et al., 2006; Craig et al., 2002; Douglas et al., 2002; Edmonds & Pring, 2006; Gompel et al., 2004a, 2004b; Lusk & Corn, 2006b; Tobin & Hill, 2012). In addition to reading slower, students with visual impairments tend to read less accurately than their peers (Bosman et al., 2006; Douglas et al., 2002; Tobin & Hill, 2012). Since fluency is a predictor of comprehension (Fuchs et al., 2001), slow reading speeds and less accurate reading would seem to result in impaired comprehension, yet the evidence on this point is inconsistent. Gompel et al. (2004a) found that children with visual impairments performed better than age-matched peers with tasks requiring the reader to choose the correct words to complete the paragraph. In contrast, other researchers found that learners with visual impairments did not perform at the level of their peers in comprehension tasks (Douglas et al., 2002; Edmonds & Pring, 2006; Tobin & Hill, 2012).

Perhaps the most troubling research findings in reading research on children with visual impairments is the finding that children with visual impairments not only tend to be delayed in literacy skills, but the discrepancy starts early (Kulp et al., 2016). Further, this discrepancy has been found to grow over time (Douglas et al., 2002; Lusk & Corn, 2006; Tobin & Hill, 2012). The presence of discrepancies, even in young students, that grow over time indicates the need to
examine the development of preliteracy skills prior to school entry.

**Problem of Practice**

The term visual impairment indicates that limitations in an individual’s functional vision, even with the use of glasses, impact the development or performance of expected tasks. Examples may include albinism, cataracts, coloboma, cortical visual impairment, glaucoma, myopia, optic nerve hypoplasia, retinitis pigmentosa, and retinopathy of prematurity. Children with visual impairments tend to demonstrate delays in pre-literacy skills, such as receptive and expressive language (Reynell, 1978) and phonological awareness (Tobin & Hill, 2012), and subsequently in reading (Lusk & Corn, 2006). These delays are apparent in 3-5-year-old preschool children attending preschool classes in a large urban/suburban school district in the western United States. The preschoolers with visual impairments within this district tend to score lower in their pre-literacy skills, such as oral language, phonological awareness, alphabet knowledge, and book/print awareness, on a district-wide curriculum-based assessment 3- or 4-year-old assessments when compared to their age-mate peers without visual impairments. Some of the factors associated with this problem are developmental differences in oral language and attention/engagement specific to children with visual impairments, lack of accessible opportunities, and teacher reticence. Drivers seem to include societal perspectives of visual impairment, and home and family influences. Attention to literacy skills for students with visual impairments, even in preschool, is important as performance gaps between students with visual impairments and age-mate peers have been found to grow over time (Douglas et al., 2002).

**Emergent Literacy in Preschool Children with Visual Impairments**

The preliteracy development of children with visual impairments can be viewed through the lens of bioecological theory (Bronfenbrenner & Morris, 2006). This theory has four major
tenets: process, person, context, and time. Each of these variables is important in defining the manner in which a child develops and is embedded in micro-, meso-, and macro-systems. The microsystem being defined as the environments that the individual interacts with, such as people, objects, and ideas. The mesosystem is interaction between different microsystems. The macrosystem is the cultural, historical, and societal atmosphere surrounding the other systems. Each of these systems interacts with the major tenets of the theory.

Time can be viewed on a macrosystems level as the historical environment in which the development is occurring. Thus, the children considered in the present paper are influenced by the literacy focus of Every Student Succeeds Act (ESSA, 2015) which states as one of its purposes “to improve student academic achievement in reading and writing … [and] to … ensure high-quality comprehensive literacy instruction for students most in need” (ESSA, 2015, Subpart 2--Literacy Education for All) in early childhood settings. Time can also relate to micro- and meso-systems. At a microsystems level, time can relate both to the temporal consistency of preliteracy opportunities and the relative timing of skill acquisition for students with visual impairments when compared to their peers with typical vision. As it is recommended that time be viewed longitudinally (Tudge, Mokrova, Hatfield, & Karnik, 2009), the time constraints of the current studies prevent the use of time as a variable.

The next property of the bioecological model is the context. This refers to the various settings which the developing child occupies, the social relationships occurring in these places, as well as the nesting of these environments in the greater cultural and societal settings (Bronfenbrenner & Morris, 2006). The main contexts that influence the growth of preliteracy skills are home, daycare, and preschool and the influences inherent to these localities. These will be considered in greater depth in the section “Emergent Literacy Environments.”
The final two tenets of the bioecological theory will be considered together as they are interrelated. These are proximal processes and person characteristics. Proximal processes, characterized as fundamental to bioecological theory (Tudge et al., 2009), refer to interactions between a person and another person, object or symbol (Bronfenbrenner & Morris, 2006). These relate uniquely to the person and their interaction partner and the frequency with which these interactions occur. Person characteristics include biological and psychological traits and resources that can promote or disrupt development (Bronfenbrenner & Morris, 2006). A visual impairment is a person characteristic that has been found to influence the development of various skills in early childhood as well as altering the proximal processes inherent to the interactions of those caring for the child. The specific ways that this influences emergent literacy are discussed later in the section titles “Individual Factors.”

**Individual Factors**

Developmental patterns related to preliteracy skill development for children with visual impairments begin in infancy and follow two main paths. The first path relates to oral language development. The second relates to attention and engagement skill development. These paths are not wholly independent of each other but are conceptualized in this manner as these early skills have been found to relate to later preliteracy indicators (see the conceptual framework, Figure 1.1).

**Oral language development.** Researchers have studied oral language development in infants with visual impairments from early infancy (Reynell, 1978; Rogers & Puchalski, 1984). Reynell (1978) observed differences in response to auditory inputs in infants with visual impairment or no vision even from the earliest observational assessments. These person-characteristic differences in receptive language persisted in all ages of children with visual
impairments assessed in her study. Similarly, N. J. Dale and Sonksen (2002) conducted global developmental assessments of 69 children with visual impairments or blindness at two distinct time points during the period from birth to age five. Despite early evidence of typical development, greater proportions of this sample were delayed in the subsequent assessment.

**Social communication.** Differences have been observed in early social interactions between infants with visual impairments and their mothers and infants of similar age with typical vision and their mothers (Rogers & Puchalski, 1984). Rogers and Puchalski (1984) observed the interaction of infants and toddlers aged 4 to 25 months with visual impairments, blindness, or
typical vision with their mothers. When compared with the control group of children without visual impairments, infants with visual impairments or blindness vocalized less and interacted less with their mothers. Social communication differences persist into toddlerhood, with visually impaired children talking less to their mothers in free play (Kekelis & Prinz, 1996), and engaging in less overall communication with their mothers than typically sighted peers (Sapp, 2001), with greater social communication challenges occurring in children with more severe visual impairments (N. J. Dale, Tadić, & Sonksen, 2014). This demonstrates how a proximal process (Bronfenbrenner & Morris, 2006), in this case, the frequency of social interaction, was impacted by unique person characteristics related to the presence of visual impairment.

**Expressive language.** Given these differences in social communication, it would be natural to anticipate an impact on expressive language development. Deviations and delays in language development are meaningful because oral language has been identified as an important variable in later literacy development (National Early Literacy Panel (NELP), 2008). Indeed, expressive language development has been studied repeatedly in children with visual impairments (E. S. Anderson, Dunlea, & Kekelis, 1984; Bigelow, 1987; Ferrell et al., 1990; McConachie, 1990; McConachie & Moore, 1994). Although some researchers have found that children with visual impairments are not necessarily delayed (Bigelow, 1987; Ferrell et al., 1990), this finding has been limited to case studies (Bigelow, 1987; sample size of 3) or a proportion of the sample (Ferrell et al., 1990; children with visual impairments and no additional disabilities used two-word phrases earlier than typical peers, but only 15/39 children were reported to have achieved this milestone). Qualitative differences in the early use of words have likewise been observed (E. S. Anderson et al., 1984; Bigelow, 1987; McConachie, 1990; McConachie & Moore, 1994). These include difficulty using words symbolically (McConachie
& Moore, 1994), expressive language use in advance of understanding (McConachie, 1990), and a reduction of extending or overextending words (E. S. Anderson et al., 1984; Bigelow, 1987).

**Oral language development and phonological awareness.** Oral language development is also important as it serves as a prerequisite skill for the development of phonological awareness. In correlational research, language scores at age three have been associated with the phonological skills of rhyming and blending at age five for children with and without a family history of language impairment (Flax et al., 2008). Similarly, D. H. Cooper, Roth, Speece, and Schatschneider (2002) found in a regression analysis that kindergarten oral language explained 42% of the variance in phonological awareness in second grade. Thus, challenges in oral language can have a long-term impact on the development of literacy skills. Although these studies did not include children with visual impairments, they provide insight on the importance of oral language development for reading development.

**Phonological awareness.** In contrast to the lack of empirical connection between oral language and phonological awareness among this population, phonological awareness itself has been researched in children with visual impairments. A literature search revealed seven studies that have evaluated phonological awareness skills in individuals with visual impairments, one evaluated adolescents (Veispak, Boets, & Ghesquière, 2013), and four focused on children in the age range of five to 15 (Dodd & Conn, 2000; Gillon & Young, 2002; Greaney & Reason, 1999; Tobin & Hill, 2012). These five studies found mixed results. Two found that children with visual impairments performed at or above the level of their age-matched peers in phonological awareness (Greaney & Reason, 1999; Veispak, Boets, & Ghesquière, 2013). The three remaining studies found that as a group, children with visual impairments tended to struggle with phonological awareness tasks. Dodd and Conn (2000) found that braille readers struggled more
than print readers with non-word reading, non-word spelling, and counting phonemes. Gillon and Young (2002) and Tobin and Hill (2012) found that phonological awareness correlated strongly with reading accuracy and comprehension, skills that students with visual impairments have been found to struggle with in other studies (Bosman et al., 2006; Douglas et al., 2002; Edmunds & Pring, 2006).

Two studies examined phonological awareness skills in younger children with visual impairments. The first of these, by Barlow-Brown and Connelly (2002), looked at 31 children age 3-9 years old with no functional vision who “were about to or had just started school” (Barlow-Brown & Connelly, 2002, p. 261). These students were grouped by their braille ability with one group for those who recognized at least one word in braille, those who recognized no words but some letters, and those who recognized no letters in braille. The group that could read words was found to be statistically different in age (older) than the group that could recognize no letters. Phonological awareness was found to correlate with decoding skill. Thus, children who could read one or more words also performed best on phonological awareness tasks and those who knew no letters performed worst. The authors interpreted this to mean that alphabet knowledge was a prerequisite skill for developing phonological awareness. It seems equally plausible, however, that the oldest children had the most exposure to braille (a necessity for learning braille letters or words) prior to school may also have received the most preliteracy experiences with phonological awareness and may have had the most interest in preliteracy activities.

The second study of phonological awareness in young children with visual impairments was conducted by Hatton, Erickson, and Lee (2010). These researchers evaluated the performance of 26 four- to seven-year-old children on four phonological awareness tasks. Each
child was administered 60 minutes of assessment including the following areas: sound isolation, syllable segmentation, sound segmentation, and letter-sound knowledge. The authors reported that the percentile scores for the children who completed the subtests were within the normal range from the standardization sample, therefore demonstrating that phonological awareness may be comparable to peers without visual impairments. This is inconsistent with the reported numbers of children demonstrating basic or proficient levels of performance. The authors reported that four children were unable to complete any items on any of the assessments and did not include them in the analysis despite there being no other rationale for their exclusion. Given that there was no difference between the children who were unsuccessful on all measures and those who were able to complete at least one assessment, it can be concluded that 13/26 (not 13/22 as originally reported) children received basic or proficient scores in syllable segmentation, 15/26 children demonstrated basic or proficient performance in sound isolation, 7/26 children scored in the basic or proficient range in sound segmentation and 10/26 were found to have basic or proficient skill in letter-sound knowledge. This indicates that the majority of the children evaluated demonstrated phonological awareness difficulty in one or more assessments.

Challenges in phonological awareness and oral language are important because these two variables have been found to relate strongly to later reading accuracy and comprehension (NELP, 2008; Storch & Whitehurst, 2002).

**Attention and engagement.** Oral language and phonological awareness represent only one of the paths important to the development of preliteracy skills in children with visual impairments. The other path, attention, like oral language development, has its roots in early infancy. Attention is an important proximal process in a bioecological framework as Bronfenbrenner and Morris (2006) indicated that “the focus of attention …[is] closely related to
the developmental outcome” (pp. 813-814). Rogers and Puchalski (1984) studied the interactions of 21 mothers with children with visual impairments ranging in age from 4 to 25 months old, and 16 mothers with children with typical vision ranging in age from 4 to 31 months old. These authors found that children with visual impairments were less likely to respond to initiations from their mothers, and less likely to initiate interaction with their mothers. This was noted not only in the data of individual participants but also as a group. Only 8 of 21 toddlers with visual impairments initiated interaction whereas 15 of 16 children from the control group initiated interaction with their mothers. These results are important to the development of attention as research suggests that attention starts with orienting attention to an auditory or visual stimulus, followed by social engagement behavior (Salley et al., 2016). The failure of these toddlers to orient and socially engage with their mothers, the primary caregivers suggests that the presence of visual impairment, a person characteristic (Bronfenbrenner & Morris, 2006), interferes with early attention behavior.

This pattern is corroborated by the findings of Tadić, Pring, and Dale (2009) in their study examining the differences in how children with typical vision, low vision (Severe Visual Impairment or SVI), and no functional vision (light perception or worse, Profound Visual Impairment or PVI) from 10 – 56 months in age perform on three different attention tasks. A sample of 16 children with PVI and 16 children with SVI, were recruited through a vision clinic, and 17 sighted peers were recruited through churches, day-cares, and parent-toddler groups. These children were given a developmental assessment, then videotaped in playing with an adult in pre-planned structured play. These videos were then analyzed and coded to evaluate the responses of the child in joint attention tasks: establishing joint attention, maintaining attention, and switching attention to a new object. Correlational and ANOVA analyses were
conducted to determine relationships between vision and attention behaviors, and between vision, attention behaviors, and the presence or absence of developmental delay. The authors wondered if congenital visual impairment was related to attention skill deficits, and if so, did skill deficits increase with the severity of vision loss or related to cognitive ability. Attention scores were significantly lower for both groups of children with visual impairments, this was despite the group of sighted children being significantly younger. This suggests that a comparison with true age-matched peers might yield even greater differences. The authors evaluated whether additional developmental delays (also called cognitive ability by the researchers) accounted for the differences and found that attention challenges were common among those children with visual impairments regardless of additional delays, though perhaps more pronounced among children with developmental delays.

Attention challenges have been found to persist as children grow (Bardin & Lewis, 2008, 2011). Bardin and Lewis (2011) asked teachers of children in grades 3-12 who used braille as their only writing media in regular education language arts classes to complete a student participation questionnaire on the student with a visual impairment, a low-achieving sighted peer and an average-achieving sighted peer from the same class. Findings indicated that students with visual impairments were much more inattentive than average-achieving peers and had the highest level of inattention between the three groups (p = .001). Thus, students with visual impairments continue to experience more difficulty with attention than peers with typical vision.

**Attention and development of emergent literacy skills.** Attention challenges impact the development of preliteracy skills in preschool children with typical vision in two ways. The first of these is through manifestation as reduced interest in literacy tasks (Baroody & Dobbs-Oates, 2011; Hume, Allan, & Lonigan, 2016). The second way is through its impact on
preliteracy skill development (Hume et al., 2016; Lonigan, Bloomfield, et al., 1999; Sims & Lonigan, 2013; Walcott et al., 2010). Although both mechanisms have empirical evidence, they are not entirely independent, as interest itself is related to preliteracy skills (Storch Bracken & Fischel, 2008). It should further be noted that although it seems likely that children with visual impairments experience similar challenges, research on the influence of inattention on the development of emergent literacy has not been conducted on children with visual impairments.

**Attention and interest.** Inattention influences the amount of interest that preschool children have in preliteracy learning (Baroody & Dobbs-Oates, 2011; Hume et al., 2016). Baroody and Dobbs-Oates (2011) used a variety of sources to determine how child behavioral characteristics influence interest in literacy. These researchers had parents of 61 children complete surveys on their child’s interest in reading and their expectations for their child in reading. Teachers completed two behavioral assessment scales on the same children. This data was analyzed to determine correlations. Literacy interest was negatively related to attention problems or inattention. This correlation is important because children’s interest in reading has been found to be significantly related to print knowledge, early writing skills, phonemic awareness, receptive vocabulary and letter knowledge (Storch Bracken & Fischel, 2008). Further, interest in preliteracy has been found to explain a portion of the variance in letter knowledge (Storch Bracken & Fischel, 2008).

This research has focused on children with typical vision, analogous research connecting literacy interest and the level of attention has not been conducted on children with visual impairments. Extant evidences offer conflicting conclusions as to whether a similar relationship may exist in children with visual impairments. Herzberg et al. (2017) found that 65% of 6-18-year-old students with dual literacy media instruction in print and braille were somewhat or very
motivated in print while only 60% were somewhat or very motivated in braille. Yet Bardin & Lewis (2011) found that motivation levels were equal among braille-reading students and their average- and low-achieving peers.

**Attention and preliteracy skill development.** Researchers have also evaluated the direct influence that attention or inattention has on the development of emergent literacy skills (Hume et al., 2016; Lonigan, Bloomfield, et al., 1999; Sims & Lonigan, 2013; Walcott et al., 2010). These researchers have found that teacher ratings of inattention negatively correlate with phonological awareness (Sims & Lonigan, 2013), definitional vocabulary (Sims & Lonigan, 2013), and initial sound fluency (Walcott et al., 2010). However, teacher ratings of inattention have been found to have the strongest negative correlation with print knowledge (Sims & Lonigan, 2013), and letter naming (Walcott, et al., 2010). These are both print-related skills. For learners with typical vision, inattentiveness appears to function to reduce the exposure to print stimuli, thus hindering the development of these skills. As children with visual impairments have been found to be more inattentive than their peers with normal vision (Bardin & Lewis, 2011; Tadić et al., 2009), it seems likely that they would experience similar impediment in the development of print- or braille-related skills.

**Preliteracy Model**

As has been suggested in the studies cited above, preliteracy in sighted children is frequently conceptualized as comprised of three main components: oral language, phonological awareness, and print knowledge (Lonigan, 2006; Sénéchal, LeFevre, Smith-Chant, & Colton, 2001; Sims & Lonigan, 2013). Similarly, the ten variables identified by the National Early Literacy Panel (NELP, 2008) as predictive of reading success can be grouped into these categories: Oral Language—oral language, rapid automatic naming of objects and colors;
Phonological Awareness—phonological awareness, phonological short-term memory; Print Knowledge—alphabet knowledge, concepts about print, rapid automatic naming of letters and digits, writing/writing name, visual perception, and print awareness.

Erickson and Hatton (2007), researchers in the emergent literacy development of young children with visual impairments, suggest that the limited empirical evidence available points to these same components as foundational for the development of literacy in children with visual impairments. Thus, the conceptual framework posits that difficulties with atypicality in the development of oral language for preschool children with visual impairments lead to challenges in phonological awareness. These two components serving as markers of preliteracy skill development. Attention challenges, like those found in children with visual impairments, function to reduce interest in print and produce lags in the development of print-based skills and knowledge. Therefore, the person characteristic of visual impairment and the related deviations in proximal processes seem to predispose these children to preliteracy skill delays. The context component of bioecological theory (Bronfenbrenner & Morris, 2006) is also important to consider in order to understand the emergent literacy development of preschool children with visual impairments.

**Emergent Literacy Environments**

The successful development of oral language, phonological awareness, and print knowledge occurs, as suggested by bioecological theory (Bronfenbrenner & Morris, 2006), as a result of interaction between the person factors and context. For children five-years-old and younger, these contexts relate to the people and places most familiar to them. These are typically the parent-child relationships in the home and teacher-child relationships in early childhood settings, such as daycare and preschool classes.
Home Literacy Environment

The home literacy environment has been conceptualized as conditions, supports, materials, and actions that facilitate the development of literacy skills in home and community settings (Carlson, Bitterman, & Jenkins, 2012). These can include the number and availability of literacy materials appropriate to the child, the extent to which reading and writing are valued in the home, and barriers to the development of literacy. The home literacy environment has been found to correlate with child literacy interest (Dobbs-Oates, Pentimonti, Justice, & Kaderavek, 2015), and may lead to varied outcomes for children of different income levels and disabilities (Carlson et al., 2012).

One of the first studies to attend to the home literacy environment of preschool children with visual impairments was a home literacy survey of families with at-risk preschool children attending early childhood classrooms (Marvin and Mirenda, 1993) (this study also considered other disabilities). Samples from three populations were compared using $\chi^2$ statistic: children from low socioeconomic status (SES) who attended Head Start (112 surveys returned), children with disabilities (151 surveys returned), and peer models from the early childhood special education class that the surveyed children with disabilities attended (28 surveys returned). Marvin and Mirenda found that children with disabilities from the sub-sample with visual impairments were less likely to be seated next to an adult or in their lap when an adult was reading a story, and less likely to be able to choose their own book. It is of note that both the children with disabilities and the children from lower socio-economic status were less likely to engage in all types of child writing activities identified in the survey, and engaged less frequently in prewriting activities. These findings suggest that children with visual impairments may have fewer opportunities to learn and practice literacy skills than their peers with typical vision.
These findings were corroborated in the study by Craig (1996). Craig surveyed parents of young children (birth-age 8) with visual impairments who were affiliated with an organization for individuals with visual impairments on their home literacy experiences. He found that potential braille readers and potential print readers experienced different preliteracy opportunities. Children who were likely to be print readers were more likely to choose the book that was read to them (75%) than potential braille readers (35%). Yet both groups chose their books less often than the children in Marvin and Mirenda (1993), who reported that 89.7% of children (including typically developing children and children with disabilities) chose their own books. Craig also noted a level of engagement in writing activities that was lower than that of Marvin and Mirenda. Perhaps the most telling finding was that children with visual impairments were not consistently demonstrating awareness that reading and writing were occurring in their environment. Although these findings may be partially explained by reduced interest in literacy activities, they are also likely indicative of reduced opportunities.

Reduced opportunity to practice preliteracy skills appears to be an issue for some low-achieving braille learners in the ABC braille study, a study of braille learners with no additional disabilities. Kamei-Hannan and Sacks (2012) interviewed 31 parents of children in this study and found that although both high achieving and low achieving braille learners may have an adult in their home who knew at least alphabetic braille, one of the few differences between low-achieving students and high-achieving students was access to braille books at home. Low achieving braille learners were less likely to own their own books.

This finding quantitatively agrees with one of the points that Craig (1999) arrived at in a qualitative study of home literacy experiences, that children with visual impairments engage more in reading activities when they can relate to the book. This was accomplished in the home
described using tactile books. Craig further suggested that home-school partnerships could ameliorate home literacy challenges for children with visual impairments.

**School and Teacher Factors**

**Early intervention.** Children with visual impairments and their families may work with a variety of teachers including teachers of students with visual impairments. The first relationship that many parents of children with visual impairments have with a teacher of students with visual impairments (TVI) is in early intervention. Early intervention refers to services provided in natural environments through part C of the IDEA (2004) for infants and toddlers from birth through the third birthday. These services typically occur in the home or day care of the child. Erickson, Hatton, Roy, Fox, and Renne (2007) qualitatively evaluated how two early intervention providers worked with families to facilitate preliteracy development in children with visual impairments age zero through the third birthday. Erickson et al. read the field notes that participant observers took in weekly visits to families of young children with visual impairments over a period of eight weeks. These notes were coded through deductive and inductive coding of adult and child behaviors. Through this process, these authors arrived at three themes describing how these early intervention providers promoted preliteracy in these very young children. The first of these themes was working with the strengths and weaknesses of the child and family, thus the provider modeled difficult skills, but encouraged continued participation in things that promoted literacy that the family may have already been doing. The second theme, development of concepts and language skills referred to educating parents of ways in which their child’s visual impairment interfered with language and gaining concepts that most children learn visually. Finally, the third theme was a focus on sensory development. Children with visual impairments often need support to develop tactile and fine motor skills as well as
listening comprehension skills to compensate for the lack of vision. These areas then can guide early preliteracy growth. Early intervention home visits then serve to help parents facilitate growth in domains adversely impacted by their child’s visual impairments, potentially reducing the effect of these impairments on development.

**Preschool challenges for students with visual impairments.** As children with visual impairments transition to preschool age, they typically begin to receive services in the classroom. Often this necessitates the introduction of additional teachers. These teachers are not necessarily trained in the education of students with visual impairments and may be reticent about working with students with visual impairments (Sharma et al., 2010). Even when teachers are not reticent, classes are generally designed for the learner to receive instruction visually, thus the student with unique visual challenges may not receive the same opportunities to develop preliteracy skills as their typically sighted peers.

**Teacher reticence.** Teacher reticence is attributable to societal views of visual impairment and blindness. As Jenks (2005), a communications researcher, observed after studying her interactions with other parents of children with visual impairments, “the primary reasons blindness is treated as a significant difference in social interaction are because sighted people do not have a lot of contact with visually impaired individuals, because sighted people do not exactly understand visual impairment, because sighted people are scared of blindness, and because sighted people set the rules of interaction" (Jenks, 2005, pp. 153-154). This observation is borne out in survey research conducted by Wall (2002). He found that teachers in general education settings who have no experience working with students with visual impairments tend to show more resistance to the students’ placement in less restrictive placements, such as the general education classroom, than teachers who have had experience with students with visual
impairments (Wall, 2002). These findings concur with those of preservice teachers who were much calmer in their attitude about individuals with visual impairments after experience with them (Ajuwon, Sarraj, Griffin-Shirley, Lechtenberger, & Zhou, 2015). Thus, as visual impairments are a low incidence disability, people have little experience with them. This lack of experiences can lead to a lack of understanding and reticence.

**Opportunity to learn preliteracy skills in the classroom.** Lack of teacher understanding of preliteracy needs of children with visual impairments may be evidenced in the teachers’ failure to use appropriate strategies for learners with visual impairments in classroom settings. McDonnell et al. (2014) used survey research to evaluate the implementation of appropriate preliteracy development strategies for students with various disabilities who attended Head Start classrooms. The sample of teachers who responded indicated a higher level of education than that typically found in Head Start teachers. Despite this potential advantage, less than 1% of these teachers reported using strategies for children with visual impairments on a daily basis even though they reported that 7.5% of the children that they served had visual impairments. Thus, opportunities for instruction and learning were reduced for students with visual impairments in these classrooms.

Lack of opportunity is not only present in classrooms designed for students who are typically developing. McKenzie (2009) examined the emergent literacy supports afforded by seven classrooms serving children (age 3-22 years) with visual impairments or deaf-blindness. Although six of the classrooms examined were designed specifically for students with visual impairments, McKenzie reported that the placement and type of labeling used to enrich the environment and other literacy supports used to make it a print-rich environment were often not accessible to the students. The types of instructional supports reported and observed and the
absence of literacy specific goals on individualized education programs also limited literacy learning opportunities. McKenzie concluded that these classrooms showed a lack of necessary curricular adjustments and environmental changes necessary to truly promote preliteracy skill development. Thus, students who enter school with delays in preliteracy skills may be further deprived by the lack of opportunity in their school environment.

**Curricular expectations.** Finally, teachers who desire to promote literacy and strive to promote literacy opportunities in the classroom may be thwarted by materials created to promote the growth of children with visual impairments. The Oregon Project For Visually Impaired & Blind Preschool Children (Oregon Project, S. Anderson, Boigon, Davis, & DeWaard, 2007), a skills inventory intended to guide the selection of appropriate goals, diverges from the Utah Early Childhood Core Standards (Utah State Office of Education, 2013) in key skills related to English and Language Arts. The core standard in print concepts for the end of preschool states that the child should “recognize print in everyday life, such as numbers, letters, one’s name, words, familiar logos and signs” (Utah State Office of Education, 2013, p. 28), yet the related vision skills four- to five-year-old children in the Oregon Project suggests that the child match “2 or 3 letters or numbers” (S. Anderson et al., 2007, p. 42). Matching is generally accepted to be a prerequisite skill to pointing to or naming, skills generally included in the term recognize. The skill discrepancy is even greater for braille learners. The compensatory skills area of the Oregon Project fails to expect the child to even match braille symbols, let alone name any braille letters. A similar omission occurs in the area of phonics and word recognition. The core standard expects children to “begin to associate names of letters with sounds of the alphabet” (Utah State Office of Education, 2013, p. 32), yet there is no mention of letter-sound association in print or braille in the Oregon Project. Thus, if the teacher uses this as a guide for potential braille learners, they
will be at a deficit in their alphabet knowledge from their typical peers.

Challenges for teachers in providing for students with visual impairments, and for children with visual impairments to learn emergent literacy skills exceed those of typical peers. Inconsistencies in expectation make it difficult for the teacher to gauge adequate progress. Further, successful adaptations to the classroom environment are difficult even for teachers of students with visual impairments to successfully accomplish, and many teachers do not even have experience with people with visual impairments. These factors may impede the progress of preschool children in acquiring preliteracy skills.

**Conclusion**

Preliteracy delays in children with visual impairments are a serious concern as performance gaps in reading tend to widen over time (Douglas et al., 2002). Children with visual impairments are vulnerable to emergent literacy lags due to a variety of factors related to the presence of their visual impairment. These include developmental variation in oral language development (Rogers & Puchalski, 1984) and greater difficulty in attending to materials as directed by an adult (Tadić et al., 2009). These initial challenges then impede the development of further emergent literacy skills, including phonological awareness and print knowledge, increasing the likelihood of delays. Thus, children may present with deficits in these areas upon school entry. Preliteracy deficits for children with visual impairments are then potentially compounded by teacher reticence, curricular confusion, and inadequate environmental accommodations. Understanding how factors identified in the literature are functioning in the preschool setting will facilitate better interventions for these children.
Emergent literacy is often conceptualized as a compilation of oral language, phonological awareness or metalinguistic skills, print concepts, and alphabet knowledge (Erickson & Hatton, 2007b; Sénéchal et al., 2001). The National Early Literacy Panel (NELP, 2008) identified these factors as predictive of reading success. My school district, a large district comprised of urban and suburban areas in the western United States, has assessed the development of preschool children attending district preschool classes in these areas for the last several years to gauge the effectiveness of instruction and to adjust instruction in specific classes to facilitate growth.

Review of the scores of selected students with visual impairments on these assessments seemed to reveal discrepancies between the preliteracy scores of students with visual impairments and the scores of their peers with typical vision. Based on these observations, I reviewed empirical literature on young children with visual impairments and conducted observation in context.

**Introduction**

A review of the literature on the literacy development of children with visual impairments indicates that children with visual impairments tend to demonstrate delays in preliteracy skills, such as receptive and expressive language (Reynell, 1978) and phonological awareness (Tobin & Hill, 2012), followed by subsequent delays in reading (Lusk & Corn, 2006). Research indicates that some of the factors involved in delays in the development of literacy skills include: developmental differences in oral language development (Moore, & McConachie, 1994) and attention/engagement specific to children with visual impairments (Tadić et al., 2009), lack of accessible opportunities in the home (Craig, 1996) and school environments (McKenzie, 2009), and teacher reticence (Ajuwon et al., 2015).

Observations in the district preschool classrooms attended by children with visual
impairments revealed some of these same factors in my context. Preschool children with visual impairments appeared to struggle with attending to teacher-directed activities, and teachers inconsistently provided students with visual impairments opportunities to develop preliteracy skills. It was hypothesized that perhaps teachers did not understand the nature of the visual impairment, thus failed to provide literacy opportunities. Other factors, such as opportunities in the home, could not be studied through classroom observations. As a full understanding of the factors influencing preliteracy development for preschool children with visual impairments in my school district could not be achieved through field observations, a needs assessment was conducted to empirically examine factors identified through the literature review and field observations.

**Goals and Objectives**

The purpose of this needs assessment was to examine the development of preliteracy skills by students with visual impairments attending preschool in my school district and the prevalence of factors related to the development of these skills as indicated through observation and empirical research. This study was guided by the following questions:

1. How does the performance of preschool children with visual impairments vary from peers within their classes, within like placements, and within the school district’s preschool program on pre-literacy components (Oral Language, Phonological Awareness, Book Awareness, Print Knowledge, and Alphabet knowledge) of the school district’s curriculum-based assessments?

2. How does the attention and engagement of students with visual impairments compare with that of peers without visual impairments?
3. How does the preliteracy interest of preschoolers with visual impairments compare with that of typically sighted peers?

4. To what extent are children with visual impairments afforded accessible opportunities to develop preliteracy skills in home and preschool environments?
   
   4a. How do home opportunities differ from those of peers without visual impairments?

5. To what extent do preschool teachers understand visual impairments, their implications, and appropriate strategies to use with preschool children with visual impairments?

6. To what extent is teacher reticence with respect to preschool children with visual impairments present in my school district?

The intent of these questions was to isolate specific areas in which preschool children with visual impairments are experiencing success or challenges in developing emergent literacy. Similarly, this study evaluated the extent to which home environments are supporting literacy development for these children. Finally, this study determined whether the preliteracy needs of students with visual impairment were understood and accommodated for by the procedures in place in the district preschool at the time of this needs assessment.

**Methodology**

**Participants**

The focus of this study was on the preliteracy skills of preschool students with visual impairments. To facilitate this understanding this study included the children themselves and people who influence the preliteracy outcomes for preschool children with visual impairments who attend preschool in my school district. Participants in this study included preschool students, including both children with visual impairments and their peers with typical vision, preschool
Table 2.1

District-wide demographic information by year.

<table>
<thead>
<tr>
<th>School Year</th>
<th>Hispanic</th>
<th>American Indian</th>
<th>Asian</th>
<th>African American</th>
<th>Pacific Islander</th>
<th>White</th>
<th>Mixed Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2014</td>
<td>32%</td>
<td>1.5%</td>
<td>4.3%</td>
<td>3.2%</td>
<td>3.7%</td>
<td>54.8%</td>
<td>0.6%</td>
</tr>
<tr>
<td>2014-2015</td>
<td>32.3%</td>
<td>1.5%</td>
<td>4.2%</td>
<td>3.4%</td>
<td>3.9%</td>
<td>54%</td>
<td>0.6%</td>
</tr>
<tr>
<td>2015-2016</td>
<td>33%</td>
<td>1.4%</td>
<td>4.3%</td>
<td>3.6%</td>
<td>4.1%</td>
<td>52.9%</td>
<td>0.8%</td>
</tr>
<tr>
<td>2016-2017</td>
<td>33.9%</td>
<td>1.4%</td>
<td>4.3%</td>
<td>3.7%</td>
<td>4.1%</td>
<td>51.7%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Note. Data from Utah Board of Education (2009-2016).

teachers and assistant teachers, and parents of preschool children. Secondary data from district-wide curriculum-based assessment of preschool skills was also obtained and analyzed.

Preschool students across the district. Secondary data was available from the assessment on all students who attended the district preschool program in the 2013-2014 (n=2,739), 2014-2015 (n=2,635), and 2015-2016 (n=2,620) school years, and from the pre- and mid-year assessments in the 2016-2017 (n=2,788) school year. Likewise, information from district-wide curriculum-based assessment was also gathered for those students receiving vision services or accommodations. Unfortunately, demographic data was not available to me for these specific students. However, district-wide demographics for those years can be seen in Table 2.1. This data show increases in in the percentages of children from Hispanic, African American, Pacific Islander, and mixed racial backgrounds, with corresponding decreases in the percentage of students who are white.

Preschool students with visual impairments and their parents. Parents of students receiving vision services or support who attended the district preschool program in 2016-2017 were asked to consent to their children being observed in teacher directed activities and to complete a survey of home literacy practices. Surveys were distributed to the parents of 13 children with visual impairments, of these 9 were returned, for a return rate of 69%. Although all
parents who returned the survey consented to observations, some of the surveys and parent consent forms were returned too late for observations to be conducted (i.e. on the child’s last day of school). Thus, a total of three children (two boys, one girl) with visual impairments were observed in regular preschool classes. Four children with visual impairments (two boys, two girls) were observed in preschool classes for just children with disabilities. Children with visual impairments participating in these observations displayed best-corrected acuities ranging from 20/60 to light perception. Vision diagnoses for these children included cortical visual impairment (n=3; 2 with additional visual impairments), aniridia (n=1, 1 with additional visual impairments), myopia (n=4, 4 with additional visual impairments), cataracts (n=1, 1 with additional visual impairments), aphakia (n=1, 1 with additional visual impairments), glaucoma (n=2, 2 with additional visual impairments), exotropia (n=3, 3 with additional visual impairments), esotropia (n=2, 2 with additional visual impairments), amblyopia (n=1, 1 with additional visual impairments), astigmatism (n=2, 2 with additional visual impairments), and nystagmus (n=2, 2 with additional visual impairments). The physiological and educational implications of these diagnoses are discussed in Table 2.2. Multiple diagnoses were present for most of these children.

Table 2.2

<table>
<thead>
<tr>
<th>Vision diagnosis information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
</tr>
<tr>
<td>Amblyopia</td>
</tr>
<tr>
<td>Aniridia</td>
</tr>
<tr>
<td>Aphakia</td>
</tr>
<tr>
<td>Astigmatism</td>
</tr>
<tr>
<td>Cataracts</td>
</tr>
<tr>
<td>Cortical Visual Impairment (CVI)</td>
</tr>
<tr>
<td>Esotropia</td>
</tr>
</tbody>
</table>
Exotropia types of strabismus or muscle imbalance. Strabismus can be caused by problems with the eye muscles themselves or with the way the brain controls eye movement (TSBVI, 2015). Use the eyes together, making binocular vision more difficult. This, in turn, impacts depth perception and hand eye coordination. Students may need vision efficiency training (TSBVI, 2015).

Glaucoma Glaucoma is an eye disease in which the pressure in the eye is increased due to blockage impeding the normal flow of aqueous humor (the fluid in the front of the eye). If untreated this can lead to blindness. (Bishop, 1986; TSBVI, 2015) Depending on how quickly the glaucoma was treated, appropriate educational accommodations may include breaks in highly visual tasks, increased contrast, reduced glare, visual efficiency training, and instruction in braille and tactile learning (TSBVI, 2015).

Myopia Myopia, or near-sightedness, is a refractive error in which the image is formed in front of the retina, causing a blurry image. This is due to the eye being elongated (Bishop, 1986). Although most simple myopia can be treated with corrective lenses, high myopia and degenerative myopia can often not be fully corrected and carry increased risk of additional visual problems (TSBVI, 2015). Preferential seating at the front of the class, good lighting, reduced glare (TSBVI, 2015).

Nystagmus Nystagmus is involuntary movements of the eye. These movements can be horizontal, vertical, circular, or mixed (TSBVI, 2015). Nystagmus is often seen in conjunction with other visual diagnoses. To compensate for nystagmus a child may tilt or turn his or her head to utilize the null point or place with the least movement. Nystagmus may impact a child’s ability to follow a row of print and may increase the visual fatigue when tasks are very visual (TSBVI, 2015).

Preschool students who attended a preschool class with a child with a visual impairment and their parents. A second group sampled in this needs assessment was children who attended a preschool class with a peer who had a visual impairment. Parents of these children were asked to provide consent for their child to be observed and to participate by completing questionnaires regarding home literacy. Surveys were completed by parents (15
mothers, two fathers, one grandmother, and three unidentified) and returned for 25 children (11 boys, 14 girls). This represented a return rate of approximately 33.3%. Five children with typical vision (three boys, two girls) were observed as a comparison to a student with a visual impairment in regular preschool classes. Similarly, five children without visual impairments (two boys, three girls) were observed in preschool classes for just children with disabilities.

**Preschool teachers and assistant teachers.** The final participant group included preschool teachers and assistant teachers. All lead preschool teachers (five females, one male) and assistant teachers (12 females, two male) who had a student with a visual impairment in their class were asked to complete questionnaires. All lead and assistant teachers with a student with visual impairments currently in their class returned their surveys. Additionally, lead teachers of preschool classes attended by children without known visual impairments were asked to complete surveys. In total 40 teachers or assistant teachers (five males, 35 females) of a possible 84 participated representing a return rate of 47.6% (see Table 2.3). Teachers ranged in age from 20 to 67 years of age and in time spent in the preschool department from less than one year to 22 years. Teachers varied in education. Some indicated that their highest level of education was a high school diploma and a child development associates’ certification (CDA), the minimum required of a lead preschool teacher in this school district, yet other teachers had bachelor’s degrees, and one teacher had a master’s degree. Teachers who had current students with visual impairments were similar to those who did not have a child with a visual impairment in age and schooling.
Table 2.3

Demographic information of preschool teachers.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Gender</th>
<th>Mean age</th>
<th>Mean years of experience</th>
<th>Schooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers with a current student(s) with VI</td>
<td>20</td>
<td>M</td>
<td>3</td>
<td>43</td>
<td>H.S. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>S.C. 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B. 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M. 1</td>
</tr>
<tr>
<td>Teachers with a previous student(s) with VI</td>
<td>9</td>
<td>M</td>
<td>0</td>
<td>47</td>
<td>H.S. 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>S.C. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B. 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M. 0</td>
</tr>
<tr>
<td>Teachers who have never taught a student with VI</td>
<td>11</td>
<td>M</td>
<td>2</td>
<td>43</td>
<td>H.S. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>S.C. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B. 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M. 0</td>
</tr>
</tbody>
</table>

Note. Means were calculated based on the number of respondents providing an answer. Age was left blank by 3 respondents, number of years in preschool was left blank by 3 respondents. Abbreviations: From the column gender: M=male, F=female. From the column schooling: H.S.=high school, S.C.=some college, B.=bachelor’s degree, M.=master’s degree

Measures

This study evaluated multiple facets of preliteracy development for children with visual impairments and factors involved in facilitating this growth. Key variables predictive of reading success (NELP, 2008) evaluated in this study included oral language, phonological or phonemic awareness, print concepts, and alphabet knowledge. Additionally, other factors indicated as necessary to emergent literacy development were also studied including the attention and engagement of the child, the child’s preliteracy interest, parent perspectives and priorities related to preliteracy, home literacy opportunities, teacher understanding of preliteracy for children with visual impairments, classroom literacy opportunities, and teacher reticence. The definitions of these constructs and measures utilized to collect this data will be discussed as they relate to the research questions.
**Research question 1.** The first research question evaluated the similarities and differences in performance of preschool children with visual impairments and their peers on pre-literacy components (Oral Language, Phonological Awareness, Alphabet knowledge, and Book Awareness/Print Knowledge) of the school district’s curriculum-based assessments (CBAs). These assessments differ based on the child’s age on September 1st. Thus, older children who have attended district preschools since their third birthday have no advantage based on re-test of identical items. The preschool department developed this assessment to assess progress of students in the program based on the state standards. After initial development, the team that developed the assessment conferred with experts in early childhood development and reading development to establish content validity. Items on each subsection are similar to items measuring these constructs in other research. Cronbach’s $\alpha$ for the preliteracy measures on the four-year-old assessment was .779. Cronbach’s $\alpha$ for the three-year-old assessment preliteracy measures was .810. Cronbach’s $\alpha$ for the preliteracy sections on the two-year-old assessment was .776.

The first of component explored on the CBA is oral language. Oral language refers to how a child understands and responds to spoken words including how many words a child understands and uses, as well as the child’s ability to comprehend and produce meaningful speech (Lonigan, 2006; Sénéchal et al., 2001). This is measured on district-wide CBAs through items such as: asking the child to follow a two-step unrelated direction (two-year-old assessment), answer questions (expected of all children, questions differing by age), point to items demonstrating concept knowledge (expected of two- and three-year-old children, with different concepts assessed for each group), or relate a personal experience (four-year-old assessment). Scores ranges in the oral language portion of the assessment varied by assessment.
The two-year-old assessment had a range of 0-21 points, with one point per item, excepting sentence length, which was scores one point per word up to three points. The three-year-old assessment scores in oral language ranged from 0-38 points, with most items worth one point, excepting sentence length (scored one point per word, up to five points possible), and taking turns in conversation (one point per turn up to four points possible). The scores in the oral language section of the four-year-old assessment ranged from 0-13 points. Items were worth one point except for sentence length, scored one point for 4-word sentences and two points for sentences six or more words in length; and relating a personal experience or retelling a story from a book, scored one point per sentence for up to three points.

Next, the district CBAs assess phonological or phonemic awareness. Phonological awareness evaluates the child’s comprehension that words are composed of different sounds and the ability to manipulate and analyze those sounds (Lonigan, 2006; NELP, 2008). Items include observing whether the child sings words or a familiar song with peers (two-year-old assessment), elicitation of blending (three-year-old assessment and four-year-old assessment), or segmentation of words (four-year-old assessment). Scores in this section of the test ranged from 0-2 points on the two-year-old assessment, 0-4 points on the three-year-old assessment, and 0-6 points on the four-year-old assessment. Each item was worth one point on all three assessments.

Alphabet knowledge refers to the ability to identify print (or braille) letters by name in either upper- or lower-case and to identify the sound associated with the letter (NELP, 2008). Again, the expectations of preschool children vary by age, with children who are two on September first expected to find their name from a choice of three with the two peer names starting with a different letter. Three-year-old children are expected to identify the first letter of their name. Four-year-old children are expected to be able to name at least some upper-case and
lower-case letters and provide letter sounds based on printed letters. This section of the assessment was worth only one point on the two-year-old assessment, 0-3 points on the three-year-old assessment, and 0-78 points on the four-year-old assessment. Points on the four-year-old assessment were awarded for each correctly named upper case letter, lower case letter, and letter sound corresponding to a lower-case letter.

Book knowledge/Print (or braille) awareness, also termed “print concepts” refers to knowledge of the mechanics of books and print (or braille) and the knowledge that print carries the meaning (Lonigan, 2006). This is assessed by items including observing whether children turn books the correct orientation (two- and three-year-old assessments), ask adults what print words say (three-year-old assessment), and differentiate between pictures and words (four-year-old assessment). Scores on this section of the two-year-old assessment ranged from 0-3 points, each item worth one point. The three-year-old assessment scores in book knowledge also ranged from 0-3 points, one point per item. Scores in the book knowledge/print awareness section of the four-year-old assessment ranged from 0-7 points, with one point per item.

**Research question 2.** The second research question compared the attention and engagement of children with visual impairments to that of their peers with typical vision. Attention is defined as the child positioning his or her body so it is oriented toward or focused on a task or interaction partner during an activity and engagement refers to listening, talking, and using materials relevant to the current activity (Hume et al., 2016; Son & Tineo, 2016; Tadić et al., 2009). This was measured using momentary time sampling. Momentary time sampling has been found to closely match continuous observations, without great increase in error when intervals of less than 2 minutes are used (J. O. Cooper, Heron, & Heward, 2007; Powell, Martindale, Kulp, Martindale, & Bauman, 1977). In this needs assessment interobserver
agreement was not possible.

**Research question 3.** The third research question evaluated the preliteracy interest of preschoolers with visual impairments as compared with that of typically sighted peers. Preliteracy interest refers to children seeming to enjoy and choosing to participate in preliteracy activities (Baroody & Dobbs-Oates, 2011). This was measured through two items on parent questionnaires asking how often a child asks to be read to and how much a child enjoys being read to. Parents reported how often their child asked to be read to by checking one of five frequencies ranging from “hardly ever” to “more than once per day.” Additionally, two parents indicated that their child never asked to be read to. The second item, how much a child likes being read to was reported on a Likert scale. Baroody and Dobbs-Oates (2011) reported Cronbach’s $\alpha$ to be .73 for parent-reported preliteracy interest. These authors established the items measuring preliteracy interest based on definitions established by other researchers examining the topic, thus demonstrating their face validity.

**Research question 4.** The next research question looks at two constructs: home literacy opportunities and classroom literacy opportunities. Home literacy opportunity, often conceptualized as home literacy environment, refers to activities, routines, materials, and choices available to the child in the home environments that relate to or contribute to preliteracy growth (Carlson et al., 2012). Home literacy environment was measured through items on parent questionnaires. These items asked regarding the reading or writing materials that children accessed, the frequency of engagement in reading, listening to stories or writing, and the utilization of community supports, such as libraries.

Questions used in this survey came from the “Family Survey of Reading and Writing Practices” adapted for children with visual impairments by Craig (1996). Craig established
construct validity using a focus group of parents of children with visual impairments. For use in this needs assessment, this survey had to be updated to include modern technology that families may use for preliteracy experiences, such as tablets. These updates were done, to the extent possible maintaining the original language of the questions. The updated survey was then reviewed by a parent of a child with a disability. As this survey included sections on both braille use and print use, adaptation for students with typical vision included removing braille items. Questions regarding large print use were retained for all family surveys. Cronbach’s $\alpha$ for items completed by all participants was .775.

Classroom literacy opportunity, conceptualized as teacher implementation of specific strategies for children with visual impairments to enable them to acquire preliteracy skills, similarly looked at a variety of possible supports. Teachers who indicated that they had a student with visual impairments in their classes specified how frequently they engaged in a variety of strategies appropriate for learners with visual impairments (McDonnell et al. 2014). Survey questions regarding strategies came from those validated by McDonnell et al. (2014) for assessing appropriate use of strategies for students with visual impairments by Head Start teachers. This survey was developed and validated through a multi-step expert review and field testing process. Analysis of strategy data through SPSS found Cronbach’s $\alpha$ to be .761.

**Research question 5.** The fifth question attempted to parse out the understanding that teachers have of visual impairments. This was conceptualized as the teacher’s knowledge of visual impairments and how this applies to teaching children with visual impairments. This variable was measured through the answers teacher provided to open-ended questions regarding concerns, modifications, and methods that they would use to teach a student with visual impairments. I used reflexivity and awareness to minimize the impact of potential biases. One
potential bias that I considered was an expectation that teachers might not understand visual impairments. To counter this I looked at teacher responses considering that maybe they had an understanding of visual impairments, asking myself what the responses really indicated.

**Research question 6.** The final research question addresses teacher reticence toward children with visual impairments. Teacher reticence was defined as negative attitudes, lack of confidence, and bias regarding placement of children with visual impairments. This was elicited through questionnaire items regarding their feelings toward having a student with visual impairments in their class, and what type of placement they perceived as appropriate for a student with visual impairments. Teacher reticence was evaluated using a slightly modified version of the measure Ajuwon et al. (2015) used to evaluate preservice teachers receptivity or hostility and calmness or anxiety to having students with visual impairments in their class, and supported through the use of the questions regarding teacher attitude developed by Wall (2002). The teacher reticence measure was originally developed by Soodak, Podell, and Lehman (1998) and found to be valid through factor analysis. Cronbach’s α for teacher reticence as indicated in this measure was .774. Wall’s study (2002) was exploratory and did not report reliability or validity for the items.

**Procedures**

Data collection consisted of three methods: questionnaires, classroom observations, and review of secondary data. Following data collection data was analyzed. Methods varied by the question, thus this section, like the discussion of measures, will follow the order of the questions.

**Question 1.** Question one relied on secondary data from curriculum-based assessments (CBAs). CBAs are conducted with every child attending preschool classes in my school district at the beginning or the year, mid-year, and at the end of the school year. This is done by having
the classroom teacher and/or the assistant teacher(s) ask the children questions on the protocol or observe the child in the classroom as delineated in the test item. Test items are grouped by domain, including; oral language, phonological and phonemic awareness, alphabet knowledge, pre-writing/fine motor skills, book knowledge/ print awareness, math, social-emotional skills, and gross motor skills. Test protocols stipulate the language to be used in administering items creating standardized testing. These domain scores, as well as a total CBA score, are kept for all students who attended a district preschool classroom. This data is collected primarily to assess the progress made by each child in these areas, but as secondary data the oral language, phonological awareness, alphabet knowledge, and book knowledge/print awareness areas of the assessment facilitate a comparison between the preliteracy development of students with visual impairments and their peers with typical vision.

The initial analysis looked only at the results of post-tests from 2013-2014, 2014-2015, and 2015-2016 school years. Program-wide post-test data was not available for the 2016-2017 school year.

**Question 2.** Attention and engagement were measured through classroom observations. After obtaining parent consent, the researcher observed a child with a visual impairment and a peer with typical vision during teacher directed activities. Where possible, the child with typical visual abilities was the same age and gender as the child with a visual impairment. The researcher set a MotivAider or similar cell phone app to vibrate every ten seconds. When the device vibrated, the researcher recorded whether a child was oriented towards the teacher or task and whether they were listening, talking about, or using materials related to the current activity. The researcher alternated between the child with a visual impairment and the other student, thus attention and engagement of each child were recorded every 20 seconds. At the conclusion of
the activity or after 30 intervals for each child (based on which came first), the researcher calculated the percentage of the observation that each child was paying attention and engaged.

For analysis, I entered the percentages of time that the child with a visual impairment and their peer were attending, and were engaged, into a spreadsheet by date and classroom type. I suspected that the percentage of time that the child with a visual impairment attended or engaged would correlate with the percentage of time that their peer attended or engaged, as an unusually interesting activity or disruption would tend to impact the attention and engagement of both children. This was verified through Pearson correlations, subsequently paired sample t-tests were used to analyze the data.

**Questions 3 and 4—parent questionnaires.** Parents completed questionnaires addressing the preliteracy interest and home literacy practices. Questionnaires were distributed in two ways: where possible the survey and informed consent were handed directly to the parent by the researcher. Where this was not possible, questionnaires and informed consent documents were distributed by teachers or placed in backpacks with explanatory notes. After completion of the surveys, the parents returned them to their classroom teacher or directly to the vision specialist.

**Preliteracy interest.** To compare the preliteracy interest between children with visual impairments and their peers I assigned a value to the frequency that the child asked to be read to with 1 indicating “hardly ever” and 5 indicating “more than once per day.” A Likert type scale was used to evaluate how much the child enjoyed being read to with 1 indicating “not at all” and a 5 indicating “very much.” Based on these values, I compared the means for children with visual impairments and those without visual impairments. Based on differences in the means I followed this up with independent samples t-tests.
**Home literacy environment.**

*Participation by number of materials or activities.* Comparison of the home literacy environment was somewhat more complex as this involved more survey items. To compare the use of print or braille materials I counted every item checked as used, participated in, and the awareness activities checked. Then the mean number of items checked by parents of children with visual impairments was compared with the number of items checked by parents of children with typical vision. Independent samples t-tests were used to determine the statistical significance of observed differences in means.

*Frequency of participation.* Several items evaluated the frequency with which the child engaged in a variety of activities related to emergent literacy learning. Parents answered on a Likert-type scale with 0 indicating that the child never participated in the activity and 4 indicating that the child participated more than 4 times per week. I calculated means for children with visual impairments and sighted peers. Variations in means were evaluated in SPSS using independent samples t-tests.

*Parental expectations.* The last element of home literacy environment analyzed was parental expectations. Parents indicated the three most important goals that they had for their children ranking them from 1 (most important) to 3 (least important). Some parents chose to mark three as most important rather than a single item. These were compared grouping the children with visual impairments and the typically sighted peers, then analyzing the frequency of a given response.

Parents were also asked regarding how much schooling they expected their child to complete. Levels of schooling were assigned to a number with larger numbers indicating more schooling. These were then evaluated to determine if the expected level of schooling correlated
with the presence of visual impairment.

Finally, two open-ended questions asked how far the parent anticipated that their child would go in reading development and barriers to achieving this expectation. These questions were analyzed qualitatively by grouping like responses and comparing the responses the presence or absence of visual impairment. During this process, I set aside my notions of what a parent may or may not feel and look for common themes through emergent coding. One theme that became evident in the parents’ responses to barriers in their child learning to read or write was communication. Multiple parents gave responses such as “not talking,” “lack of communication,” “doesn’t talk at all,” and “his speech.” These responses, though varied, pointed to communication challenges.

**Questions 4 and 5—teacher questionnaires.** These questions were addressed through questionnaires administered to teachers. I, the researcher and preschool vision specialist, personally handed the questionnaires for teachers and assistant teachers with students with visual impairments. I explained what I was doing and what I hoped to accomplish through this study. Other lead preschool teachers in the school district were also asked to complete questionnaires. These were sent to them in district mail with informed consent, a note describing the research and giving a return deadline, and a label to affix to the district mail (reusable) envelope to facilitate the easy return of the survey.

**School literacy opportunities.** Seven questions in the teacher questionnaire asked teachers with current students with visual impairments about their use of several strategies recommended for students with visual impairments. Responses indicated the frequency of use, non-use, that this strategy was not appropriate or that it was not available. These responses were depicted on histograms which allowed for visual analysis of the data. Following these questions
teachers indicated any other strategies that they were using.

**Teacher understanding.** Teachers responded to questions regarding what it means to have a visual impairment, how you would teach such a student, and what concerns or modifications would be needed. Teacher understanding was demonstrated through qualitative questions. I read these responses then noted themes that emerged through inductive reasoning. To understand the extent to which teacher understanding depends on the experience of having a child with a visual impairment as a student, I grouped responses according to whether the teacher indicated that a current student had a visual impairment, a past student had a visual impairment, or whether the teacher indicated that they had never had a student with a visual impairment. I further assumed that there may be a difference in the understanding of teachers who had worked with the vision specialist when compared with those who had not, however, this could not be separated from understanding gained simply by teaching a child with a visual impairment.

**Question 6.** I approached this question through the use of an adapted version of the instrument Ajuwon et al. (2015) used to examine the anxiety or calmness and hostility or receptiveness of preservice teachers regarding students with visual impairments. This is measured through several items with continuums of feelings such as anxious-relaxed. Teachers answers were grouped by those items through which Ajuwon et al. identified as indicative of anxiety or calmness, including the pairings scared/fearless, anxious/relaxed, nervous/calm, comfortable/uncomfortable. confident/overwhelmed, weak/powerful, and prepared/unprepared; or indicative of hostility or receptiveness, including the pairings enthusiastic/unenthusiastic, angry/not angry, unwilling/willing, interested/disinterested, pleased/displeased, annoyed/indifferent, accepting/opposing, resistant/cooperative, happy/unhappy, and pessimistic/optimistic. Each pairing was scored based on the positivity of the answer with the
most positive answer scored as five, neutral as three, and the most negative scored as 1. Totals for anxiety or calmness and hostility or receptivity were then compared using independent samples t-test to examine differences in teacher reticence between teachers who currently have students with visual impairments and those who do not.

**Results**

**Research question 1.**

This question addressed how students with visual impairments performance on pre-literacy portions of the school district’s two-, three-, and 4-year-old assessments varied from their peers without visual impairments. This analysis looked at the results of assessment from 2013-2014, 2014-2015, and 2015-2016 school years. Program-wide post-test data was not yet available for the 2016-2017 school year. Descriptive statistics from students with visual impairments and students with typical vision are shown in Table 2.4. As these statistics indicate, students with visual impairments scored below their peers in the majority of assessments. This is due in part to a high prevalence of visual impairment occurring with concomitant disabilities in other areas. Hatton, Schwietz, Boyer, and Rychwalski (2007) suggested that 68% of children with visual impairments had multiple disabilities.

The scores of children with visual impairments were also compared with the goals established by the program. These results are depicted in Table 2.5. For this analysis, the scores of preschool children with visual impairments were compared with the established program goals, then the performance of students with visual impairments who attended preschool in a regular class was considered. This was done to assess how students with either less severe or without concomitant disabilities performed against the program goals. Although the percentage of students with visual impairments who attended regular classes achieving the program goal...
differed from that of all students in the district by more than 10% in only three sub-tests on the two-year-old assessment. The percentage of preschoolers with visual impairments scoring at or above the goal decreased with respect to the performance of other preschool children in the program on both the three- and four-year-old assessments. Of note is the performance on oral language. The two- and three-year-old assessments capture vocabulary in these assessments. The percentage of students with visual impairments attending regular preschool classes decreases over time indicating that the students are not acquiring vocabulary at the rate of their peers. The improvement in these scores on the four-year-old assessment depicts the change in focus from vocabulary to understanding and answering questions. Strength in this area may reflect the tendency of parents to ask more “test” questions to children with visual impairments (Kekelis & Prinz, 1996), thus strengthening their ability to understand and answer questions. It is also of interest that although half of the four-year-old preschool students with visual impairments in regular classes achieved the pre-test goal established for alphabet knowledge, the percentage of these students continuing to achieve the next goal dropped to 40% then only 30% achieved the year-end goal for alphabet knowledge. This contrasts from the steady increases in percentages of program-wide preschoolers’ achieving these increasingly difficult goals and shows that preschool children with visual impairments are not progressing in the manner of their peers.

**Research Question 2**

The second research question compared the levels of attention and engagement of students with visual impairments with those of their peers with typical vision. Twenty observations were conducted with students attending six different classrooms. The mean percentage of intervals that children with visual impairments were attending to the teacher directed activity (see Table 2.6) was 55.4%, much less than their peers who attended to teacher directed activity in a mean of
Table 2.4


<table>
<thead>
<tr>
<th>Domain</th>
<th>Test Period</th>
<th>Two-year-old assessment</th>
<th>Three-year-old assessment</th>
<th>Four-year-old assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n(all) Mean</td>
<td>SD</td>
<td>n(all) Mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n(VI)</td>
<td></td>
<td>n(VI)</td>
</tr>
<tr>
<td>Oral Language</td>
<td>Pretest</td>
<td>332</td>
<td>9.02</td>
<td>7.20</td>
</tr>
<tr>
<td></td>
<td>Mid-year</td>
<td>546</td>
<td>11.05</td>
<td>7.47</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>445</td>
<td>13.66</td>
<td>7.42</td>
</tr>
<tr>
<td>Phonological</td>
<td>Pretest</td>
<td>332</td>
<td>5.72</td>
<td>1.27</td>
</tr>
<tr>
<td>Phonological</td>
<td>Mid-year</td>
<td>546</td>
<td>1.18</td>
<td>.39</td>
</tr>
<tr>
<td>Phonological</td>
<td>Posttest</td>
<td>445</td>
<td>1.08</td>
<td>.89</td>
</tr>
<tr>
<td>Alphabet Knowledge</td>
<td>Pretest</td>
<td>332</td>
<td>.34</td>
<td>.75</td>
</tr>
<tr>
<td>Alphabet Knowledge</td>
<td>Mid-year</td>
<td>546</td>
<td>.72</td>
<td>.51</td>
</tr>
<tr>
<td>Alphabet Knowledge</td>
<td>Posttest</td>
<td>445</td>
<td>1.08</td>
<td>.56</td>
</tr>
<tr>
<td>Pre-Writing</td>
<td>Pretest</td>
<td>332</td>
<td>1.34</td>
<td>.48</td>
</tr>
<tr>
<td>Pre-Writing</td>
<td>Mid-year</td>
<td>546</td>
<td>.46</td>
<td>.33</td>
</tr>
<tr>
<td>Pre-Writing</td>
<td>Posttest</td>
<td>445</td>
<td>.69</td>
<td>.33</td>
</tr>
<tr>
<td>Book Knowledge/Print Awareness</td>
<td>Pretest</td>
<td>332</td>
<td>1.12</td>
<td>.49</td>
</tr>
<tr>
<td>Book Knowledge/Print Awareness</td>
<td>Mid-year</td>
<td>546</td>
<td>.40</td>
<td>.48</td>
</tr>
<tr>
<td>Book Knowledge/Print Awareness</td>
<td>Posttest</td>
<td>445</td>
<td>1.94</td>
<td>.33</td>
</tr>
</tbody>
</table>
### Table 2.5

Percentage of all students with visual impairments, students with visual impairments in regular preschool classes, and percentage of all students attending district preschool classes during the years 2013-2014, 2014-2015, 2015-2016, and 2016-2017 scoring at or above the established program goal by domain and assessment period.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Testing period</th>
<th>Percent of two-year-old students w/VI at program goal</th>
<th>Percent of all two-year-old students w/VI in regular class at program goal</th>
<th>Percent of three-year-old students w/VI at program goal</th>
<th>Percent of all three-year-old students w/VI in regular class at program goal</th>
<th>Percent of four-year-old students w/VI at program goal</th>
<th>Percent of four-year-old students w/VI in regular class at program goal</th>
<th>Percent of all four-year-old children in district at program goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Language</td>
<td>Pretest</td>
<td>20%</td>
<td>50%</td>
<td>42%</td>
<td>11%</td>
<td>25%</td>
<td>53%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Mid-year</td>
<td>12%</td>
<td>40%</td>
<td>41%</td>
<td>14%</td>
<td>33%</td>
<td>59%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>7%</td>
<td>25%</td>
<td>39%</td>
<td>3%</td>
<td>9%</td>
<td>54%</td>
<td>44%</td>
</tr>
<tr>
<td>Phonological Awareness</td>
<td>Pretest</td>
<td>20%</td>
<td>50%</td>
<td>31%</td>
<td>7%</td>
<td>17%</td>
<td>43%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Mid-year</td>
<td>18%</td>
<td>40%</td>
<td>46%</td>
<td>7%</td>
<td>8%</td>
<td>51%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>14%</td>
<td>50%</td>
<td>44%</td>
<td>20%</td>
<td>45%</td>
<td>54%</td>
<td>20%</td>
</tr>
<tr>
<td>Alphabet</td>
<td>Pretest</td>
<td>20%</td>
<td>50%</td>
<td>34%</td>
<td>30%</td>
<td>42%</td>
<td>50%</td>
<td>19%</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Mid-year</td>
<td>12%</td>
<td>20%</td>
<td>46%</td>
<td>18%</td>
<td>33%</td>
<td>65%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>29%</td>
<td>50%</td>
<td>67%</td>
<td>24%</td>
<td>64%</td>
<td>63%</td>
<td>12%</td>
</tr>
<tr>
<td>Pre-Writing</td>
<td>Pretest</td>
<td>60%</td>
<td>100%</td>
<td>87%</td>
<td>19%</td>
<td>42%</td>
<td>66%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Mid-year</td>
<td>29%</td>
<td>80%</td>
<td>89%</td>
<td>29%</td>
<td>58%</td>
<td>85%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>38%</td>
<td>100%</td>
<td>77%</td>
<td>24%</td>
<td>55%</td>
<td>89%</td>
<td>4%</td>
</tr>
<tr>
<td>Book</td>
<td>Pretest</td>
<td>40%</td>
<td>100%</td>
<td>65%</td>
<td>30%</td>
<td>50%</td>
<td>68%</td>
<td>7%</td>
</tr>
<tr>
<td>Knowledge/Print</td>
<td>Mid-year</td>
<td>18%</td>
<td>60%</td>
<td>57%</td>
<td>21%</td>
<td>42%</td>
<td>71%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>8%</td>
<td>33%</td>
<td>38%</td>
<td>10%</td>
<td>27%</td>
<td>48%</td>
<td>32%</td>
</tr>
</tbody>
</table>

*Note.* Bold typeface indicates when the percentage of students with visual impairments scoring at or above program goal is more than 10% less than the percentage of all students in the district scoring at or above a given goal.
66.1% of intervals. The engagement was similarly reduced for students with visual impairments (58.4%) as compared with their peers (70.2%). Differences in attention and engagement occur irrespective of placement in a regular class or a special class.

Since each observation paired a student with visual impairments with a student with normal vision during the same teacher-directed activity, it was suspected that the attention and engagement of students with visual impairments would correlate with that of peers with typical vision. This was verified through Pearson correlations (attention $r = 0.725$, $n = 20$, $p < .001$, engagement $r = 0.729$, $n = 20$, $p < .001$). Given these correlations, I conducted paired samples t-tests on this data using SPSS. This analysis revealed that children without visual impairments are attending ($M = 66.1$, $t (19) = -3.56$, $p = .002$) and engaging ($M = 70.2$, $t (19) = -4.16$, $p = .001$) in teacher directed activities significantly more than their peers with visual impairments ($M_{\text{attending}} = 55.35$, $M_{\text{engaging}} = 58.4$). Cohen’s $d$ effect size for the attention pairing was $d = -0.809$ and the effect size for the engagement pairing was $d = -0.944$. These are large effect sizes. Thus, we can reasonably conclude that preschool children with visual impairments in my context are more inattentive than their peers. This is consistent with the findings of Tadić, Pring, and Dale (2009), who found that toddlers with visual impairments had difficulty with achieving joint attention, sustaining that attention, and shifting attention when elicited by an adult. It is also in keeping with the findings of Bardin and Lewis (2011), who found that visually impaired students in general education language arts classes were rated by their teacher as more inattentive than average or low achieving students from their class.

**Research Question 3**

The third question compares the literacy interest of preschool students with visual
Table 2.6

Results of analysis comparing the attending behavior and engagement of students with visual impairments with the attending behavior and engagement of their peers with typical vision.

<table>
<thead>
<tr>
<th></th>
<th>Regular class</th>
<th>Special Class</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention of children w/VI</td>
<td>Mean: 65.1%</td>
<td>Mean: 45.6%</td>
<td>Mean: 55.4%</td>
</tr>
<tr>
<td>SD: 16.76</td>
<td>SD: 16.2</td>
<td>SD: 18.91</td>
<td></td>
</tr>
<tr>
<td>Attention of peer</td>
<td>Mean: 75.7%</td>
<td>Mean: 56.5%</td>
<td>Mean: 66.1%</td>
</tr>
<tr>
<td>SD: 14.19</td>
<td>SD: 14.95</td>
<td>SD: 17.27</td>
<td></td>
</tr>
<tr>
<td>Engagement of children w/VI</td>
<td>Mean: 68.6%</td>
<td>Mean: 48.2%</td>
<td>Mean: 58.4%</td>
</tr>
<tr>
<td>SD: 16.03</td>
<td>SD: 14.06</td>
<td>SD: 18.03</td>
<td></td>
</tr>
<tr>
<td>Engagement of peer</td>
<td>Mean: 80.2%</td>
<td>Mean: 60.1%</td>
<td>Mean: 70.2%</td>
</tr>
<tr>
<td>SD: 11.22</td>
<td>SD: 13.41</td>
<td>SD: 15.85</td>
<td></td>
</tr>
</tbody>
</table>

Impairments with that of their peers. This question referred to survey questions asking the parent how often their child asked to be read to and how much their child enjoyed being read to. Parents reported that children with visual impairments asked to be read to, on average, about once or twice per week (M=2.11) this was just slightly less than their typically-sighted peers (M=2.60; see Table 2.7). Similarly, enjoyment in being read to was analogous among both children with visual impairments (M=4.56) and their sighted peers (M=4.12). This was borne out by independent samples t-tests with t (32) = .76, p = .451 for asking to be read to and t (32) = -.95, p = .351 for enjoying being read to. Based on these findings, it seems reasonable to conclude that the preliteracy interest for children with visual impairments was comparable to that of their peers without visual impairments. This finding departs from the literature indicating that inattention was negatively correlated with interest in emergent literacy in typically developing preschool children (Baroody & Dobbs-Oates, 2011). This may be attributable to the high proportion of parents who participated in the survey who identified their child as having a disability other than visual impairment (23/34 children).
Table 2.7

*Frequency with which children with visual impairments and their peers request to be read to and the amount that they enjoy being read to.*

<table>
<thead>
<tr>
<th></th>
<th>Asks to be read to</th>
<th>Enjoys being read to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child with a visual impairment</td>
<td>Mean: 2.11</td>
<td>Mean: 4.56</td>
</tr>
<tr>
<td></td>
<td>SD: 1.76</td>
<td>SD: 1.01</td>
</tr>
<tr>
<td>Typically-sighted peer</td>
<td>Mean: 2.60</td>
<td>Mean: 4.12</td>
</tr>
<tr>
<td></td>
<td>SD: 1.61</td>
<td>SD: 1.24</td>
</tr>
</tbody>
</table>

**Research Question 4**

**Opportunities in preschool environments.** This question considered the extent to which students with visual impairments received accessible opportunities to develop preliteracy skills. The first part of this question looks at school environments and the second studies preliteracy in home environments. Figure 2.1 depicts the teacher's answers to these items using histograms. Although many teachers indicated daily use of positioning and verbal description, teachers generally indicated that they were not providing children access to braille writing materials. This finding was interesting because in my role as vision specialist I consider the appropriateness of braille for every student I work with and communicate this at meetings discussing student needs that teachers attend, including Individualized Education Program and Section 504 plan meetings. The findings indicate that teachers are trying to help students access literacy. Given that the majority of the students I work with have usable vision, the strategies used most often are perhaps the most appropriate for the majority of these students.

When contrasted with the use of vision-appropriate strategies reported by McDonnell et al. (2014), the teachers in the current context who have a child with a visual impairment in their class report substantially more use of vision-appropriate strategies. A couple of factors may
Figure 2.1

*Strategy use for facilitating emergent literacy for students with visual impairments.*

The strategies depicted in the histograms are as follows:

35. Position materials and use other strategies to help child see materials

36. Lighting intensity increased or decreased for individual needs

37. Provide tactile books or books adapted to provide tactile cues

38. Draw children’s attention to environmental braille

For each strategy: 4—daily use, 3—use 1-2 times per week, 2—use 1-2 times per month, 1—not appropriate, 0—not available or not used.
Figure 2.1, continued: *Strategy use for facilitating emergent literacy for students with visual impairments.*

The strategies depicted in the histograms are as follows:

39. Provide braille books or books with braille added to print

40. Provide a braillewriter, slate and stylus, for “scribbling” and early braille writing

41. Provide verbal description or explanation

For each strategy: 4—daily use, 3—use 1-2 times per week, 2—use 1-2 times per month, 1—not appropriate, 0—not available or not used.
account for this difference. First, the survey administered to teachers in this district was specific to vision, and presented to them by the vision specialist, in contrast to the more diversified survey of preliteracy strategies for students with disabilities administered by McDonnell et al. to Head Start teachers. Thus, the teachers with students with visual impairments may have felt a level of expectation that they should be using some vision-specific strategies. Next, unlike the teachers in the McDonnell et al. survey who did not mention a vision specialist or teacher of students with visual impairments (TVI) as a support who worked with children in their class, most teachers who identified themselves as having a student with a visual impairment in their class worked directly with the vision specialist. This suggests that the teachers in this district may have had more training in strategies to use with students with visual impairments.

**Opportunities in home environments.** The second part of this question assesses the differences in home literacy environments for students with visual impairments and their typically sighted peers. This question encompasses the number of materials, the frequency of participation and parental expectations. When considering these components, both print and braille must be considered.

*Participation by number of materials.* The participation of children with visual impairments in reading, writing, and activities indicating awareness of print literacy in their environments was similar to that of their peers with normal vision (see Table 2.8). Statistical analysis found that, on average, students with visual impairments (M=10.8) and their typically sighted peers (M=8.28) had comparable exposure to print materials t (32) =1.4, p =.18. When braille materials are examined, however, a very different picture emerges. The students whose parents indicated that they would be braille users or use dual media (print and braille) had
Table 2.8

Participation of preschool students in preliteracy activities by the number of activities or types of materials

<table>
<thead>
<tr>
<th></th>
<th>Number of literacy materials</th>
<th>Number of ways child participates in reading</th>
<th>Number of ways child participates in writing</th>
<th>Number of ways child shows awareness of reading or writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with visual impairments</td>
<td>n: 9</td>
<td>n: 9</td>
<td>n: 9</td>
<td>n: 9</td>
</tr>
<tr>
<td></td>
<td>M: 10.8</td>
<td>M: 4.1</td>
<td>M: 2.2</td>
<td>M: 2.33</td>
</tr>
<tr>
<td></td>
<td>SD: 5.6</td>
<td>SD: 2.4</td>
<td>SD: 2.8</td>
<td>SD: 1.7</td>
</tr>
<tr>
<td>Braille</td>
<td>n: 3</td>
<td>n: 4</td>
<td>n: 4</td>
<td>n: 4</td>
</tr>
<tr>
<td></td>
<td>M: 1.0</td>
<td>M: 1.75</td>
<td>M: .25</td>
<td>M: .25</td>
</tr>
<tr>
<td></td>
<td>SD: 1.7</td>
<td>SD: 1.7</td>
<td>SD: .5</td>
<td>SD: .50</td>
</tr>
<tr>
<td>Typically-sighted peers</td>
<td>n: 25</td>
<td>n: 25</td>
<td>n: 25</td>
<td>n: 25</td>
</tr>
<tr>
<td></td>
<td>M: 8.28</td>
<td>M: 4.8</td>
<td>M: 3.4</td>
<td>M: 2.7</td>
</tr>
<tr>
<td></td>
<td>SD: 4.4</td>
<td>SD: 2.2</td>
<td>SD: 2.5</td>
<td>SD: 1.4</td>
</tr>
</tbody>
</table>

significantly less exposure to braille (M=1.0) than they receive for print (M=10.8) t (10) =4.6, p =.001.

Similarly, although there was no difference between the reported number of books that children with visual impairments owned (M=2.78), indicating that most children had between 4-9 books) and the number of books that their peers owned (M=2.76), there was a significant difference between the number of books owned (M=2.78) and the number of braille books owned (M=.29), t (14) = 8.3, p <.001. The majority of students with visual impairments owned no braille books (one child of the seven whose parent answered that question was reported to have braille books), but over half (four of seven) reported that someone provided access to touch books or children’s books in braille. No parent reported that anyone in their home read braille.

These findings represent a departure from previous studies indicating between one-third and one half of parents of braille learners knew at least some braille (Craig, 1996; Kamei-
Hannan & Sacks, 2012). It is possible, however, that these findings are indicative of the difference in children with visual impairments in my district from those in other studies. Although Craig (1996) reported that just over half of respondents indicated that their child had at least one additional disability, seven of the nine parents of students with visual impairments who responded to my questionnaire indicated that their child had at least one additional disability.

**Frequency of participation in preliteracy activities.** Parent questionnaires elicited the frequency of eight preliteracy activities (See Table 2.9). Although for most of these activities the participation of children with visual impairments was similar to that of peers with normal vision, there is one notable exception. Children with visual impairments engaged in pretending to write (M=1.78, or about 1-2 times per week) significantly less than their peers with typical vision (M=3.04, or about 3-4 times per week) t (32) = 2.4, p =.024 Cohen’s d =.858. This was a somewhat unexpected finding as both the group of children with visual impairments and the group of children with typical vision include students with severe disabilities. However, seven of the nine students in the group of students with visual impairments also have at least one additional disability, but only 15 of the 25 students in the typically sighted group have at least one disability. This difference in proportion may partially explain the reduced participation in writing.

**Prospective view from parents.** The final component of the home literacy environment is how the parent envisions their child’s future. Quantitatively this was examined through parental priorities and expected amount of schooling. This was supplemented by barriers to learning to read expressed by parents.

Although the level of schooling parents expected their children to achieve did not differ significantly based on the presence of visual impairment, comparison of the parental priorities
Table 2.9

*Frequency of engagement in activities supporting preliteracy development.*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Visually Impaired</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read to by adults</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td></td>
<td>2.96</td>
<td>1.136</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>3.22</td>
<td>.972</td>
</tr>
<tr>
<td>Read to by Siblings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>24</td>
<td></td>
<td>1.46</td>
<td>1.285</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>1.33</td>
<td>1.323</td>
</tr>
<tr>
<td>Reads to Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>1.11</td>
<td>1.453</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td></td>
<td>1.44</td>
<td>1.227</td>
</tr>
<tr>
<td>Pretend to write</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>1.78</td>
<td>1.641</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td></td>
<td>1.13</td>
<td>1.014</td>
</tr>
<tr>
<td>Visit the library</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>.67</td>
<td>.866</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td></td>
<td>2.72</td>
<td>1.339</td>
</tr>
<tr>
<td>Reading or talking about books as a family</td>
<td></td>
<td></td>
<td>2.44</td>
<td>1.236</td>
</tr>
<tr>
<td>Go on outings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td></td>
<td>2.96</td>
<td>1.098</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>2.33</td>
<td>1.000</td>
</tr>
<tr>
<td>Listen to story in audio format</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td></td>
<td>.84</td>
<td>.943</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>.89</td>
<td>1.364</td>
</tr>
<tr>
<td>Watch educational television</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>24</td>
<td></td>
<td>3.25</td>
<td>.897</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td></td>
<td>3.44</td>
<td>1.014</td>
</tr>
</tbody>
</table>

*Note:* For these items, answer categories included Never, scored 0; Less than once a week, scored 1; 1-2 times per week, scored 2; 3-4 times per week, scored 3; or More than 4 times per week, scored 4.

for children with visual impairments and their peers revealed distinct differences. The goal that parents of students with visual impairments indicated was their priority was communication, with 100% of parents indicating that it was one of their top three goals. Ranking next in priority, with 89% of parents indicating that it was a priority, was self-help skills, followed by learning to read and write with 67%. In contrast, the parents of children with normal vision indicated learning to read and write was their top priority, with 84% of parents selecting it as a priority,
followed by self-help and communication, with 64% of parents indicating that each of these was a priority.

The prioritization of communication varies from other surveys of students with visual impairments (Craig, 1996; Kamei-Hannan & Sacks, 2012). Other researchers have observed that for students with visual impairments, but no concomitant disabilities, learning to read and write is their number one priority followed by self-help skills (Craig, 1996; Kamei-Hannan & Sacks, 2012). However, when additional disabilities were present Craig (1996) noted that learning self-help skills was the first priority, followed by effective communication and learning to read and write. The priorities of both groups vary from the priorities noted by Marvin and Mirenda (1993), who found that although communication and self-help were the first priorities of parents of students in special education, these were followed by making friends. Differences in observed prioritization may represent a hybridization of the previous research: both groups in the current study included students with additional disabilities, varying from the groupings represented in other studies.

Considering the way parents prioritized learning goals, the barriers expressed by parents are not surprising. For parents of learners with visual impairments the most often mentioned barriers were physical challenges, either the visual impairment itself or concomitant motor challenges. Parents also mentioned cognitive delays. These challenges can make achieving proficient self-help skills difficult, explaining its high ranking in prioritization. In contrast, the most commonly cited barrier for learners without visual impairments was communication, corresponding with another of the priorities. Interestingly, multiple parents noted a barrier that probably impacts most students: time. As one parent expressed, “time, the time parents can spend reading to them. And later time they spend reading to themselves.” This was echoed in the
Table 2.10

Prioritization of parental goals.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Visual Impairment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Help Skills</td>
<td>Yes</td>
<td>7/9 (78%)</td>
<td>0/9 (0%)</td>
<td>1/9 (11%)</td>
<td>8/9 (89%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>12/25 (48%)</td>
<td>4/25 (16%)</td>
<td>0/25 (0%)</td>
<td>16/25 (64%)</td>
</tr>
<tr>
<td>Communication</td>
<td>Yes</td>
<td>7/9 (78%)</td>
<td>2/9 (22%)</td>
<td>0/9 (0%)</td>
<td>9/9 (100%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>13 (52%)</td>
<td>2/25 (8%)</td>
<td>1/25 (4%)</td>
<td>16/25 (64%)</td>
</tr>
<tr>
<td>Learning to read and write</td>
<td>Yes</td>
<td>4/9 (44%)</td>
<td>0/9 (0%)</td>
<td>2/9 (2%)</td>
<td>6/9 (67%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11/25 (44%)</td>
<td>2/25 (8%)</td>
<td>8/25 (32%)</td>
<td>21/25 (84%)</td>
</tr>
<tr>
<td>Making friends</td>
<td>Yes</td>
<td>1/9 (11%)</td>
<td>2/9 (22%)</td>
<td>1/9 (11%)</td>
<td>4/9 (44%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4/25 (16%)</td>
<td>6/25 (24%)</td>
<td>4/25 (16%)</td>
<td>14/25 (56%)</td>
</tr>
<tr>
<td>Developing recreational skills</td>
<td>Yes</td>
<td>4/9 (44%)</td>
<td>0/9 (0%)</td>
<td>0/9 (0%)</td>
<td>4/9 (44%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3/25 (12%)</td>
<td>4/25 (16%)</td>
<td>4/25 (16%)</td>
<td>11/25 (44%)</td>
</tr>
<tr>
<td>Developing vocational skills</td>
<td>Yes</td>
<td>3/9 (33%)</td>
<td>0/9 (0%)</td>
<td>0/9 (0%)</td>
<td>3/9 (33%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4/25 (16%)</td>
<td>3/25 (12%)</td>
<td>4/25 (16%)</td>
<td>11/25 (44%)</td>
</tr>
</tbody>
</table>

Note: The goals identified as the priorities by the highest percentage of parents are indicated in bold text.

sentiments of other parents. One parent went so far as to mention the need for afterschool programs, inferring an inability of the parent to help their child learn to read. These barriers highlight the importance for schools to find ways to help all children access literacy and to learn to read.

Research Question 5

Teacher understanding of visual impairments and how to address them in the classroom is the topic of the fifth question. This includes a rudimentary understanding of what it means to have a visual impairment, how this should be attended to by preschool teachers, and what resources they might draw upon to foster the learning of students with visual impairments. As survey respondents included teachers with current students with visual impairment, those who formerly taught a student with a visual impairment, and those with no experience teaching a student with a visual impairment, these differences in experience level will be used to guide this
Understanding of visual impairments. At a very basic level, all teachers who responded to the survey understood that visual impairments are not all the same. Most teachers simply answered “no” to this question, however those who elaborated presented some variation in the level of understanding between teachers with current students and those who have never taught a student with a visual impairment. Two teachers with current students cited differences in severity. Another teacher demonstrated more specific understanding of impairments saying, “Cortical visual impairment is different than seeing items in only close proximity, or seeing light & dark or colors and clarity.” In contrast, teachers who gave no indication of previous experience tended to see them as different more broadly. As one teacher described, “I’m sure they are different in many ways because we are not all the same and our bodies find different ways of coping with it.”

When asked what it means when a child has a visual impairment 57.5% of respondents indicated that the child simply did not see well. Other teachers indicated more specific challenges with optic functioning. Approximately 10% of respondents indicated that the student would need more assistance to access their environment. A couple of teachers indicated an implication of lowered quality of life or ability to learn. Interestingly, only three teachers thought that the term visual impairment referred to a refractive error correctible with glasses. There was no discernible pattern in the responses between those teachers with experience with visual impairments and those without.

How to teach students with visual impairments. Differences in understanding of visual impairment became more obvious when teachers were asked how to teach a student with a visual impairment. Four of the teachers who had no experience teaching a child with visual
impairments admitted that they did not know or left the item blank. Two other themes among these teachers were the use of special seating and unspecified accommodations. Overall, this group of teachers came up with 5 discrete strategies with each respondent providing less than one strategy.

Teachers who had previously taught one or more students with visual impairments indicated somewhat better understanding. Although two teachers either did not answer the question or wrote, “N/A,” the majority listed at least one strategy. Five mentioned adjusting seating, others stated specific accommodations, such as braille, minimized distractions, and allowing a child to hold items closer with time to visually process what they are seeing. Two teachers indicated accessing resources, specifically the vision specialist. Teachers in this group produced 9 distinct strategies with an average of 1.67 strategies per respondent.

The final group of teachers is those who are currently teaching a student with visual impairments. All teachers in this group provided at least one strategy. The most oft cited strategy was utilizing other senses, most specifically touch. Other common strategies included preferential seating, using different materials, large print, and presenting materials closer to the student. Several other appropriate strategies were also mentioned with teachers in this group totaling 16 distinctive strategies, each teacher providing a mean of 3.11 strategies. This larger repertoire indicates that these teachers had a better understanding of strategies to use to teach children with visual impairments.

**Concerns and resources.** The last two components of teacher understanding are concerns and resources. All three groups of teachers arrived at similar concerns with respect to having a child with a visual impairment or who is blind in their class. The most common concerns, depicted in Table 2.11, were different for students with visual impairments and
students who are blind. Although some of these concerns, such as student abilities and safety, matched those mentioned in previous research (Wall, 2002), overall teachers in this study were most concerned with how to teach students with visual impairments. This may reflect the difference in the ages of the students taught by teachers in this study from those in the study by Wall, as the teachers in the study by Wall were k-12 educators. It may also reflect the education level of the respondents as the teachers in the previous research (Wall, 2002) had received bachelor’s degrees, but most teachers in the current study had not.

Most teachers who currently had a student with a visual impairment or who had one in the past could identify at least one service or resource available to assist teachers with students with visual impairments. The most commonly identified resource was the vision specialist, identified by 62% of these teachers. None of the teachers who had never taught a student with a visual impairment, however, identified the vision specialist as a resource. Teachers with a current student with a visual impairment collectively identified a total of 13 resources, teachers with a past student identified 7 resources, and teachers who had never taught a student with a visual impairment identified only two.

When the extent to which teachers understand visual impairments, their understanding of strategies, their concerns and resources are taken together a consistent picture emerges. It becomes clear that teachers of current students with visual impairments demonstrate a functional level of understanding of visual impairments that is demonstrated in their articulation of what it means to have a visual impairment, and in their ability to identify strategies and resources to enable them to teach their student. Teachers who have taught a student with a visual impairment in the past retain some grasp of the implications of visual impairment, strategies to employ, and resources. However, teachers who have never taught a student with a visual impairment not only
Table 2.11

Major concerns that teachers would have if a student with a visual impairment or who was blind were to join their class.

| Major concern                                      | Students with visual impairments (%) | Students who are blind
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How to teach the student</td>
<td>35%</td>
<td>How the student will safely navigate school environments 50%</td>
</tr>
<tr>
<td>What and/or how far can the student see</td>
<td>28%</td>
<td>How to best teach the student 33%</td>
</tr>
<tr>
<td>How does the visual impairment impact the student’s safety</td>
<td>23%</td>
<td>Personal capability to teach this student 25%</td>
</tr>
<tr>
<td>How to present materials or concepts effectively</td>
<td>20%</td>
<td>How to help the student to participate when they cannot see the materials 13%</td>
</tr>
</tbody>
</table>

Note: Percentages reflect the proportion of teachers who participated in the survey who expressed this or a similar concern. Percentages may add to more than 100% as participants were asked to indicate more than one concern.

do not know how to help that student but are largely unaware of where to access assistance. This is consistent with the experience described by other researchers indicating that teachers with no experience with students with visual impairments do not understand them and have little knowledge of available resources (Ajuwon et al., 2015; Morris, Sharma, & Centre, 2017; Sharma et al., 2010).

Research Question 6

This final research question examines the role teacher reticence may play in the emergent literacy development of children with visual impairments. Results indicated (Table 2.12) that teachers with current students with visual impairments are significantly calmer (M=23.79, larger numbers indicating more calmness, t (29) = 3.16, p=.004, effect size d=1.141) and more receptive (M= 42.04, t (29) = 3.04, p =.005, effect size d=1.113) toward the idea of having a new student with a visual impairment in their class than teachers who have a student with a visual impairment.
impairment in their class in the past, but do not currently have one (M anxiety/calmness=17.63, M hostility/receptiveness=35.69) and teachers who have never had a student with a visual impairment in their class (M anxiety/calmness=17.44, M hostility/receptiveness=36.33). Based on the similarity between the scores of teachers with past experience teaching a student with visual impairments and those who have never taught a student with visual impairments, it is reasonable to conclude that this is related to the current experience of having a student with a visual impairment in their class as the teachers themselves do not control the assignment of students to their classes. This partially agrees with the findings of Ajuwon et al. that experience with individuals with visual impairments reduces anxiety. However, contrary to the findings of Ajuwon et al. those teachers with current students with visual impairments were also significantly more receptive to having students with visual impairments in their classes. These findings may be better explained by Gotshall and Stefanou (2011) who found that teachers with students with disabilities who received on-going consultation had greater teacher self-efficacy than those who did not.

Table 2.12

<table>
<thead>
<tr>
<th>Scale</th>
<th>Scale</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers with a current student(s)</td>
<td>Anxiety/Calmness</td>
<td>14</td>
<td>23.79</td>
<td>5.55</td>
</tr>
<tr>
<td>Teachers with a current student(s)</td>
<td>Hostility/Receptiveness</td>
<td>14</td>
<td>42.04</td>
<td>4.55</td>
</tr>
<tr>
<td>Teachers with previous student(s)</td>
<td>Anxiety/Calmness</td>
<td>8</td>
<td>17.63</td>
<td>3.82</td>
</tr>
<tr>
<td>Teachers with previous student(s)</td>
<td>Hostility/Receptiveness</td>
<td>8</td>
<td>35.69</td>
<td>5.96</td>
</tr>
<tr>
<td>Teachers who have never taught a</td>
<td>Anxiety/Calmness</td>
<td>9</td>
<td>17.44</td>
<td>6.78</td>
</tr>
<tr>
<td>student with VI</td>
<td>Hostility/Receptiveness</td>
<td>9</td>
<td>36.33</td>
<td>6.61</td>
</tr>
</tbody>
</table>

*Note: The possible range of Anxiety/Calmness scores was from 7-35. The possible range of Hostility/Receptiveness scores was from 10-50.*
Table 2.13

*Teacher responses when asked to identify the best educational placement for students with visual impairments and students who are blind.*

<table>
<thead>
<tr>
<th>Vision</th>
<th>Class location</th>
<th>Teachers with a current student with VI</th>
<th>Teachers who do not have a student with VI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visually Impaired</td>
<td>Regular class</td>
<td><strong>15 (75%)</strong></td>
<td><strong>14 (74%)</strong></td>
<td><strong>29 (74%)</strong></td>
</tr>
<tr>
<td></td>
<td>Special class</td>
<td>9 (45%)</td>
<td>6 (32%)</td>
<td>15 (38%)</td>
</tr>
<tr>
<td></td>
<td>Special school</td>
<td>5 (25%)</td>
<td>5 (26%)</td>
<td>10 (26%)</td>
</tr>
<tr>
<td></td>
<td>Home</td>
<td>4 (20%)</td>
<td>2 (11%)</td>
<td>6 (15%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Blind</td>
<td>Regular class</td>
<td>4 (20%)</td>
<td>5 (26%)</td>
<td>9 (23%)</td>
</tr>
<tr>
<td></td>
<td>Special class</td>
<td>10 (50%)</td>
<td>7 (37%)</td>
<td>17 (44%)</td>
</tr>
<tr>
<td></td>
<td>Special school</td>
<td><strong>18 (90%)</strong></td>
<td><strong>13 (68%)</strong></td>
<td><strong>31 (79%)</strong></td>
</tr>
<tr>
<td></td>
<td>Home</td>
<td>4 (20%)</td>
<td>2 (11%)</td>
<td>6 (15%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2 (10%)</td>
<td>2 (11%)</td>
<td>4 (10%)</td>
</tr>
</tbody>
</table>

*Note:* The number indicates the number of teachers who indicated that a given placement was best for most students with that level of visual impairment, the percentage is based on the number of teachers who responded to this item. Teachers could choose as many placements as seemed appropriate to them. The number in bolded text indicates the placement that the highest percentage of teachers indicated.

Another component of teacher reticence is bias regarding placement. Results of the survey item regarding placement, shown on Table 2.13, indicate clear differences in what teachers see as appropriate placements based on the severity of the visual impairment. Although most teachers regarded the regular class as an appropriate placement for students with a visual impairment, the special school, or school for the blind, was regarded as more appropriate for students who are blind. These results contrast with those of Wall (2002) who found differences in teacher responses based on their experience with children with visual impairments. As was discussed with respect to teacher concerns, this may reflect differences in the nature of the preschool teaching environment in contrast to that of older students. The results of the calmness and receptiveness measure and the placement item indicate that although preschool teachers with current students with visual impairments in my district are more calm and receptive to new
students when they currently have a student with visual impairments, this does not impact how they feel about placement.

**Conclusions**

Results of this needs assessment indicate that some of the factors identified in the literature review as possibly contributing to literacy delays in preschool students with visual impairments are present in my setting while other factors are not evidenced. First, analysis of secondary data from district-wide curriculum based emergent literacy assessments indicates that students with visual impairments are not performing as well as their peers with typical vision. Some specific areas of concern include alphabet knowledge and vocabulary. This reflects the differences in proximal processes during early oral language development (N. J. Dale et al., 2014; Kekelis & Prinz, 1996; Rogers & Puchalski, 1984; Sapp, 2001) incident to the visual impairment, a person factor. These differences are likewise borne out in the attention and engagement challenges present in learners with visual impairments in my district. However, despite links between inattentiveness and lack of interest in preliteracy in typical populations (Baroody and Dobbs-Oates, 2011), students with visual impairments were rated as having similar the levels of preliteracy interest as their peers.

Examination of environmental, or contextual, factors indicated that there was some use of appropriate accommodations in classrooms, but teachers either were unsure of which accommodations were appropriate or were neglecting to use other strategies. This may partially explain continual challenges in development of preliteracy skills. Teachers with current students with visual impairments were found to be significantly more receptive to having students with visual impairments in their classes in the future and were less anxious than teachers who did not have a current student with visual impairments. This receptivity seemed to depend on the
severity of the impairment, however, all groups of teachers surveyed teachers exhibited a considerable bias toward placing students who were blind at a special school.

Home literacy environments for children with visual impairments in many ways were similar to those of their peers. This meant that preschoolers with visual impairments owned books, accessed and were aware of reading and writing in their homes, and were read to if the materials were in print. Students who may be learning braille, however, experience a distinct disadvantage. Few owned books with braille and none of their parents knew braille. This lack of contextual support at home may tend to exacerbate challenges in learning braille.

This needs assessment has identified that preschoolers with visual impairments in my district are experiencing challenges in preliteracy development. Some of the factors at play include slowed vocabulary development, challenges in learning alphabet letters and sounds, attention and engagement difficulties, and limited access to braille in home and school contexts. These findings can guide the evaluation of interventions to better facilitate preliteracy growth.
Chapter 3

Children with visual impairments tend to be behind their peers in literacy skills (Tobin & Hill, 2012). This gap in literacy skills is traceable to infancy and toddlerhood when the presence of one or more visual impairments adversely impacts the development of oral language (Rogers & Puchalski, 1984) and attention (Tadić et al., 2009) in young children. These person characteristics (Bronfenbrenner & Morris, 2006) then functionally influence proximal processes, or the patterns in which the individual relates with the people in his or her immediate environment, resulting in reduced communication between children with visual impairments and their mothers (Kekelis & Prinz, 1996; Sapp, 2001). These person and proximal processes combine with reduced availability of accessible preliteracy opportunities at home (Craig, 1996, 1999) and at school (McDonnell et al., 2014; McKenzie, 2009) resulting in emergent literacy delays for preschool children with visual impairments. Delays are manifest in lags in receptive and expressive language (Reynell, 1978), phonological awareness (Tobin & Hill, 2012), and print knowledge (Kulp et al., 2016). Preliteracy delays are noteworthy, even in preschool students, because literacy performance gaps between children with visual impairments and their age-mate peers have been found to grow over time (Douglas et al., 2002; Lusk & Corn, 2006b).

The needs assessment discussed in chapter 2, which examined the performance of preschool children with visual impairments and the performance of their peers across the 2013-2014, 2014-2015, 2015-2016, and 2016-2017 school years, verified preliteracy skill delays in 3- to 5-year-old preschool children with visual impairments attending preschool classes in a large urban/suburban school district in the western United States. These children were less likely than typically-sighted peers to achieve program goals on district-wide curriculum-based assessments for 3- or 4-year-old preschool students in oral language, phonological awareness, alphabet
knowledge, and book/print awareness. Likewise, in classroom observations of seven preschool children with visual impairments from the 2016-2017 school year showed decreased attention to teacher-directed activities when compared to their classmates. These challenges occurred despite parents of preschool children with visual impairments reading to them as frequently as their typically-sighted peers. In contrast, parents of preschool children with visual impairments prioritized development of self-help skills and communication over learning to read and write, and only one of nine parents who completed surveys provided their preschool child with books with braille or textures.

**Theoretical Perspectives**

Bioecological theory posits that person characteristics, proximal processes, contextual variables, and time influence the developmental outcomes for the individual (Bronfenbrenner & Morris, 2006). The results of the needs assessment and the factors identified by the literature review reflect these properties. The needs assessment in Chapter 2 also illuminated the person characteristics as shown in the heterogeneity of preschool children with visual impairments attending district preschool classes. For example, some students had mild concomitant disabilities or no additional disabilities while other students had multiple or severe disabilities in addition to their visual impairment. In general, children with fewer or more mild disabilities attended regular preschool classes while their peers with more severe disabilities attended special classes. Children who attended regular preschool classes were more likely to achieve program goals. This difference in achievement of program goals suggests that concomitant disabilities also interfere with preliteracy development. Even among children with multiple disabilities, however, some children are more successful than other children. These differences are better explained by dynamic systems theory (Thelen, 2005).
Dynamic systems theory posits that development represents an interplay between the child’s social environment, past and continuing behavior, and biological characteristics (Thelen, 2005). Thus, a child’s history and a caregiver or teacher’s history influence each other and impact the child’s development. Major tenets of this theory include the notions of complexity, continuity in time, and dynamic stability. Complexity postulates that every behavior or skill involves many things happening at the same time, and changes in any part of this change the way other components relate to one another. Continuity in time proposes that events and skill development from the past influences present and future developmental states. Dynamic stability suggests that the behavior of any individual forms patterns with a degree of stability. Thelen (2005) theorized that the basis of development is the process of forming patterns that serve the individual with a greater or lesser degree of stability.

To address the problem of preliteracy delays in preschool children with visual impairments, it seems appropriate to consider both theories. Bioecological theory as posited by Bronfenbrenner and Morris (2006) provides a lens to view the preliteracy development of preschool children with visual impairments by considering the context at multiple levels. The macrosystem consisting of the outside culture and political climate sets the stage. Then levels closer to the child include the exosystem, or networks of families and colleagues that influence the parent, the microsystem consisting of the environments that are part of the child’s world, and the mesosystem entailing of the interplay between these systems. Analysis of these levels focuses on the factors most malleable to change between the person characteristics, the proximal processes, and context (Bronfenbrenner & Morris, 2006). In contrast to the wide angle view provided by Bioecological Theory, the Dynamic Systems Theory takes a microanalytic consideration of what Bronfenbrenner and Morris (2006) would call the proximal processes of
the microsystem, or facets of the interaction between the parent and child that coalesce to form a new behavior, past patterns of behavior between the parent and the child, as well as the current state of the child’s functioning in considering an appropriate intervention (Thelen, 2005).

**Emergent Literacy Interventions**

Based on the factors highlighted in these theories, the problem of preliteracy delays for preschool children with visual impairments suggests two potential groups as targets for intervention: preschool teachers with a student with visual impairments in their class and parents of children with visual impairments. Each of these groups uniquely influences literacy development for children with visual impairment through proximal processes but in different environmental contexts. Within their different contexts, teachers and parents directly influence elements of the microsystem, which refers to the environments directly surrounding the child (Bronfenbrenner & Morris, 2006). A dynamic systems theory perspective can facilitate tailoring of an intervention to counter person characteristics related to the visual impairment through consideration of specific child and situational attributes. The following sections will consider person characteristics, teacher and parent interventions broadly before narrowing in on a specific intervention.

**Person Characteristics for Evaluating Interventions**

In considering these potential interventions there are three points to consider. The first point is concerning the nature of visual impairments. The second is the influence of concomitant impairments. Finally, the consideration of what literacy media are appropriate based on the nature of the visual impairment and other child factors.

Visual ability represents a continuum from individuals who are completely blind, with no light perception, to those with typical near and distance visual acuity (Colenbrander, 2003). This
is only one dimension of vision, however. Retinitis pigmentosa, homonymous hemianopsia, colobomas and other eye diseases can limit the use of peripheral vision or produce holes in the central visual field (Colenbrander, 2003). Near visual acuities can also be affected by visual impairments. Some children with visual impairments may prefer to hold objects very close (within 5” of their eyes) to see them and other children will tilt their head to optimize viewing by their better eye. These preferences may be reflected on eye reports. Yet, ophthalmic measurements fail to define functional vision as used in life and educational settings (Colenbrander, 2003). Additionally, cortical visual impairments (CVI) produce visual functioning that is inconsistent across time and settings (Dutton, 2002). Even when a child diagnosed with CVI demonstrates consistent visual functioning, integration of visual input and understanding about people and objects is often compromised (Dutton, 2002). These variations in functional vision necessitate individualized approaches to literacy instruction (Wilkinson, Trantham, & Koenig, 2001). The one commonality for preschool children with visual impairments is limited exposure to environmental literacy; necessitating direct exposure to appropriate literacy media (Wilkinson et al., 2001).

The presence of concomitant disabilities must also be taken into account when assessing interventions to improve preliteracy skills for children with visual impairments. Researchers have found that 64 to 68% of children with visual impairments have additional disabilities (Hatton, Ivy, & Boyer, 2013; Hatton et al., 2007; Lueck, 2004). Additional physical, sensory, communication, psychosocial, and cognitive disabilities may interfere with prereading tasks (Lueck, 2004; Zebehazy, 2014). Students with visual impairments and significant cognitive disabilities may require different literacy approaches from typically developing children.

Given the heterogeneity of children with visual impairments both in their functional
vision and in the presence or absence of additional disabilities, it is not surprising that variation exists in literacy media as well. Braille, print, and aural literacy media can be appropriate literacy media for children with visual impairments (Wilkinson et al., 2001). Braille in particular must be considered for all children with visual impairments (Musgrove & Yudin, 2013). Learning media is often first determined during their initial evaluation for special education eligibility, just prior to a child’s third birthday. Unfortunately, some children do not receive early intervention services prior to their third birthday and are identified as requiring vision services when they enroll in preschool. Other children are first diagnosed with a visual impairment during their preschool years. For these children the first learning media assessment is conducted when the classroom team becomes aware that the child has a visual impairment. For all preschool children with visual impairments, educational teams determine appropriate literacy media by considering how the student gains information and performs tasks in his environment, their diagnosis from eye care professionals, and the presence of additional disabilities (Wilkinson et al., 2001). As children gain skills, their reading rate, fatigue, and working distance are also considered in choosing literacy media (Wilkinson et al., 2001). Thus, determination of literacy media is an ongoing, fluid process. It is not uncommon for multiple literacy media, including braille, print, and aural media, to be used in preschool to facilitate growth and allow for the child to gain skills in their preferred media.

**Preschool Teachers**

Teachers most frequently implement interventions occurring in the preschool classroom. These interventions typically occur in large or small groups and may address a variety of emergent literacy skills. These include vocabulary (Goldstein et al., 2015; Haley, Hulme, Bowyer-Crane, Snowling, & Fricke, 2016), alphabet knowledge (Justice, Chow, Capellini,
Flanigan, & Colton, 2003), phonological and phonemic awareness (Justice et al., 2003), and general oral language (Phillips et al., 2016).

Just as researchers have examined interventions for a variety of preliteracy skills, they likewise have considered different groups as targets for preliteracy interventions. Participants have included toddlers 12-36 months old (Gardner-Neblett et al., 2017), typically developing preschool children (Ukrainetz, Nuspl, Wilkerson, & Beddes, 2010), preschool children from low-income families (Lefebvre, Trudeau, & Sutton, 2011), preschool children with language delays (Haley et al., 2016), preschool children with developmental delays (Hansen, Wadsworth, Roberts, & Poole, 2014; Towson, Gallagher, & Bingham, 2016), and preschool children with intellectual delays (Hansen et al., 2014; Katims, 1991). These groups did not include children with visual impairments, but some researchers deliberately excluded children with sensory challenges (Haley et al., 2016; Towson & Gallagher, 2014; Towson et al., 2016). Although these researchers do not explain why children with visual impairments are excluded, it is likely attributable to the researchers’ belief that this may present a confounding variable.

Likewise, searches for interventions for preschool children with visual impairments and articles by researchers in the field of visual impairment document no evidence-based interventions to improve emergent literacy skill in preschool children with visual impairments (Cooney, Young, Luckner, & Ferrell, 2015; Jones, Smith, Hensley-Maloney, & Gansle, 2015; Kamei-Hannan, Holbrook, & Ricci, 2012; Parker & Pogrund, 2009). The lack of evidence-based interventions stems from an absence of research in emergent literacy for preschool children with visual impairments. Thus, an intervention for children with visual impairments would be developed based on application of known practices for children with visual impairments and effective interventions for typically-sighted children.
A search of the What Works Clearinghouse website (https://ies.ed.gov/ncee/wwc/#) yielded four practices with research evidence that teachers may use to develop oral language, vocabulary (referred to as comprehension in some reports), phonological processing, print knowledge, or alphabets. These include phonological awareness training, phonological awareness training plus letter knowledge training, dialogic reading, and shared reading. These four practices represent two types of instruction: explicit instruction and instruction paired with reading. Phonological awareness training and phonological awareness training plus letter knowledge training both employ explicit instruction and dialogic reading and shared book reading both pair literacy instruction with reading.

**Phonological awareness training.** Phonological awareness training consists of explicit instruction in phonological awareness including identification of initial sounds in words, rhyming, and segmentation of words (What Works Clearinghouse, 2006a). Likewise, phonological awareness training plus letter knowledge training includes the aforementioned instruction plus lessons and activities to teach letter names and sound-symbol relationships (What Works Clearinghouse, 2006b). Both phonological awareness training and phonological awareness training plus letter knowledge training were found to increase phonological processing (What Works Clearinghouse, 2006a, 2006b). This type of intervention was successfully implemented as a tier 2 intervention for preschool children from low income families attending Head Start (Kruse, Spencer, Olszewski, & Goldstein, 2015). In this intervention Kruse et al. (2015) conducted small group sessions for nine 4-year-old preschool children who demonstrated deficits in phonological awareness. A multiple-baseline design demonstrated the causal relationship between intervention and improved performance in phonological awareness. All children demonstrated increases in at least one phonological
awareness skill that were maintained over time.

In a similar study comparing the performance of 77 children with disabilities to 77 children with typical development attending Early Reading First classrooms, or preschool classrooms with enriched language and literacy instruction, all children made gains in phonological skills (Green, Terry, & Gallagher, 2014). Despite these encouraging results, the children with disabilities failed to catch up with their typical peers and narrowed the achievement gap between their performance and that of their typical peers on only one of four subtests. It is also significant to note two characteristics of the children with disabilities in this study. First, the functioning of these children was such that they could make progress and participate in language and literacy instruction in the general education class setting. Also, these children were able to perform the tasks on the assessments according to standardization, indicating that their disabilities were at most moderate.

Shared reading-interventions. Shared reading interventions have been described as having two categories: dialogic reading and print referencing (Justice & Pullen, 2003). These two instructional practices were described in the What Works Clearinghouse as dialogic reading (What Works Clearinghouse, 2007) and shared book reading (What Works Clearinghouse, 2015).

Dialogic reading. Dialogic reading describes a set of interactive reading procedures wherein the teacher encourages interaction with the child using the five types of prompts described by the acronym CROWD: Completion, or allowing the child to complete the sentence; Recall, describing the adult asking the child to recount what has happened or to simply answer questions about the book; Open-ended, in this prompt the teacher asks the child questions about pictures in the book that have no specific right or wrong answer; Wh-, this described the adult
using questions such as who is in the picture, what they are doing, where they are going, etc.; Distancing, this refers to the adult relating the words, pictures, or story theme of the book to the child’s own experience (What Works Clearinghouse, 2007). A second acronym, PEER, has also been used to describe adult prompting in dialogic reading (What Works Clearinghouse, 2007). The acronym PEER refers to Prompting the child to comment about the book; Evaluating the response; Expanding the child’s response; and Repeating the prompting sequence to create dialogue about the book (What Works Clearinghouse, 2007). Prompting generally moves from less complex, such as the PEER strategies, to more advanced questioning, as reflected in CROWD. Dialogic reading has been conducted during large group (Wasik & Bond, 2001), small group (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999), and individual instruction (Crain-Thoreson & Dale, 1999). The most frequent effects of dialogic reading are seen in oral language and communication (What Works Clearinghouse, 2007).

Although the studies cited as representing different group size presentations of dialogic reading above met the What Works criteria, two of these studies have issues that confound the results. Crain-Thoreson and Dale (1999) found that all children improved in number and length of utterances but did not find significant differences between parent-child, child-staff member dialogic reading, and child-staff member control. However, the same staff member read to children in the dialogic reading and control conditions, potentially neglecting to use techniques with children receiving treatment or using treatment with children in the control group. Likewise, parents and staff received two 1.5-hour trainings in dialogic reading spaced four weeks apart, which appears to have been insufficient to master the techniques as little change was observed in the use of several of the strategies during reading in pre-and post-test videos.

Similarly, the study by Wasik and Bond (2001) presented issues. In this intervention
teachers were trained in dialogic reading then given big books and props to teach vocabulary, as well as follow-up activities. The control group initially received just the big book, but was eventually also given follow-up activities partway through the intervention period when it was determined that there was no follow up for the children in this condition. The most significant issue in this intervention was the frequency with which the intervention was conducted. Wasik and Bond (2001) indicated that the intervention was conducted for 15 weeks over a period of over seven months. This indicates that the intervention was taking place in approximately two of every four weeks. Although the researchers indicated that the children made gains relative to peers in the control condition, it is unknown whether this was due to the dialogic reading techniques, the supplemental vocabulary instruction, or differences in the way that the two teachers in the intervention condition taught versus the way that control teachers taught.

**Print referencing shared reading.** Of the four literacy promoting practices that What Works Clearinghouse reviewed, the one that was least positively reviewed was the one termed shared book reading. In this classification, the reviewers seem to have lumped together any intervention that involved a teacher reading a book with one or more children, regardless of strategies used or the intent of the research. Given the broadness of this definition it is not surprising that the reviewers did not find conclusive results (What Works Clearinghouse, 2015). Evaluation of shared reading interventions specifically intending to address print referencing tend to reflect more positive findings (Justice, McGinty, Piasta, Kaderavek, & Fan, 2010; Piasta, Justice, McGinty, & Kaderavek, 2012).

Piasta et al. (2012) trained teachers in project STAR or “sit together and read” intervention. In this training teachers spent an 8 hour fall workshop learning about the research behind shared reading to increase print referencing and how to implement print referencing
strategies. These strategies included explicit demonstration with verbalization of where to start to read and which way to go, pointing out and naming specific letters, and pointing out distinct words. Initial training was followed up with a 3-hour refresher midway through and two written feedback letters based on video of the teacher implementing the intervention. For this study, researchers randomly assigned teachers to one of three intervention groups: high dose, low dose, and comparison. Teachers in the high-dose condition utilized print-referencing shared book reading strategies in four sessions per week. In low-dose teachers utilized print referencing strategies two days per week. In the comparison condition teachers received training in the importance of shared book reading and how to tie this into themes or dramatic play. They then read the same books to the children four times per week. All teachers read to the whole class.

After the initial intervention, researchers followed the children one- and two-years post intervention. One-year post intervention children in the high dose condition scored better than children in the non-print referencing comparison group in spelling, reading, and comprehension. Scores for the children from the low dose print referencing did not differ from those of either group. After two years, children from the high dose print referencing condition not only scored better than the comparison group, but also scored significantly better than the low dose print referencing group in reading. This is important as it demonstrates the necessity of frequent implementation of intervention.

Automated storybook reading interventions. A final kind of intervention that researchers have had teachers implement are automated storybook reading interventions. In these interventions teachers assist small groups of children with listening center equipment and turning pages, while an automated recording reads to children. Children in the intervention group hear the story with embedded vocabulary instruction. Children in the comparison group hear the same
story without the embedded vocabulary instruction. Each child listened to each book ten times. As may be anticipated, children in the intervention group were able to answer more vocabulary questions correctly than children in the control group. There was no difference between groups in comprehension. This suggests that typically developing children may benefit from automated vocabulary instruction embedded in listening center activities.

Parents of Preschool Children with Visual Impairments

Unlike the preschool teacher, the parents of children with visual impairments typically have an ongoing presence in their lives (Bransford, Brown, & Cockings, 2000; Leyser & Heinze, 2001). Parents usually have less children to attend to and can give more targeted attention to the child with visual impairments (Leyser & Heinze, 2001). These characteristics suggest the parent as a potential interventionist.

Little empirical research has been conducted on literacy focused interventions for parents of preschool children with visual impairments (Erickson & Hatton, 2007b). However, several research studies have addressed parent preliteracy interventions for other groups of children from birth through age five (P. J. Cooper et al., 2014; Huebner & Payne, 2010; Mathis & Bierman, 2015; Sheridan et al., 2011; Sim et al., 2014; van Bysterveldt et al., 2006; Whitehurst et al., 1988).

One intervention intended to develop preliteracy skills is the Getting Ready intervention (Sheridan et al., 2011). This intervention consists of teachers conducting eight 60-minute home visits spread over two years to support and enhance the quality of parent child interactions. During the intervention the teacher discussed child strengths, goals, and developmental information, then helped the parent brainstorm ways to improve their child’s development. Follow-up phone calls, notes, and interaction at drop-off and pick-up encouraged follow through
on these plans. Sheridan et al. (2011) found that children in the intervention condition improved more as measured on the Preschool Language Scale-4th edition, but not on the Teacher Rating of Oral Language and Literacy. This suggests that spaced home visits may improve some aspects of language and literacy but have limited impact on others.

A second group of researchers utilized a mixed intervention approach with more closely spaced home visits, provision of activity boxes with books and games, and instruction to guide their use (Mathis & Bierman, 2015). This instruction came in written and video formats and included dialogic reading strategies and embedding literacy into dramatic play scenarios. Teachers played videotapes modeling skills with the parents and discussed the material as well as giving tip sheets. Researchers videotaped sessions to track parent-child interaction quality and used the findings to increase support where needed. Descriptive statistics indicated that children in the intervention group scored similarly to those in a control group that did not receive the home visits on both pre- and post-test measures of literacy.

These studies suggest that home visits are not an effective means to improve literacy for preschool children. In contrast, the most frequently studied approach to this was the shared book reading intervention (P. J. Cooper et al., 2014; Huebner & Payne, 2010; Justice, Skibbe, et al., 2010; Sim et al., 2014; van Bysterveldt et al., 2006), shows promise as a means to improve preliteracy skills.

**Shared Book Reading Intervention**

In shared book reading interventions, parents are taught techniques to use while reading with their child, such as asking the child questions about the book; expanding on child comments; or pointing out features of the book, text, or individual words. These interventions may improve orientation toward books (Hardman & Jones, 1999), attention (P. J. Cooper et al.,
2014), vocabulary (Whitehurst et al., 1988), phonological awareness (Justice, Kaderavek, Bowles, & Grimm, 2005; Sim et al., 2014), print concepts (Justice, Skibbe, et al., 2010; Sim et al., 2014), and alphabet knowledge (van Bysterveldt et al., 2006). These areas are noteworthy as they correspond with areas of deficit for children with visual impairments (for attention see Tadić, Pring, & Dale, 2009; for print concepts including alphabet knowledge see Kulp et al., 2016; for vocabulary see N. J. Dale & Sonksen, 2002; for phonological awareness see Hatton, Erickson, & Lee, 2010; for evidence of need in all areas listed above in the current context see results from the curriculum based assessment in Chapter 2).

**Orientation Toward Books**

Infants are the youngest age group represented in published shared storybook reading intervention for parents (P. J. Cooper et al., 2014; Hardman & Jones, 1999). Researchers have studied parents of babies as young as nine months as they interacted with their child and books (Hardman & Jones, 1999). Mothers were taught to hold the book where the baby could focus on it, move the baby’s hand to touch the book, point to and turn pages, and talk to the baby about the book. These very young children were found to increase their looking at and reaching for books after two months of their mothers’ attending book groups and having improved access to books (Hardman & Jones, 1999). Unfortunately, Hardman and Jones (1999) were vague in their description of the content of parent meetings, thus preventing replication of training methods. Despite this weakness, this study suggests that shared book reading promotes increased orientation toward books. simply seeking to interact with books provides a foundation for development of additional skills. This study also demonstrates the dynamic systems theoretical principle of complexity by showing how small changes in the mother’s focus, one factor impacting the child’s literacy development, produce changes in the child.
Attention

A second skill that is developed through shared storybook reading with older infants and toddlers is attention or engagement. P. J. Cooper and colleagues (2014) trained South African women with infants between 15 and 17 months old to follow their babies’ cues; provide names for objects of interest to the child; ask where, what, and who questions; and link book content to the child’s experience. This training took place across six sessions and helped mothers to improve their engagement quality with their babies. After six weeks of training, the improvement in child attention was significantly greater than attention increases observed in the control group that received training in toy play. Despite this promising evidence, some characteristics of this study make it difficult to transfer to the current context.

First, P. J. Cooper et al. (2014) measured attention quality in solitary infant play. Although appropriate for younger children, most older children engage in more complex play (Parten, 1933). Additionally, preschool children must learn to attend in school settings, not just with self-selected toys (Arnold, Kupersmidt, Voegler-Lee, & Marshall, 2011). Finally, the small sample size of 30 children in total from a very different culture necessitates caution in transferring these findings to the current context.

In contrast to the improved attention observed in the study by P. J. Cooper et al. (2014), P. S. Dale, Crain-Thoreson, Notari-Syverson, and Cole, (1996) did not observe increased engagement in three- to six-year-old children with language impairments after parent training in shared book reading. This lack of change both reflects that the children were already sustaining in high levels of engagement, with pre-test measures indicating over 90% engagement. These researchers recorded engagement as a response to parental utterance, thus failing to acknowledge whether the child was engaged for the duration of parent verbalizations, such as when the parent
read passages of text. Due to these study characteristics, this study may not fully capture the potential for shared book reading to affect attention and engagement for children with attention and engagement challenges.

The way that these studies considered attention in shared book reading illustrates the importance of considering continuity in time. The first study considered the attention of very young children who had little experience with book reading and had not yet developed their ability to attend (P. J. Cooper et al., 2014). For these children attention was an area of need. In contrast, the second study considered the attention of children who were already demonstrating high levels of attending using the researchers’ definition (P. S. Dale et al., 1996). Thus, the study’s failure to see improvement in attention may relate directly to the researcher’s failure to consider the participant’s past, or inattention to the dynamic systems concept of continuity in time.

**Vocabulary**

In addition to improving orientation toward books and attention, empirical evidence suggests that shared book reading interventions improve vocabulary in both toddlers and preschool children (P. J. Cooper et al., 2014; Towson & Gallagher, 2014; Whitehurst et al., 1988). In a seminal study, Whitehurst and colleagues (1988) explored the impact of training parents of typically developing children between 21- and 35- month old children in dialogic reading strategies through two sessions. Four weeks later children of trained parents scored significantly higher in measures of expressive vocabulary than children whose parents had not received the training. Posttest vocabulary scores likewise reflected in near-significant differences nine-months later. P. J. Cooper et al. (2014) similarly found in improvements in vocabulary and comprehension for 15-17-month-old children.
Shared storybook interventions have also improved vocabularies for children with language delays. P. S. Dale et al. (1996) trained parents of children with mild to moderate language delays in either dialogic reading or conversational language. Six to eleven weeks after pretest and initial training children from the dialogic reading group used a greater number of different words than children in the conversational language group. This observed difference in word usage for children with language delays indicates that shared storybook interventions may be efficacious for typical and atypical children.

**Phonological awareness**

Unlike the studies of orientation toward books, attention, and vocabulary which focused on infants, toddlers, and preschool children, researchers examining the effects of shared storybook reading on phonological awareness have focused on children four years old or older (Justice et al., 2005; Skibbe, Justice, & Bowles, 2011; van Bysterveldt et al., 2006). Justice and colleagues (2005) conducted a feasibility study evaluating a parent implemented phonological awareness shared storybook reading intervention. These researchers randomly assigned 22 children with language impairments to either the experimental group or a control group. Each parent was provided with ten books that they read with their child. Parents were to read each book four times during its assigned week. After reading the book, parents in the experimental group completed two phonological awareness tasks with their child. These tasks included alliteration or rhyming tasks, such as finding a word in the book that rhymed with a given word. The comparison group also completed a task; this task focused on vocabulary. Results indicated that the experimental group performed better than the comparison group in rhyme, but not alliteration. Despite mixed findings, Justice et al. (2005) believed that this study provided support for future implementation of shared book reading interventions directed toward
improving phonological awareness of children with developmental disabilities.

Research on shared book reading intervention geared toward phonological awareness has also considered the efficacy of parent implementation as compared with teachers or researchers. Skibbe, Justice, and Bowles (2011) found that parents can provide appropriate support to help their children improve phonological awareness over time, including reducing support as children become more independent. Additionally, development of phonological awareness concepts may still be effective when they are embedded in shared book with children with language impairments (Skibbe et al., 2011). Similar interventions were likewise effective for children with Down Syndrome (van Bysterveldt et al., 2006).

**Print Awareness and Alphabet Knowledge**

Several studies have applied print referencing strategies to shared reading interventions (Justice & Ezell, 2002; Justice, Skibbe, et al., 2010; Justice, Weber, Ezell, & Bakeman, 2002; Lefebvre et al., 2011; Sim et al., 2014; van Bysterveldt et al., 2006). Justice and Ezell (2002) conducted a study considering the efficacy of incorporation of print concepts into shared book reading. In this study, children at-risk for literacy challenges attending Head Start classrooms participated in an eight-week intervention with shared storybook reading sessions conducted four days per week. Following implementation, children in the intervention group demonstrated significantly more growth than children in the control group in several print awareness subdomains. In this study, researchers carried out the intervention, however. Thus, intervention implementation fidelity was high. These researchers and colleagues (Justice et al., 2002) carried out another study on parent implementation of print referencing during shared storybook reading with typically developing children. This study found that parents were idiosyncratic in their implementation of print referencing following training in print referencing strategies, indicating
that unlike interventions implemented by researchers, parental implementation would tend to vary by parent.

Despite this weakness, multiple researchers found improvements in print concepts following a parent-implemented shared storybook reading intervention (Justice, Skibbe, et al., 2010; Sim et al., 2014; van Bysterveldt et al., 2006). Interestingly, children participating in shared book reading interventions with a print referencing focus appear to make no more progress than that of children in comparison or control groups in alphabet knowledge (Justice, Skibbe, et al., 2010; Sim et al., 2014; van Bysterveldt et al., 2006). These studies also provide evidence that shared storybook reading with print referencing strategies may positively impact print concepts for children with language impairments (Justice, Skibbe, et al., 2010) and down syndrome (van Bysterveldt et al., 2006).

As was suggested above, these teacher and parent interventions did not include children with visual impairments. To determine an appropriate intervention, characteristics of the current context must be considered. Although preschool teachers in the present context currently receive no training on visual impairments unless there is a child with visual impairments in their class (see needs assessment in Chapter 2), the curriculum mandated by the preschool department, (We Can) includes explicit language and literacy instruction. This includes phonological awareness training and letter knowledge instruction. Where needed, braille materials are provided to allow children with visual impairments to access the materials. As the needs assessment in Chapter 2 indicated, children with visual impairments represent only 0.4% of the students attending preschool in this district, training a given teacher in a secondary intervention to support a child with visual impairments would likely support only one child for the time that child was in their class. After the child left their class these skills would be unlikely to be used again or would
decay before another child with a visual impairment was in their class again. Additionally, the heterogenous nature of children with visual impairments is inconsistent with the children benefitted by classroom interventions. This suggests that intervening with parents may allow more individualized benefits, if adapted to children with visual impairments.

**Application to Children with Visual Impairments and Their Parents**

Although shared book reading interventions have been shown to improve orientation toward books, attention, vocabulary, phonological awareness, print concepts, and alphabet knowledge for typically developing infants, toddlers, and preschool children, and for preschool children with language impairments, autism, and Down Syndrome (P. J. Cooper et al., 2014; Justice et al., 2005; Justice, Skibbe, et al., 2010; van Bysterveldt et al., 2006; Whalon, Hanline, & Davis, 2016; Whitehurst et al., 1988) literature searches in JSTOR, ERIC, Education Source, PsycINFO, Education Database, and Academic Search Complete revealed only one study that evaluated the efficacy of a shared storybook reading intervention on literacy skills for children with visual impairments. This study evaluated the effects of shared stories on the comprehension of two 6-year-old children with visual impairments and intellectual disabilities (Mims, Browder, Baker, Lee., & Spooner, 2009). Mims and colleagues (2009) adapted books by removing pages and lines, inserting other lines, and attaching objects to the pages of the book and had the instructor employ a least-to-most prompting strategy. Although the strategies utilized by Mims et al. (2009) were effective for these children, the intervention required extensive preparation and least-to-most prompting. In a least-to-most prompting strategy if the student responds incorrectly or fails to respond, the teacher provides least intrusive prompt. This requires an understanding of the importance of wait time, an understanding of the amount of time to wait for an individual child on a given task, and the ability to analyze the task to know the least intrusive prompt that
may enable the child to be successful. The combined requirements of least to most prompting may be beyond the skill of most parents. Further, the complexity of preparations renders this strategy unlikely to be perpetuated in the home with novel books.

**Parent Interventions for Children with Visual Impairments in Other Domains**

Another relevant body of research includes studies of interventions in other developmental domains successfully implemented by parents of children with visual impairments. One of the earliest of these described an early intervention approach to support global development of infants with no functional vision from birth to their third birthday (Fraiberg, Smith, & Adelson, 1969). Researchers observed behavior of infants and their parents concerning attachment, interaction with objects, use of language, and concept of self. After observing, the researchers then taught the parent to recognize attachment cues. Next the researchers helped the parent to “talk” with the baby, including verbal and tactile conversations, such as helping the baby explore their parent’s face. Similarly, researchers taught parents to facilitate exploration in other areas, such as finger foods, and objects. This study by Fraiberg, Smith and Adelson provided evidence that teaching the parent may promote development.

A similar approach by Beelman and Brambring (1998) used a quasi-experimental approach with an experimental group receiving instruction specifically designed to promote global development of children with visual impairments while the control group received regular early intervention services specific to their different regions of Germany. In this study the experimental group and the control group did not perform differently at most assessments, but implementation data suggested that parents found the intervention useful because it was adapted to their child’s development (Beelmann & Brambring, 1998). Beelman and Brambring asserted that “positive ratings on the cooperation of the children and the parents’ interest … [illustrate] the
positive impact of a close link between developmental assessment and intervention planning” (Beelmann & Brambring, 1998, p. 238). This claim supports the use of an individualized approach to intervention for children with visual impairments.

More recently Platje, Sterkenburg, Overbeek, Kef, and Schuengel (2018) used a randomized control trial to evaluate a video-feedback intervention developed to promote attachment and parent child interaction. Although the researchers found no direct intervention effect on parent-child interaction, parents receiving the video-feedback positive parenting intervention experienced increased parental self-efficacy and reduced stress compared with parents in the control group who received visits designed to address parental needs. These increases in parental self-efficacy predicted increases in parent-child interaction scores. Unfortunately, it is unclear whether this was due to use of standardized positive parenting instruction content prescribed by the intervention or the result of discussion of video of their interaction with their child. The researchers similarly discussed that the failure of the intervention to produce improved sensitivity or directly influence interaction may be the result of the intervention failing to address the current needs of the dyad.

These studies suggest that teaching parents of children with visual impairments may positively influence outcomes. Thus, teaching parents shared storybook strategies for preschool children with visual impairments may be successful. However, this intervention would require integration of successful intervention principles, working knowledge of the characteristics of the visual impairment, and addressing the current needs of the dyad. This section will review skills successfully promoted through shared storybook interventions, the strategies utilized, and accommodations or modifications necessary to apply these interventions to children with visual impairments.
Orientation Toward Books

Orientation toward books is a basic preliteracy skill influenced by shared storybook reading. The development of this orientation appears to be precipitated in typically developing infants by increasing the parent’s value of engaging in literacy activities (Hardman & Jones, 1999). As the parent values these activities more, they engage in them more frequently, and the baby becomes more interested in the book, which encourages the parent to continue (Hardman & Jones, 1999). This process is consistent with the dynamic systems theory idea that the individual is influenced by their environment while simultaneously changing the way that the environment influences them (Thelen, 2005).

Orientation toward books may be more challenging to develop in children with visual impairments (Craig, 1996). Craig (1996) indicated that children who were going to use braille were less likely to initiate shared reading experiences with family members than children with visual impairments who were going to be print readers. Regardless of whether this is due to the severity of the visual impairment impeding connection with the book (Craig, 1999), children who initiate shared reading are likely to be read to more frequently. However, qualitative research of families with children with visual impairments led Craig (1999) to suggest that, like typically sighted children, the frequency with which families of children with visual impairments engage in literacy experiences based on the extent to which they value literacy. Based on the findings of Hardman and Jones (1999), however, it seems plausible that these two factors interact. Thus, to increase the frequency of engagement in shared book reading it is important to address the value placed in literacy, while simultaneously providing strategies that will build child engagement.

Attention
The second set of skills that shared storybook reading may influence are attention and engagement. Just as helping orient children to books may improve the frequency that they are read to, the frequency of shared reading relates to child attention (Fletcher, Cross, Tanney, Schneider, & Finch, 2008). Attention and engagement for typically sighted children are developed by training parents in three techniques (P. J. Cooper et al., 2014). The first technique is to teach parents to follow cues of their child and emphasize stimuli that the child attends to (P. J. Cooper et al., 2014). This aspect of parent training may be especially crucial for parents of children with visual impairments as researchers have observed that parents of children with visual impairments have more difficulty reading cues from their children than do parents of children without visual impairments (Rogers & Puchalski, 1984). If parents learn to read and respond to the cues of their child while the parent engages with the child in shared reading, then the child may respond by both attending to the book and engaging with the parent, thus demonstrating the dynamic relationship between the child’s development and the parent’s responses.

The next technique that P. J. Cooper and colleagues (2014) utilized in training parents to develop attention was active child participation. Parents facilitated the child’s handling of books, helping the child to orient the book and turn pages (P. J. Cooper et al., 2014). For children with visual impairments, this strategy may be unique to the child. Children with more functional vision may benefit from instruction in more visual cues to orient the book, whereas children with less functional visual may need tactile strategies. Likewise, concomitant motor impairments may necessitate adaptation in book handling to help them to attend to the book.

Finally, parents need to be taught to link the content of the book to the child’s experience (P. J. Cooper et al., 2014). For children with visual impairments, this aspect may have additional
import. Parents need to learn to help their child to reflect on past experiences (Erickson & Hatton, 2007b) or use household objects to help the child relate to the text. By reading child cues, encouraging active participation, and tying book content to experience parents may build their child’s ability to attend to books and the book sharing experience.

Vocabulary

Once the child is oriented to the book and attending to it, shared book reading techniques may be used to develop vocabulary. A frequently used strategy for enhancing vocabulary through shared book reading is through dialogic reading (Whitehurst et al., 1988). Dialogic reading techniques have been described using two acronyms: CROWD and PEER (Towson & Gallagher, 2014). In CROWD the parent uses completion, or strategic pauses that allow the child to fill in the blank; recall, or adult questions about what happened; open-ended questions about the story; wh-questions about the story; and distancing, or asking the child to relate the story to their own experience (Towson & Gallagher, 2014). The other dialogic reading technique, PEER, involves the adult prompting the child to comment about the book; evaluating what the child said; expanding on the child’s comment; and repeating or asking the child to repeat the expanded comment (Towson & Gallagher, 2014). These techniques typically involve the child interacting with the pictures. Thus the interventionist must consider the visual ability of the child and may need to adapt the training of these techniques to include responses to tactile components or auditory input. These adaptations may be effective for highly verbal children with visual impairments but require additional adaptation for children who are non-verbal or who have limited verbal skills.

Phonological Awareness

Researchers have taught parents a variety of techniques to develop their child’s
phonological awareness during shared book reading. The simplest technique is simply commenting about rhyme or words that start or end with the same sound as it occurs in the book (Sim et al., 2014). A more explicit technique asked parents to draw their child’s attention to a letter, state the letter’s name, provide the sound, and relate the letter’s sound to its position in a word (van Bysterveldt et al., 2006). A third technique embedded questions for the parent to ask in books provided to the parent by the researchers (Skibbe et al., 2011). These techniques rely more on auditory ability that functional visual thus should require minimal adaptation, such as pointing out a braille letter rather than a print letter, for some children with visual impairments. However, some oral language ability is needed for success in phonological awareness. Thus Skibbe and colleagues point out these skills may not be appropriate for children who are non-verbal or who have severe concomitant oral language delays.

Print Awareness

The final preliteracy skill group wherein preschool children have shown growth in response to parent implemented shared storybook reading interventions is print awareness. This skill group includes concepts about print and book awareness. Researchers taught parents to implement explicit discussion and demonstration of print concepts such as distinguishing a letter from a word, commenting about letters, and evaluating of the relative length of words; and book awareness tasks such as where to start reading, tracking the words as they are read, talking about the title of the book, and playing with the orientation of the book (Justice, Skibbe, et al., 2010; Sim et al., 2014).

These concepts about print and book awareness apply to both print and braille books, thus can be appropriate for all children. The training of parents whose children are braille learners will have to include at least minimal training in braille as the needs assessment in
Chapter 2 indicated that none of the parents of preschool children with visual impairments in the current context knew braille. Like other skills, training parents to implement print awareness in their shared book reading will require differentiation based on the child’s functional visual and any additional disabilities.

**Key Characteristics for Training Parents of Children with Visual Impairments**

As the previous section indicated, training parents of children with visual impairments to implement shared storybook reading strategies requires differentiation based on the needs of the child. Additionally, interventionists need to consider characteristics of parents of children with visual impairments in determining the type and extent of training. This section will consider these training characteristics.

**Type of Training**

Parents have been trained in shared storybook reading interventions through live group sessions (Whitehurst et al., 1988), group overview with individual follow-up training (P. J. Cooper et al., 2014), videotaped training (Justice et al., 2002), videotaped training with follow-up (Huebner & Meltzoff, 2005), and online (Beschorner & Hutchison, 2016). Each of these training types may be effective in promoting preliteracy development through shared book reading. The characteristics of the training type and the needs of parents of children with visual impairments lend themselves to some types of training over others, however.

Parents of children with visual impairments experience more stress than parents of children without disabilities, but perceive that they have less social support to ameliorate this stress (Tröster, 2001). When these parents can connect with social support their stress is lessened (Tröster, 2001). One way that parents reported finding support was through support groups for parents of children with visual impairments (Leyser & Heinze, 2001). One factor that was
beneficial was the connection that parents made with other parents of children with visual
impairments (Leyser & Heinze, 2001). The ability to connect with other parents was similarly a
factor that parents enjoyed during face-to-face dialogic reading trainings (Beschorner &
Hutchison, 2016). This suggests that grouping parents with other parents of children with similar
challenges may facilitate not only training in shared storybook reading but also promote social
support and reduce stress.

A second characteristic that must be addressed is the heterogeneity of the children with
visual impairments. As discussed earlier in the chapter, a large percentage of children with visual
impairments have concomitant disabilities in addition to their visual impairment (Hatton et al.,
2013). Previous research suggests that consideration of the unique needs of the parent-child dyad
is important to intervention success (Beelmann & Brambring, 1998; Platje et al., 2018). Thus, an
intervention with both group and individualized components may best meet the needs of these
parents and children.

**Extent of Training**

Researchers have implemented face-to-face trainings for shared storybook reading as
infrequently as once in the intervention (van Bysterveldt et al., 2006) or as frequently as every
two weeks for five months (Hardman & Jones, 1999). In the studies where parents cited
interaction with other parents as beneficial in its facilitation of connection with other parents, at
least five trainings occurred (Beschorner & Hutchison, 2016; Hardman & Jones, 1999). Parents
seemed to respond to the opportunity to connect with other parents during the training rather than
just before or after the training (Beschorner & Hutchison, 2016). This parent response suggests
that multiple trainings with planned time for parents to connect may support the parents. These
kinds of trainings were effective in promoting preliteracy skills for children as well (Beschorner
& Hutchison, 2016).

**Maintenance of Skills Learned**

Although multiple studies have evaluated whether parents could perform shared storybook reading strategies (Crain-Thoreson & Dale, 1999; P. S. Dale et al., 1996; Huebner & Meltzoff, 2005; Huebner & Payne, 2010), most of these considered only the development of the skill in the short term. An exception to this is the study by Huebner and Payne (2005). These researchers considered whether parents would maintain dialogic reading strategy use over two years. In this study Huebner and Payne (2005) trained parents of two- or three-year-old children in dialogic reading strategies. Two years later these researchers invited the parent-child dyads to be assessed one more time to see if the parents were using dialogic reading strategies more than a group of parents of children of similar age who had not been trained. Parents who had been trained used 90% more dialogic reading strategies than those who had not been trained. This indicates that parents who have learned to engage in shared reading strategies are likely to continue using them.

**Dynamic Systems Theory Intervention Research**

Thus far this discussion has considered elements of emergent literacy amenable to change through shared storybook reading intervention, how these elements may be applied to children with visual impairments, and the manner in which the parent accesses the training. The final aspect to consider in developing an intervention are dynamic systems theory research strategies.

Researchers using dynamic systems theory often employ microanalysis of relationships between two or more individuals (Steenbeek, van Geert, & van der Steen, 2017). Steenbeek et al. (2017) observed the process through which a boy with autism increased his independent on-task behavior and play skills through prompting given by his mother. Researchers tracked the number
of prompts that the mother gave and the on-task or play initiatives of the boy as a function of time. Time was considered in an individual session, and across sessions. Behaviors initially showed a great deal of variability with the boy requiring many prompts, but responding to the prompting by requiring less prompts at the end of the session than the beginning. Over time, the variability decreased, and the boy demonstrated more independence.

In another study van Vondel, Steenbeek, van Dijk, and van Geert (2017) taught 23 science teachers to increase the understanding of their students by using more complex questions and encouraging greater student complexity of responses through video coaching. Teachers were observed teaching two lessons in baseline. Teachers were then trained in teaching strategy. During this intervention phase teachers were observed teaching a lesson, then were given video feedback coaching that focused on three positive examples and one aspect to change. Intervention phase consisted of four to six observed lessons. Two months after the last coaching session teachers were observed again for two lessons. Performance of teachers in the intervention condition were compared with a control group that did not receive the intervention. in this study, researchers plotted the complexity of teacher questions as it related to student responses. This analysis was conducted in individual lessons and over time. This kind of analysis was also done with the teachers in the control condition. The researchers observed different patterns of interactions in the intervention condition from the baseline.

Both of these studies showed how dynamic stability of interaction patterns is. Thus, these interactions may be altered through changes in the way that one interaction partner approaches an interaction. This process of observation of change can be applied to the current problem by First observing the parent reading to the child, marking the parent use of strategies, child attention, child response, then plotting these elements. This is followed by instructing like
parents in appropriate strategies and rationale. Then observe again, coaching the parent in
improving their use of the strategies previously learned. This is then followed by further training
in additional strategies.

Conclusions

Very little research has been done on interventions to promote preliteracy development of
preschool children with visual impairments. Thus, to find an appropriate intervention this
literature review relied on research on other preschool children. This research suggests that
parent-implemented shared storybook reading interventions promote the preliteracy development
of preschool children. These interventions seem promising for preschool children with visual
impairments as well. The parent is the ideal interventionist as preschool children in the current
context spend at most 12 hours of their week in school (three hours per day, two to four days per
week), while spending much more time with their parents. Parent training for this kind of
intervention must address specific needs of the child but may benefit the parent as well if the
training is ongoing and conducted in groups.
Chapter 4

As discussed in preceding chapters, preschool children with visual impairments tend to demonstrate delays in pre-literacy skills, such as oral language (Reynell, 1978), phonological awareness (Tobin & Hill, 2012), and print knowledge (Kulp et al., 2016). This gap in literacy skills is traceable to infancy and toddlerhood when the presence of one or more visual impairment adversely impacts the initial development of language (Rogers & Puchalski, 1984) and attention (Tadić et al., 2009). These weaknesses combine with reduced availability of accessible preliteracy opportunities at home (Craig, 1996, 1999) and result in preliteracy delays. Preliteracy delays are noteworthy because literacy performance gaps between children with visual impairments and their age-mate peers have been found to grow over time (Lusk & Corn, 2006b).

The needs assessment discussed in Chapter 2 examined the performance of preschool children with visual impairments and their peers in a school district in the western United States verified performance gaps. Children with visual impairments were less likely than typically-sighted peers to achieve program goals on district-wide curriculum-based assessments in oral language, phonological awareness, alphabet knowledge, and print knowledge. Classroom observations similarly indicated that children with visual impairments showed decreased attention to teacher-directed activities when compared to their classmates. Home factors contributed to these delays. Parents of preschool children with visual impairments prioritized development of self-help skills and communication over learning to read and write, despite indicating that they read to their children as frequently as parents of typically-sighted peers read to their children.

Little intervention research has focused on improving emergent literacy for children with
visual impairments. A broader focus on interventions that advance preliteracy skill development for preschool children with typical vision suggests that a shared storybook reading intervention implemented by parents promotes emergent literacy skill development for preschool children. Further, disparate preliteracy performance between children with visual impairments without additional disabilities or with mild disabilities and children with visual impairments and concomitant severe disabilities suggests a differentiated approach tailored to the needs of the child and parent. This tailoring relied on dynamic systems approaches to intervention.

Given this need for individualization, several shared book reading strategies were utilized. These are summarized in Table 4.1.

Table 4.1

*Shared book reading techniques and their application to children with visual impairments.*

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Application to children with visual impairments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Engagement Strategies (P. J. Cooper et al., 2014)</td>
<td></td>
</tr>
<tr>
<td>Teaching the child to orient to books by presenting books where the child can access them and bringing the child’s hand to the book</td>
<td>Provide book appropriate to child’s functional vision, present it in child’s preferred visual or tactile location, lead the child’s hand to the book, particularly to tactile features, such as textures or braille. Teach parent to read cues of their child. For some children there will be eye gaze cues, other children may look away to indicate tactile engagement, as the child may process one sense at a time. This is very idiosyncratic.</td>
</tr>
<tr>
<td>Follow child’s cues to build child engagement</td>
<td></td>
</tr>
<tr>
<td>Develop active participation</td>
<td>To the extent that the child is able, allow the child to hold the book. This may involve positioning the child and the book. Help the child to turn pages, to the level that the child is able. This may be full page turning, turning a partially turned page, or indicating that it is time to turn the page through eye gaze at a near distance.</td>
</tr>
</tbody>
</table>
Link the content of the book to the child’s experience

If the book is about a routine that the child participates in, bring items that the child uses or has interacted with that he or she can touch.

Dialogic Reading Strategies (What Works Clearinghouse, 2007)

P-prompt the child to comment about the book

For verbal children, this may include any comment. For non-verbal children read child cues, such as where the child is touching.

E-evaluate what the child said

This may include interpreting meaning of an utterance or action.

E-evaluate what the child said

This may include interpreting meaning of an utterance or action.

R-repeat—ask the child to repeat the comment

For a verbal child this is straightforward, for a non-verbal child this may mean repeating the comment for them.

Allow a verbal child to complete a phrase. For a non-verbal child this may mean accepting a vocalization or body response to the rhythm of the book.

C-completion

Ask a child about what you read. For a non-verbal child this may mean asking the child a question that can be answered using a gesture, such as locating a texture or part of a picture.

For verbal children this can be adapted to the child’s functional vision, such as predicting based on the picture or a tactile cue. For a non-verbal child this may be beyond their expressive language ability.

R-recall

For verbal children this can be adapted to the child’s functional vision, such as predicting based on the picture or a tactile cue. For a non-verbal child this may include where questions, such as “where is the scratchy texture?”

O-open-ended questions about a picture in the book

Connect the book to the child’s experience, through objects, scents, sounds, or words.

W-wh-questions

Book and Print Awareness Strategies (Sim et al., 2014)

Mechanics of the book

- Explicitly point out parts of the book as you encounter them while reading
- Explore the orientation of the book

- Draw attention to parts of the book, such as the cover, the pages, the back as you encounter them use tactile, visual or a combination of senses to explore these parts of the book
- Help the child to orient the book either
Concepts of print

- Point out the words and the pictures, then ask the child to find the word or the picture
- When a child can confidently find the word from the picture, point out letters
- Talk about how you read from left to right, point to the words as you read
- As you follow a line, point out how there is a written word for every word you say

- Explicitly point out words and pictures or braille words and textures as appropriate to the visual functioning of the child
- Point our letters in print or braille as appropriate to the child. Encourage the child to then find a letter in a word
- For children who will be print readers, point out how you follow the line of print, for children who will read braille, help them to follow the line of braille
- Point out the correspondence between written or brailled words and spoken words

Purpose of Study

The purpose of this study was to evaluate at the macro level the efficacy of parent-implemented shared storybook reading intervention in improving preliteracy skills (oral language, phonological awareness, and book and print awareness) for preschool children with visual impairments and to consider the underlying dynamics of this intervention at the micro level. To accomplish this, this study examined how parent implementation of shared storybook reading strategies changed the child’s level of attention and verbalization in reading activities. Likewise, the study assessed whether parents viewed participation in this study as meaningful, whether the day to day process of using shared storybook reading strategies improved the value
of reading with their child, and whether they viewed adoption of shared storybook reading strategies after the conclusion of the study as helpful. Finally, the study evaluated how child oral language, phonological awareness, and book and print awareness skills changed after parents implemented shared storybook reading strategies. This study addressed the following questions:

1. How does parent implementation of shared book reading strategies influence oral language, phonological awareness, and book and print awareness skills of preschool children with visual impairments?

2. What influence does training parents of preschool students with visual impairments in shared storybook reading strategies have on parental use of shared storybook reading strategies?
   a. To what extent do parents use strategies that they have been taught in observations of shared reading?
   b. To what extent do parents report using strategies that they have learned when reading with their child at home?
   c. To what extent do parents continue to use strategies learned while they gain additional strategies and after instruction and coaching sessions have concluded?

3. What influence does parental use of shared storybook reading strategies in reading with preschool students with visual impairments have on the attention and elicitation of language of preschool children with visual impairments during shared storybook reading?

4. How are the effects of a storybook reading intervention on children with visual impairments moderated by the absence, type, and extent of additional disabilities?
5. What are parents’ perceptions on the usefulness of a shared storybook intervention on the preliteracy skills of their preschool student with visual impairments?

a. To what extent do parental priorities for their preschool child with a visual impairment shift in any way following participation in a shared storybook reading intervention?

**Intervention**

Parents in dyads with similar shared reading strategy needs were taught shared storybook reading strategies by the researcher in group sessions 10 to 30 minutes in length in a preschool classroom outside of class time. This instruction, based on the method used by Whitehurst et al. (1988), consisted of the researcher verbally explaining the strategy selected for the session including rationale for its use. The researcher then demonstrated how to use the skill. Next the parents had the opportunity to practice the skill with an adult acting as the child. Finally, the parent had a chance to practice with their own child, receiving feedback on their performance. One week later each dyad was videotaped in shared reading. Video from this observation was used in individual researcher-parent shared reading coaching sessions. Coaching sessions will follow the format described by van Vondel et al. (2017), wherein the researcher, acting as the coach preselects several selections and shares three positive clips and one area for improvement. The researcher reviewed the video from the previous week with the parent. As shown in the logic model (Appendix A), following instruction and coaching parents it was anticipated that parents would increase use of shared storybook reading strategies. As parents employed shared reading strategies their children would then increase in attention and language use in shared reading. As a result, children would enjoy the activity and have more opportunity to develop preliteracy skills. In turn their preliteracy skills would improve.
Method

Research Design

This study employed a mixed-method embedded (Creswell & Plano Clark, 2011) single case research design based on principles of dynamic systems theory (Steenbeek et al., 2017). Mixed methods research combines the strengths of quantitative and qualitative research approaches to produce a more complete depiction of the problem studied (Creswell & Plano Clark, 2011). This study employed an embedded design (Creswell & Plano Clark, 2011) with a principal focus on collection of quantitative data to examine changes in child attention, preliteracy skills, and parent engagement in intervention strategies, and strategic use of qualitative data to investigate changes in parental attitude and parent perception of outcomes. By integrating qualitative and quantitative data, I was able to use triangulation (Collins, Onwuegbuzie, & Sutton, 2006) to determine whether changes occurred for participants both through changes in behavior, scores, and parent interview.

Use of mixed methods to evaluate this solution to preliteracy delays in preschool children with visual impairments relies on a pragmatic philosophical stance. Pragmatic research approaches rest on the philosophy that the significance of the research is in its ability to define, expand understanding, or move toward solutions to problems through the methodology or methodologies that best suit the problem (Creswell & Plano Clark, 2011). This philosophical perspective embraces the notions inherent to this research that it is possible to know whether shared reading interventions produce quantifiable changes in preliteracy skills for children with visual impairments, a postpositive idea, while simultaneously accepting that the viability of the research depends on the value and meaning that it has for the participants, a constructivist viewpoint. Acceptance of alternative perspectives in this manner epitomizes the pragmatic
perspective underlying mixed methods research.

The single case aspect of this study limits generalizability but enables dual micro and macro analyses of preliteracy development through the intervention. Pre- and post-tests captured any quantitative change in a macro sense and framed the measurement of mediating variables that capture the process of change microanalytically throughout the intervention. Qualitative interview of the perspectives of the parents who participate enriched understanding of this intervention and complemented analysis of the effectiveness of this intervention.

An overview of the intervention, as depicted in the logic model (Appendix A) shows expected outcomes. The first outcome, parent implementation of shared storybook reading strategies produces increases in child attention and engagement in preliteracy learning. These outcomes in turn lead to increases in preliteracy skills and parent appreciation of shared book reading. Finally, it is proposed that the shared book reading intervention will lead to improved reading performance for children with visual impairments.

Process Evaluation

Evaluation of the research process is important to all research, especially single case research, because it helps to explain why observed results were obtained (Steckler & Linnan, 2002). Process evaluation considers several variables that may affect the extent to which expected outcomes are realized (Steckler & Linnan, 2002). Such factors include: participants recruitment, contextual factors, whether the intervention was delivered as written, whether participants received the intervention, whether participants engaged in strategies taught in the intervention initially, and whether they continued to use the strategies over time (Baranowski & Stables, 2000).

Participant recruitment. This study employed purposeful sampling (Creswell & Plano
Clark, 2011). To ensure maximal variation while confirming parental understanding of the intervention, the researcher contacted fluent English-speaking parents of a representative sample of preschool-aged children identified by the preschool TVI as having a visual impairment either through services in the child’s IEP or Section 504 accommodation plan. At individual preschool orientation appointments, the researcher spoke to five parents of preschool children with mild to severe visual impairments and explained the expectations of the study including the planned schedule and time commitments. Three of the parents contacted agreed to participate and attended the initial interview and video recording session with the researcher.

**Contextual Factors.** This process variable refers to elements of the environment which may influence participation in the intervention (Baranowski & Stables, 2000). This study involves two noteworthy contextual factors. These two factors are home and family variables and the position of the researcher in the context of the school district of the participants.

Each family situation is unique, so it was important to capture family dynamics to help understand factors that may influence opportunities to practice shared storybook reading skills at home. These factors include the number of siblings and whether the primary caregiver and research participant also worked outside the home. Siblings may impact the time that the parents can spend reading with their child with visual impairments. Likewise, if the primary caregiver must balance their time between outside employment responsibilities and home duties it may be more difficult for them to find time to read with their child with visual impairments.

In addition to the contextual effect that family factors may have on this intervention, this intervention may be influenced by the position of the researcher and her potential biases. The researcher is the only preschool vision specialist in the school district, therefore she has a stake in the outcome of this intervention. This stake could potentially introduce bias in interpretations
made (Creswell & Plano Clark, 2011). One source of this bias is the expectations that the researcher has for the success of this intervention. This bias can be addressed through reflexivity or remaining aware of my bias and seeking disconfirming evidence and through using a data collector who was blind to the intervention and strategies that parents may or may not have been taught.

**Implementation fidelity.** Despite the limitations in generalizability inherent to single case design, fidelity of implementation is important as it facilitates replication by other researchers in additional contexts (Dusenbury, Brannigan, Falco, & Hansen, 2003; Nelson, Cordray, Hulleman, Darrow, & Sommer, 2012). Fidelity of implementation considers the faithfulness to which the person teaching shared reading strategies follows delineated lesson plans. Failure to teach empirically evidenced strategies would both reduce the replicability and, in the event that the strategies were unsuccessful, potentially reduce the use of a tool that may be successful if implemented correctly. This study considered adherence, dose, quality of delivery, and participant responsiveness as described by Dusenbury et al. (2003).

**Participant receipt of intervention.** Sometimes referred to as dose given and dose received (Steckler & Linnan, 2002), this aspect of process evaluation considers how much of an intervention is delivered to participants and how much they receive (Steckler & Linnan, 2002). Key factors include participant attendance to instructional sessions, and for the child participants the extent to which parents actually used the strategies in reading with their child at home during the intervention.

**Continued use of strategies.** The last aspect of process evaluation that was considered is continued use of strategies after initially learning them. For children to benefit from shared storybook reading strategies their parents must not only implement them while a given strategy is
the focus, but also continue to use the strategies (Baranowski & Stables, 2000). Although researchers have found effects with less than two weeks of intervention, longer implementation has typically been more beneficial (Trivette, Simkus, Dunst, & Hamby, 2012). Thus, this study also considered whether the parents continued to use strategies learned when they were no longer receiving instruction or coaching in strategy use.

Participants

Three parent child dyads participated in this intervention study. All children who participated in this study attended preschool two days per week for three hours per preschool session. Dyads will be referred to as Parent 1—Child 1, Parent 2—Child 2, Parent 3—Child 3.

Dyad 1

Child 1 turned three just before the start of this study and participated in the district’s 2-year-old assessment. Child 1 has been diagnosed with X-linked hydrocephalus due to L1CAM. His school records indicate that he has significantly delayed motor, cognitive, communication, and adaptive skills. His vision diagnoses include severe cortical visual impairment, exotropia, and ptosis of the left eyelid. His acuity on a recent eye report is listed as fix and follow. Child 1 resides with his mother, father and two older siblings. His mother, Parent 1, reports her occupation as “mom”.

Dyad 2

Child 2 was three years, four months old at the start of this study and participated in the district’s 3-year-old assessment. Child 2 has a history of non-accidental trauma, left subdural hematoma, and right-side hemiparesis. School records indicate that he has significantly delayed motor skills with moderately delayed cognitive, communication, and adaptive skills. His vision diagnoses include homonymous hemianopsia, myopic astigmatism, and monocular exotropia
amblyopia of the left eye. His acuity is listed as fix and follow. Child 2 resides with his mother, father, and two older siblings. His mother, Parent 2, reports her occupation as loss prevention. Her work schedule influenced scheduling of intervention activities.

**Dyad 3**

Child 3 was three years, six months old at the start of this study and participated in the district’s 3-year-old assessment. Child 3 has genetic markers for Smith-Lemli-Opitz Syndrome, and a history of gastric dysmotility, and failure to thrive. School records indicate that Child 3’s developmental skills in the areas of motor, behavior, adaptive, cognitive and language are delayed for her age. She has moderate hearing loss in her right ear and mild hearing loss in her left ear and wears hearing aids. Her vision diagnoses include myopia with high astigmatism, and v-pattern exotropia with excellent control at near but that breaks down quickly with constant alternating exotropia at distance. Child 3 resides with her mother, father two older and one younger sibling. Her mother, Parent 3, describes herself as self-employed.

**Instruments**

Evaluation instruments come from two broad categories: outcome evaluation measures and process evaluation measures. Outcome evaluation measures look at the mid-range outcomes as depicted on the logic model whereas process evaluation measures consider provision of outputs, such as fidelity with which the training aligned with planned instruction, and short-term outcomes, including the parents’ use of strategies they were taught.

**Process evaluation instruments.** As discussed above, process evaluation consists of participant recruitment, fidelity of implementation, receipt of intervention by participants, and parent use of shared reading strategies (Baranowski & Stables, 2000; Dusenbury et al., 2003; Steckler & Linnan, 2002).
**Contextual factors.** Contextual factors were measured through interviewing the parent prior to intervention using questions from the family information section of the Family Survey of Reading and Writing Practices (Appendix C). In addition to the questions presently included, the researcher will ask regarding the employment situation of the primary caregiver and research participant. This will include inquiries about whether this person (or these people) are stay-at-home parents, work part time, or full time.

**Fidelity of implementation.** Fidelity of implementation was measured by having parents complete a checklist to determine the extent to which the researcher implemented the intervention lesson plan as written. This measure will rely on face validity. High parental fidelity of implementation consisted of the parent using the strategies that they had been taught at a higher frequency than during baseline. Interobserver agreement for a percentage of lessons will verify reliability of the measure. Additional qualitative data will be obtained through interviewing participants regarding their participation in the study.

**Receipt of intervention.** Receipt of intervention is tracked in two ways: parent attendance at instructional sessions and coaching sessions and parental use of shared reading strategies subsequent to instruction. Parent attendance was tracked through completion of fidelity of implementation forms.

**Parent use of shared reading strategies.** Parent use of strategies was evaluated in observations before, during and after the intervention as this measure of process is also an outcome variable. As a process variable this measure considers the parent’s initial and continued use of strategies. This variable was measured using the Systematic Assessment of Book Reading Measure (SABR, Justice, Zucker, & Sofka, 2010). The SABR is an observational assessment of shared reading quality which considers five constructs of shared reading: language development,
abstract thinking, elaborations, print/phonological skills, and session climate. Trained observers record the occurrence of adult behaviors reflective of these constructs by coding videos of shared reading in 15-second intervals. Pentimonti et al. (2012) evaluated reliability of these constructs for this assessment through observing preschool teachers reading to children. Cronbach’s alpha for four of the five components ranged from .83 for language development to .64 for abstract thinking, indicating reasonable acceptability. The fifth construct, print/phonological skills had a Cronbach’s alpha of .50, which authors attributed to these items reflecting more than one construct. An application of this assessment to both caregivers and teachers found that the SABR had interclass correlations (ICCs) that ranged from .973 to 1.00 (Kaderavek, Pentimonti, & Justice, 2014).

The second measure of parent use was parent-report of shared reading at home between sessions. Parents were asked to report the frequency with which they engage in reading to their child, what strategies they used, and the frequency that they used these strategies while reading with their child. In addition to reporting parent use of training, this also provides a measure of how much of the intervention the child is getting.

**Outcome evaluation instruments.** Instruments utilized to measure outcome variables examine the effects of the intervention at both the macro level and the micro level.

**Macro level measures.** At the macro level the effects of the intervention were reflected in child performance on preliteracy tasks, evaluated by considering the performance of preschool children on preliteracy components (Oral Language, Phonological Awareness, Alphabet Knowledge, and Book Awareness/Print Knowledge) of the school district’s curriculum-based assessments (CBAs). Parent outcomes were also evaluated at the macro level by using semi-structured interviews considering the parent’s perspective of the feasibility of the intervention,
the extent to which they felt that the strategies were helpful, and the likelihood that they would continue to use the shared reading strategies after the intervention was finished.

*Curriculum based assessment (CBA).* Curriculum based assessments differ based on the child’s age on September 1st. Thus, older children who have attended district preschools since their third birthday have no advantage based on re-test of identical items. The preschool department developed these assessments to assess progress of students in the program based on the state standards. After initial development, the team that developed the assessment conferred with experts in early childhood development and reading development to establish content validity. Items on each subsection are similar to items measuring these constructs in other research. In the needs assessment discussed in chapter 2 conducted in this district in spring 2017 Cronbach’s $\alpha$ for the preliteracy measures on the four-year-old assessment was .779. Cronbach’s $\alpha$ for the three-year-old assessment preliteracy measures was .810. Cronbach’s $\alpha$ for the preliteracy sections on the two-year-old assessment was .776.

The first component explored on the CBA is oral language. Oral language refers to how a child understands and responds to spoken words including how many words a child understands and uses, as well as the child’s ability to comprehend and produce meaningful speech (Lonigan, 2006; Sénéchal et al., 2001). This is measured on district-wide CBAs through items such as: asking the child to follow a two-step unrelated direction (two-year-old assessment), answer questions (this is expected of all children, questions differing by age), point to items demonstrating concept knowledge (expected of two- and three-year-old children, with different concepts assessed for each group), or relate a personal experience (four-year-old assessment). Score ranges in the oral language portion of the assessment varied by assessment. The two-year-old assessment had a range of 0-21 points, with one point per item, except sentence length,
which is scored one point per word up to three points. The three-year-old assessment scores in oral language ranged from 0-38 points, with most items worth one point, excepting sentence length (scored one point per word, up to five points possible), and taking turns in conversation (one point per turn up to four points possible). The scores in the oral language section of the four-year-old assessment ranged from 0-13 points. Items were worth one point except for sentence length, scored one point for 4-word sentences and two points for sentences six or more words in length; and relating a personal experience or retelling a story from a book, scored one point per sentence for up to three points.

Next, the district CBAs assess phonological or phonemic awareness. Phonological awareness evaluates the child’s understanding that words are composed of different sounds and the ability to manipulate and analyze those sounds (Lonigan, 2006; National Early Literacy Panel, 2008). Items include observing whether the child sings words of a familiar song with peers (two-year-old assessment), elicitation of blending (three-year-old assessment and four-year-old assessment), or segmentation of words (four-year-old assessment). Scores in this section of the test ranged from 0-2 points on the two-year-old assessment, 0-4 points on the three-year-old assessment, and 0-6 points on the four-year-old assessment. Each item was worth one point on all three assessments.

Alphabet knowledge refers to the ability to identify print (or braille) letters by name in either upper- or lower-case and to identify the sound associated with the letter (National Early Literacy Panel, 2008). Consistent with other components of the CBA, the expectations of the of preschool children vary by age. Two-year-old children are expected to find their name from a choice of three with the two peer names starting with a different letter. Three-year-old children are expected to identify the first letter of their name. Four-year-old children are expected to be
able to name at least some upper-case and lower-case letters and provide letter sounds based on printed letters. This section of the assessment was worth only one point on the two-year-old assessment, 0-3 points on the three-year-old assessment, and 0-78 points on the four-year-old assessment. Points on the four-year-old assessment were awarded for each correctly named upper case letter, lower case letter, and letter sound corresponding to a lower-case letter.

Book knowledge/ Print (or braille) awareness, also termed “print concepts” refers to knowledge of the mechanics of books and print (or braille) and the knowledge that print carries the meaning (Lonigan, 2006). This is assessed by observing whether children turn books the correct orientation (two- and three-year-old assessments), ask adults what print words say (three-year-old assessment), and differentiate between pictures and words (four-year-old assessment). Scores on this section of the two-year-old assessment ranged from 0-3 points, each item worth one point. The three-year-old assessment scores in book knowledge also ranged from 0-3 points, one point per item. Scores in the book knowledge/print awareness section of the four-year-old assessment ranged from 0-7 points, with one point per item.

**Micro level measures.** At the micro level two child variables seem significant: attention or engagement and language elicitation. Each of these variables is measured before and on a bi-weekly basis throughout the intervention.

*Attention/engagement.* Attention is defined as the child positioning his or her body so it is oriented toward or focused on a task or interaction partner during an activity and engagement refers to listening, talking, and using materials relevant to the current activity (Hume et al., 2016; Son & Tineo, 2016; Tadić et al., 2009). This variable is measured using momentary time sampling. Momentary time sampling has been found to closely match continuous observations, without great increase in error when intervals of less than 2 minutes are used (J. O. Cooper et al.,
In addition to consideration of attention, the SABR included observation of children touching the book. As touching a book is one way that children with visual impairments engage with books, this was considered a secondary component of child engagement. Inter-coder agreement measured the reliability of the measurement of this variable by having two raters independently code 83% of video recordings of shared storybook readings.

*Language elicitation.* Language elicitation refers to the number of utterances, both intelligible and unintelligible produced by the child in an experience (Davie & Kemp, 2002). Davie & Kemp (2002) developed this measure to record language of children in specific situations after piloting several versions. The observer records the context of the utterance, codes whether it is inaudible, unintelligible, imitated, a response, or initiated, and records the utterance in its entirety if it is intelligible. Reliability of this measure is measured through inter-coder agreement.

**Procedure**

Following participant recruitment and obtaining consent the researcher reviewed the students’ files documenting the child’s vision including diagnoses, structural anomalies, results of exam under anesthesia, and acuities as described in their eye reports, the child’s use of functional vision as delineated in their educational record, and the child’s additional disabilities or developmental delays as documented in educational evaluation. Concurrent to obtaining consent and file review, the child’s classroom teacher completed the curriculum-based assessment. File review and CBA pretest period consisted of the first few weeks of school.

Concurrent to file review and CBA pretesting, each parent was asked to come to a school and read to their child on two separate occasions. In each reading the researcher videotaped the dyad. These two readings comprise the baseline for parental shared storybook reading strategy
use, child attention and language use, and to establish the pattern with which the parent and child interact with each other. In addition to baseline readings the researcher interviewed the parent using the home literacy survey.

After baseline data collection, the researcher analyzed CBA and baseline data to group parent-child dyads based on intervention needs. This grouping considered the shared reading strategies that the parent was already using and child characteristics including the current preliteracy skills, the presence of additional disabilities, and the nature of the visual impairment. Dyads with similar needs were grouped for parent instruction. Dyad needs and characteristics led to formation of one group of 3 parents. Where scheduling allowed all parents attended together (2 of 4 instructional sessions, for another session 2 parents attended together) to facilitate mutual parental support.

The initial instructional session focused on dialogic reading strategies. Parents were first taught background information on shared storybook reading. This was followed by information on the focus of the training. Parents were encouraged to ask questions. The skill was modeled for the parent. Then parents were asked to role play it with each other, receiving feedback from the researcher. When parents were comfortable with the technique, they practiced the skill with their children with the opportunity to ask questions and receive feedback. Parents were then provided with a tracking form to record what happens during the week as they read to their child.

The following week each dyad returned individually to be videotaped again. This was analyzed to find three strengths to celebrate and one thing to improve. The parent then returned the following week to review the video and receive individual coaching on the shared storybook reading. A week of videotaping and data analysis again followed the coaching. Thus, a pattern was established: training, taping, coaching, taping, training, etc. (see Table 4.2). After the fourth
### Table 4.2

**Intervention timeline**

<table>
<thead>
<tr>
<th>Event</th>
<th>Approximate Timeline</th>
<th>Approximate dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain informed consent</td>
<td>Parent orientation</td>
<td>August 20-24</td>
</tr>
<tr>
<td>Review files</td>
<td>Parent orientation</td>
<td>August 20-24</td>
</tr>
<tr>
<td>Baseline observation 1</td>
<td>Parent orientation</td>
<td>August 27-31</td>
</tr>
<tr>
<td>Baseline observation 2</td>
<td>First few weeks of school</td>
<td>August 27-September 12</td>
</tr>
<tr>
<td>Obtain CBA pretest scores</td>
<td></td>
<td>October 1-5 or earlier as available</td>
</tr>
<tr>
<td>Parent training 1</td>
<td>Approximately one month after school starts</td>
<td>September 26</td>
</tr>
<tr>
<td>Intervention observation 1</td>
<td>One week later</td>
<td>October 3-10</td>
</tr>
<tr>
<td>Coaching session 1</td>
<td>One week later</td>
<td>October 8-12</td>
</tr>
<tr>
<td>Intervention observation 2</td>
<td>One week later</td>
<td>October 17</td>
</tr>
<tr>
<td>Parent training 2</td>
<td>One month after first training</td>
<td>October 24</td>
</tr>
<tr>
<td>Intervention observation 3</td>
<td>One week later</td>
<td>October 29- November 7</td>
</tr>
<tr>
<td>Coaching session 2</td>
<td>One week later</td>
<td>November 9-12</td>
</tr>
<tr>
<td>Intervention observation 4</td>
<td>One week later</td>
<td>November 14</td>
</tr>
<tr>
<td>Parent training 3</td>
<td>One month after second training</td>
<td>November 28</td>
</tr>
<tr>
<td>Intervention observation 5</td>
<td>One to two weeks later</td>
<td>December 3-5</td>
</tr>
<tr>
<td>Coaching session 3</td>
<td>One week later</td>
<td>December 10-12</td>
</tr>
<tr>
<td>Intervention observation 6</td>
<td>One week later</td>
<td>December 17-January 2</td>
</tr>
<tr>
<td>Final parent training</td>
<td>One month after training 3</td>
<td>January 2</td>
</tr>
<tr>
<td>Post intervention observation 1</td>
<td>Two to three weeks later</td>
<td>January 14-18</td>
</tr>
<tr>
<td>Post intervention observation 2</td>
<td>One month after last training</td>
<td>January 30-February 4</td>
</tr>
<tr>
<td>Obtain CBA mid-year scores</td>
<td></td>
<td>February 11-13</td>
</tr>
</tbody>
</table>
training, a review session, two weeks elapsed before another video recording. This recording was the first post intervention observation. Approximately one month after the last training the parent and child returned for a final follow-up videotaping of a shared reading session. This method of utilizing group trainings and individual coaching sessions to develop parental strategy usage with their child with disabilities was used by Barton and Lissman (2015) to support parents with unique challenging behaviors in children with developmental disabilities.

Data Collection

Each video recording was coded by both the researcher and a trained data collector. Outcome coding consisted of recording each utterance or communication behavior of the child and parent. Then the tape was reviewed to determine the frequency with which the child was attending to the activity. Curriculum based assessment data was obtained from the classroom teacher. Parental interview data was recorded and transcribed for analysis. Likewise, process evaluation consisted of the parent participant recording whether the researcher completed each step as specified.

Intercoder Agreement

Intercoder agreement is an important tool to establish reliability in data collection (Creswell & Plano Clark, 2011). For this study, the researcher coded all videos and a data collector coded 83% of observation videos using the SABR, recording language elicitation, and observing child attention for each 15-second interval. The percentage of codes in common was used to determine the rate of intercoder agreement. Inter-coder agreement for video coding ranged from 83.8% to 95.9% with a mean of 89.1%.

Data Analysis

Data collected through the measures discussed above require a variety of analysis
techniques. This section will describe analysis techniques by research question.

The first question considered the influence that the intervention would have on preliteracy skills assessed through the district curriculum-based assessment. This data was analyzed by comparing pre-test raw scores and mid-year raw scores for each child participant in the intervention.

The next question considered the influence that instructing parents of preschool children with visual impairments in storybook reading strategies had on their use of these techniques. The first aspect of this considered the strategies parents used in observations. After coding the data, the data was plotted to facilitate visual analysis of parent strategy use data. A second aspect of this question includes parent report of strategy use. Where available, this data was compared with the observation data. Attendance data from parent instruction and coaching sessions was also compared with strategy use data. Analysis of the final aspect of this question, parent use of strategies after the conclusion of instruction, compared post-intervention strategy use data to both pre-intervention strategy use and to strategy use during the intervention.

Research question 3 considered the relationship between parental strategy use and child attention and language use during shared reading. This data was analyzed by graphing parent strategy use and child attention and language use in each observation, then layering these graphs to allow for visual analysis of temporal relationships. These graphs were then analyzed across time to determine whether change occurred in child responsiveness to parent strategy use across time. Finally, this data was analyzed across the sample for group trends.

The next research question concerns the moderating effects of additional disabilities. Analysis was planned to consist of visual comparison of graphs of children without additional disabilities, those with mild or moderate disabilities and those with severe additional disabilities
from research question 3.

Analysis of the final research question addressing parental perceptions of the intervention and priorities for their child first required transcription of interviews. Following this, these interviews were analyzed using inductive reasoning to discover common themes. After analysis, conclusions were reviewed with parent participants to member check veracity of findings.

**Conclusion**

This intervention evaluated the process of implementing a shared reading intervention, the process of the parent implementing shared reading strategies and child responses to this intervention. Correlation between research questions, instruments, data analysis, and data type is portrayed in the summary matrix in Appendix B.
Chapter 5

This chapter presents the results of the intervention. This includes the process of implementation, findings of the intervention discussed in previous chapters, and discussion. Discussion within this chapter will situate research findings within the literature, as they relate to dynamic systems theory, and to implications for practice. Limitations and recommendations will also be discussed.

The shared storybook reading intervention described herein took place in a large school district in the western United States from late August 2018 through early February 2019. This intervention addressed several questions, listed below. These will be addressed in the order listed.

1. How does parent implementation of shared book reading strategies influence oral language, phonological awareness, and book and print awareness skills of preschool children with visual impairments?

2. What influence does instructing parents of preschool students with visual impairments in shared storybook reading strategies have on parental use of shared storybook reading strategies?
   a. To what extent do parents use strategies that they have been taught in observations of shared reading?
   b. To what extent do parents report using strategies that they have learned when reading with their child at home?
   c. To what extent do parents continue to use strategies learned while they gain additional strategies and after instruction and coaching sessions have concluded?
3. What influence does parental use of shared storybook reading strategies in reading with preschool students with visual impairments have on the attention and elicitation of language of preschool children with visual impairments during shared storybook reading?

4. How are the effects of a storybook reading intervention on children with visual impairments moderated by the absence, type, and extent of additional disabilities?

5. What are parents’ perceptions of the usefulness of a shared storybook intervention on the preliteracy skills of their preschool student with visual impairments?
   a. To what extent do parental priorities for their preschool child with a visual impairment shift in any way following participation in a shared storybook reading intervention?

**Outcome on Preliteracy Skills**

Research Question one examined changes in child performance on the district-wide curriculum-based assessment. The scores for each child are depicted in Table 5.1. All children increased their oral language scores from the pre-assessment to the mid-year assessment, though none achieved the program goal for their test. Few gains were made in other areas, although Child 1 increased his alphabet knowledge score (from a pre-test score of 0 to 10) achieving 67% of the program goal (of 15) at mid-year. On the pre-test Child 1 was unable to point to any colors or basic body parts or follow simple directions. After the intervention he was able to point to six colors, two body parts, and follow one simple direction on request. None of the children made large gains in phonological awareness or alphabet knowledge. These areas were not emphasized in this intervention. Minimal score gains are consistent with the observation made by Trivette et al. (2012) that larger effects are observed in shared storybook reading interventions when the
content of the assessment matched the content of the interventions. It is also possible, however, that these children require more experiences with new literacy concepts to achieve mastery due to concomitant language impairments (Nash & Donaldson, 2005).

Table 5.1

Raw scores for children who participated in this intervention. Pre scores occurred before the intervention, mid immediately after the intervention finished.

<table>
<thead>
<tr>
<th>Child</th>
<th>CBA</th>
<th>Oral Language</th>
<th>Phonological Awareness</th>
<th>Alphabet Knowledge</th>
<th>Book Knowledge/Print Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td></td>
<td>Child score/Program Goal</td>
<td>Child score/Program Goal</td>
<td>Child score/Program Goal</td>
<td>Child score/Program Goal</td>
<td>Child score/Program Goal</td>
</tr>
<tr>
<td>1</td>
<td>2-yo</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3-yo</td>
<td>20</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>3-yo</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: This table indicates child raw scores and program goals. Possible scores for these assessments were as follows: for the 2-year-old assessment Oral Language 0-21, Phonological Awareness 0-2, Alphabet Knowledge 0-1, Book Knowledge/Print Awareness 0-3; 3-year-old assessment Oral Language 0-38, Phonological Awareness 0-4, Alphabet Knowledge 0-4, and Book Knowledge/Print Awareness 0-3. Post intervention scores were obtained from the mid-year administration of the CBA.

Parent Strategy Use

Research question two examined the research process and the extent to which parents respond to instruction in shared storybook reading. All three parent participants attended four instructional sessions and three coaching sessions. Parent attendance and instructional fidelity for instructional and coaching sessions are discussed below.

Fidelity of Implementation

Instructional fidelity was assessed in both group instructional sessions and in coaching
sessions. Parent participants were given checklists at the beginning of both group and individual sessions and asked to either complete them throughout the session or following instruction.

**Group Instructional Sessions.** Although it was planned that instructional sessions would be conducted with the group, scheduling conflicts prevented Parent 1, Parent 2, and Parent 3 from meeting together for the first session. These first instructional sessions focused on dialogic reading strategies. The second instructional session consisted of two sessions due to scheduling conflicts, Parent 1 and Parent 3 attended one session, and both of Child 2’s parents attended a different session. This instructional session focused on strategies to develop book knowledge. In contrast to the first two sessions, all three parent participants attended the third instructional session on print awareness strategies together. The fourth instructional session, a review session, was likewise attended by the group. Parents individually completed intervention fidelity checklists for each instructional session. All parents indicated that all ten steps (100%) were completed for all (n=4 per parent) instructional sessions.

**Individual Coaching Sessions.** Unlike instructional sessions, coaching sessions were designed to be completed individually. Parents were expected to attend three sessions. All parents attended 100% (n=3) of the coaching sessions. Though the content of these coaching sessions was based on parent strategy use in shared reading the previous week, certain themes emerged in parent coaching needs. All parents required additional coaching in developing active participation and child engagement. These strategies included following the child’s lead in shared reading interactions, expanding the child’s verbal or non-verbal comments, and allowing the child to hold the book and choose when to turn pages. A second need reflected in all of the parents was the need to be explicit in book knowledge strategies. Although the parents understood the intent behind book knowledge strategies, their techniques tended to use terms
broadly without clear referents, which children with visual impairments need in order to understand this content. Another theme that emerged for two parents was in integrating book knowledge and print awareness strategies at natural opportunities. For instance, in one recording the child was holding a book when it slipped so he was no longer orienting it correctly, yet the parent simply turned the book without comment.

Despite these unifying themes, individualization was also needed. This came in two ways. First, parents were shown specific parts of their recording wherein they were demonstrating appropriate strategy use. An example of this from Dyad 1 showed Parent 1 sharing a book with Child 1. Parent 1 said, “I see a word. It says ‘white’.” Child 1 looked at where Parent 1 pointed, showing interest, and Parent 1 described how this word related to the picture. This was an example of print awareness strategies integrated into the reading experience.

Next, parents were shown places in the recording where strategy use could be improved. One example of this occurred with the same Dyad. Child 1, in the process of the shared reading experience, turned the book such that it was completely upside down. Instead of commenting on how to orient the book, Parent 1 simply turned it. Later on Parent 1 randomly turned the book upside down and asked, “is this how we read it?” Child 1 answered, but seemed perplexed by this random action. These two occurrences gave rise to a discussion of how to utilize naturally occurring opportunities to discuss book knowledge topics. This kind of individualization occurred in every coaching session.

As with group instructional sessions, in coaching sessions parents completed fidelity checklists. Parents reported 100% fidelity of implementation in coaching sessions for eight of nine sessions. In one session one item, “Did the instructor scaffold parent’s practice with their child?” was not implemented as designed because the parent arrived late to the before-school
coaching session and students were arriving who required the classroom, preventing the implementation of scaffolded practice. This was the researcher’s only deviation from implementing the intervention as planned.

**Parent Use of Strategies in Shared Reading Sessions**

To analyze the extent of change in parent strategy use following instruction in shared storybook reading strategies, it is necessary to examine the immediate parental strategy use, strategy use at home, and continued strategy use.

**Initial strategy use.** To examine immediate parental strategy use, one must to look at data from before the intervention and consider the content of instructional and coaching sessions. Two numerical analyses were used to evaluate increases in frequency with initial strategy use. First, it was assumed that if the intervention produced an increase in parental strategy use then the difference between the number of supports per minute for the session and the largest pre-intervention recording value would be positive ($S - P_L$ where $S$ is the number of strategies used per minute in the session and $P_L$ is the highest pre-intervention recording value for the strategy type). The second analysis considered the total strategy usage in the session. For this analysis it was assumed that the intervention produced an increase if the total strategy usage was greater than the largest pre-intervention value plus the absolute deviation between pre-intervention values ($T > P_{TL} + |\Delta PT|$ where $T$ is the total number of times the strategy was used in the session and $P_{TL}$ is the largest pre-intervention recording value for the strategy type and $|\Delta PT|$ is the absolute deviation between the two pre-intervention totals). For this analysis the largest value was used rather than the mean of the two pre-intervention values as a more conservative measure despite possible differences in shared reading session length. Parent strategy use is shown in Table 5.2.
The first anticipated change would be observed following the first instructional session. This session focused on dialogic reading strategies, including aspects of elaboration, language supports, and abstract thinking. Parent 3 showed increases in language development supports (1.9; 33 > 8 + 5) after this initial intervention. As the first coaching session linked these initial practices to following the child’s lead, the second intervention recording would likewise be expected to see changes in these areas. In this recording Parent 3 continued to demonstrate heightened levels of language development supports (4.2; 20 > 8 + 5) and Parent 2 increased in elaborations (0.7; 5 > 1 + 1).

The second instructional session focused on book knowledge. Changes in book knowledge strategies are often reflected in language development supports and print/phonological skill supports. Parent 1 showed an increase in print/phonological skill supports (0.3; 6 > 2 + 2). Parent 2 increased in language development supports (1.8). Parent 3 did not show increases in either of these areas but increased in abstract thinking supports per minute (0.4; 2 > 0 + 0). The subsequent coaching session focused on making the use of these strategies more explicit, which might likewise be expected to produce gains in language development and print/phonological skill supports. Parent 1 showed a slight increase in print/phonological skill supports (0.1 previous session rate rather than pre-intervention rate) and an increase in language supports with total strategy usage exceeding that of pre-intervention sessions (−1.7; 47 > 24 + 4). Parent 2 showed an increase in print/phonological skill supports (0.5; 6 < 5 + 2) while maintaining elevated rates of language development supports (0.5; 11 < 10 + 2). Parent 3 maintained elevated levels of language development supports (2.4; 21 > 8 + 5) but showed no improvement in print/phonological skill supports (-0.8; 1 < 4 + 4).
Table 5.2

*Parent strategy use by recording session for each parent.*

<table>
<thead>
<tr>
<th>Recording or intervention Session</th>
<th>Parent 1</th>
<th>Parent 2</th>
<th>Parent 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Development Supports</td>
<td>3.2</td>
<td>6.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Abstract Thinking Supports</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Elaborations</td>
<td>0.8</td>
<td>1.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Print/Phonological Skill Supports</td>
<td>4.4</td>
<td>0</td>
<td>3.1</td>
</tr>
<tr>
<td>Language Development Supports</td>
<td>1.8</td>
<td>2.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Abstract Thinking Supports</td>
<td>0.4</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>Elaborations</td>
<td>2.2</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Print/Phonological Skill Supports</td>
<td>2</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Language Development Supports</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Abstract Thinking Supports</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Elaborations</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Pre-intervention recording 1</td>
<td>(20)</td>
<td>(24)</td>
<td>(25)</td>
</tr>
<tr>
<td>Instructional Session 1—Dialogic reading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention recording 1</td>
<td>3.2</td>
<td>6.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Coaching Session 1—Following child’s lead, elaboration, expansion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Session 2—Book Knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention recording 2</td>
<td>(20)</td>
<td>(13)</td>
<td>(11)</td>
</tr>
<tr>
<td>Instructional Session 2—Explicit implementation of book knowledge strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention recording 3</td>
<td>2.8</td>
<td>0</td>
<td>(28)</td>
</tr>
<tr>
<td>Coaching Session 3—Print Awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Session 3—Print Awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention recording 4</td>
<td>4.7</td>
<td>1</td>
<td>(47)</td>
</tr>
<tr>
<td>Instructional Session 4—Review of all strategies taught</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention recording 5</td>
<td>5.9</td>
<td>1</td>
<td>(31)</td>
</tr>
<tr>
<td>Coaching Session 3—Integrating Book knowledge and print awareness through natural opportunities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Session 4—Review of all strategies taught</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-intervention recording 1</td>
<td>3.1</td>
<td>3.7</td>
<td>(37)</td>
</tr>
<tr>
<td>Instructional Session 4—Review of all strategies taught</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-intervention recording 2</td>
<td>2.5</td>
<td>0</td>
<td>(29)</td>
</tr>
</tbody>
</table>

*Note:* The top number in each cell indicates the rate of strategy use per minute: bolded values indicate sessions wherein strategy use per minute exceeded pre-intervention levels. The bottom number, in parentheses, reflects the total frequency of strategy use during the reading session: bolded values indicate when $T \geq PT_L + |\Delta PT|$. Recording errors limited the available video for recordings marked with an asterisk (*).
The third instructional session addressed print awareness. Strategies included in this instruction are most likely to be reflected in print/phonological awareness but may include language development supports as well. Following this instructional session, Parent 1 showed a marked increase in print/phonological awareness (1.2; 8 > 2 + 2) as well as a small increase in total language development supports (−0.5; 31 > 24 + 4). Parent 2 also showed a distinct increase in print/phonological awareness strategy use 1.4 and 0.9). The raw data shows that Parent 3 used this strategy much more than in previous recordings, but paired with an increase in the time that the child spent reading, the strategy use per minute did not increase from rates previously observed in the intervention (1.2 = 1.2 (highest rate, not pre – intervention); 13 > 4 + 4). Coaching session 3 was geared at helping parents use the book knowledge and print awareness strategies that they had learned at natural times while reading with their child. The only observed increase in strategy use was seen in the elaborations of Parent 2 (1.7 > 0.4; 6 > 1 + 1).

The final instructional session was held after winter break and consisted of a review of all strategies used with opportunities for parents to share their successes and ask about how other parents used strategies. After this session, parents were not recorded in shared reading until the post-intervention sessions two and four weeks later.

The observed changes in strategy use suggest that following shared storybook reading intervention, parents will often immediately implement strategies that they have used. These changes are consistent with the findings of Huebner and Meltzoff (2005) who observed that parents change their shared reading after instruction in shared storybook reading strategies.

**Strategy use at home.** The next sub-question considered the extent to which parents reported using strategies at home. Only two parents, Parent 1 and Parent 3, returned home
reading logs. These were dispersed at each instructional and coaching session.

Parent 3 reported on 4 reading sessions and Parent 1 reported on 33 sessions (see Figure 5.1). Parent 1 reported using a variety of dialogic reading strategies, using multiple strategies of this kind in most reading log entries. In contrast, Parent 3 focused on following her child’s lead and employing book knowledge strategies. This self-reported strategy use does not appear to relate to strategy use in shared storybook reading recordings. In contrast, there may be some relationship to child outcomes. Parent 1’s focus on dialogic reading would be expected to lead to improved oral language skills (Whitehurst et al., 1988), of the children who participated in this study Child 1 demonstrated the greatest improvement in oral language on the CBA at mid-year. Parent 3’s focus on following her child’s lead may have contributed to increased interest in reading as observed in Child 3 choosing to remain in shared reading for longer intervals. In more than one recorded shared reading session, she chose to engage with books for more than 10 minutes toward the end of the study.

Figure 5.1

*Percentage of parents’ self-reported strategy use by category*
**Continued strategy use.** This final sub-question looked at whether parents continued strategies once learned in future readings and after instructional and coaching sessions were concluded (Table 5.2). Each of the three parents demonstrated learning a strategy then using it at higher levels for the remainder of the study: Parent 3 implemented language development support strategies after the instructional session on dialogic reading and continued to demonstrate increased levels of language development throughout the remainder of the study. In pre-intervention shared reading sessions Parent 3 chose the book, held the book and read the text with occasional directions to Child 3, but when Child 3 tried to point out things that interested her, Parent 3 kept reading without acknowledging Child 3’s interests. After learning to prompt Child 3 to comment, then to make the shared reading a dialogue between herself and her child, Parent 3 started letting Child 3 have a greater role in the shared reading. Child 3 was allowed to choose the book or books for the session, she held them and chose when to turn the pages. Parent 3 commented on things that Child 3 pointed to and followed her lead when she vocalized. As she had more control of the experience, Child 3 chose to read for longer durations.

The greatest growth for Parent 1 came in an increased rate of print/phonological skill use after the instructional session on book knowledge strategies. Her use of these skill supports increased again with instruction in print awareness. Like Parent 3, Parent 1 initially held the book and read the text as written but gave Child 1 opportunities to choose the book. Parent 1 did not comment on or point out print or parts of the book, even when Child 1 was interested in the front or back cover. After learning to promote book knowledge, Parent 1 allowed Child 1 to choose the book then she pointed out what was on the front, labeling it as such. When Child 1 turned the book over she talked about the back of the book. As he had chosen the book, Child 1
watched carefully as Parent 1 pointed out these features and repeated these labels when he turned it again.

Parent 2 also showed a sustained increase in print/phonological skill support strategies, but her increase came after receiving coaching on explicit implementation of book knowledge strategies. Initially Parent 2 also read the text, giving Child 2 directions, but little control of the process. Child 2 inconsistently followed these directions. After Parent 2 learned to be clear in discussing book knowledge, Child 2 watched her when she explicitly pointed out the front cover and title of the book.

In contrast to these sustained increases, Parent 2 and Parent 3 also demonstrated transient increases. Parent 2 improved her language development support usage following book knowledge instruction, but language development support usage was variable after the initial increase. Parent 3 likewise used more print/phonological skill supports after instruction in print awareness, but she reverted to her previous levels after an initial increase.

Continued strategy use may also be examined as differences between pre-intervention recording sessions and post-intervention recording sessions. When compared with the pre-intervention sessions, Parent 1 and Parent 2 were observed to use print/phonological awareness skill support strategies more frequently but showed little change in other areas. In contrast, Parent 3 increased her use of language development supports and increased print/phonological skill support usage. These findings suggest that although parent use of shared storybook reading strategies is variable following instruction, with parents increasing skill usage in some, not all, areas, all parents demonstrated areas of learning and implementation of skills.

**Relationship Between Parent Strategy Use and Child Behaviors**

Research question 3 examined the relationship between parent strategy use and child
behaviors, the next aspect of the logic model (Appendix A). This was examined through interactions between the parent and the child in individual sessions (Figure 4) and through the examination of changes in parent and child session means across the intervention.

**Parent-Child Interaction Within Recording Sessions**

Dyads were recorded in shared storybook reading prior to, during, and after the intervention to observe how parent use of shared reading supports changes child behavior during the session. Figures 5.2, 5.3, and 5.4 depict parent supports, an aggregate of parent language development supports, abstract thinking supports, print/phonological skill supports, and elaborations; and child behaviors, a composite of child attention, child touching the book, and child utterances. For these figures, synchronicity is defined as intervals wherein increases decreases, or maintenance of a given level of parent strategy use co-occurred with concurrent corresponding increases, decreases, or maintenance in child behavioral measures. Although some shared reading sessions reflect higher levels of synchronicity, most readings show some relationship between parent supports and child behaviors. Some of these relationships were not strictly synchronous, but with parent behavior preceding or following child behavior.

**Dyad 1.** In the prerecording sessions Child 1 and Parent 1 occasionally displayed synchronous changes in behavior. For example, in the first recording session an incidence of synchronicity occurred as follows. Parent 1 had been simply reading text while Child 1’s interest was directed away from the shared reading. Parent 1 then gestured, pointing out the picture in the book and commented on what was happening. This attracted Child 1’s attention. Parent 1 responded to this by gesturing more. Child 1 then gestured to the book. After the first intervention session this dyad demonstrated synchronous behavior changes in the last nine intervals of the recording. Intervention recording 2 also demonstrates a series of five contiguous
intervals with synchronized behavior change. Intervention recording 3 has three shorter series of synchronized changes in parent and child behavior.

In contrast, intervention recordings 4, 5, and 6 indicate less synchronous behavior. This deviation from previous patterns of synchronicity aligns with the principle of dynamic stability which suggests that behavioral patterns of the dyad will lose stability in the transition from one stable pattern (or attractor state) to another (Steenbeek et al., 2017; Thelen, 2005). For the current intervention an extended period of variability may be anticipated given the pattern of parent instruction and the expectation that the parent would apply new strategies learned in shared reading sessions. Visual analysis of both post-intervention sessions indicates that although there are times when Child 1’s behavior reflects Parent 1’s strategy use, the response is delayed. At other times it appears that the parent is following the child’s behavior, but with delay. This lack of synchronicity may relate to Parent 1’s focus on language development in home reading sessions rather than following her child’s lead but may also reflect Child 1’s increasing interest in mechanically opening and closing the book rather than visually or tactilely exploring the pages. In this way, the strategies that Parent 1 was using were effective as, after a delay necessary for Child 1 to process her observations, Parent 1’s strategies redirected Child 1 back to literacy building activities.
Figure 5.2

Micro level interaction data on parent strategy use as it relates to child behaviors. Time scales on these graphs vary with the duration that the child participant was willing to join in shared storybook reading.
**Dyad 2.** Dyad 2 showed almost perfect synchronicity across the first pre-intervention recording. This occurred, in part, as the book selected had movable elements but little text. Parent 2 commented on the movable items as Child 2 grasped them. As her attention was directed where his was, her comments aligned with his attention and when he was finished with a page, she turned it. This helped Child 2 to maintain attention. The second pre-intervention session also reflected synchronicity. This same pattern occurred in the first intervention recording. In the second intervention recording Parent 2’s use of shared storybook reading strategies reversed trends in child behavior. This occurred again in the third intervention recording. In the fifth and sixth intervention recording sessions Dyad 2 showed synchronous fluctuations in parent and child behaviors, though these changes did not necessarily match in magnitude. The depicted data from the first post-intervention session represents only about the
last third of the shared reading session due to a recording error. The final recording session again shows the parent’s use of shared reading strategies successfully changing child behavior.

Figure 5.3

*Micro level interaction data on parent strategy use as it relates to child behaviors. Time scales on these graphs vary with the duration that the child participant was willing to join in shared storybook reading.*
**Dyad 3.** The last dyad also demonstrated how the parent’s strategy use changes child behaviors. This dyad showed brief moments of synchronous change in pre-intervention recordings but demonstrated clear synchronicity in intervention recording 2 after Parent 3 received coaching in how to follow her child’s lead. Parent 3 allowed Child 3 to open the book and select the topic of the discussion. If Child 3 touched a tactile feature in the book, Parent 3
commented on it (e.g. “is it soft?”). Parent 3 labeled Child 3’s actions and responded appropriately to her vocalizations. This supported Child 3’s engagement. Another important change occurred in intervention recording sessions 3 and 4 when Parent 3 used increased levels of support to increase child responses. Intervention recording sessions 5 and 6 both displayed periods of parent-child synchronous behavior. A larger change seen in Dyad 3 across the pre-intervention, intervention, and post-intervention recording sessions is seen in the level of child participation. In the pre-recording sessions Child 3 did not exceed four behaviors in an interval, with many intervals with only one behavior, either touching the book, attending, or vocalizing. This begins to change in the first intervention recording wherein we see a couple of intervals with over 5 behaviors, and continues for the remainder of the intervention, with only a few intervals wherein Child 3 shows only one behavior and many intervals with more than five behaviors.

Figure 5.4

_Micro level interaction data on parent strategy use as it relates to child behaviors. Time scales on these graphs vary with the duration that the child participant was willing to join in shared storybook reading._
In contrast to the examples of synchronicity provided above, asynchronous behavior changes occurred when the child was interested and the parent was disengaged, or the parent comments diverged from and disregarded the child’s interest. These led the child to lose interest.

**Amalgamation of micro-level behavioral patterns.** Evaluation of micro-level variations across dyads and in different phases of this study also reflects interrelationship between parent participation in the intervention and parent-child interactions (see Table 5.3). As dynamic systems theory would suggest, parent-child interactions within shared reading sessions showed stability in patterns. In pre-intervention reading sessions, parents’ interactions with their children during reading at times showed interaction, but at other times appeared divergent.

As dyads entered the intervention phase, graphs indicated some changes. First, for many reading sessions the scale of the y-axis reflected a greater range of values. This indicates increases in the number of parent supports implemented in an interval, the frequency of child behaviors, or both. In many reading sessions alignment between parent support usage and child behavior could be observed, even when these changes were not necessarily synchronous.

In post-intervention phases some of this alignment continued to be present. Another pattern also emerged. As children showed higher levels of attention, engagement, and vocalization behavior, parents reduced their support. This aligns with the observation made by
Table 5.3

Comparative presentation of micro-level data.

<table>
<thead>
<tr>
<th>Dyad</th>
<th>Pre-intervention R-1</th>
<th>Pre-intervention R-2</th>
<th>Intervention R-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad 1</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
</tr>
<tr>
<td>Dyad 2</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
</tr>
<tr>
<td>Dyad 3</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
<td>[Graphs]</td>
</tr>
<tr>
<td></td>
<td>Intervention R-6</td>
<td>Post-intervention R-1</td>
<td>Post-intervention R-2</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Dyad 1</td>
<td><img src="image1" alt="Graph" /></td>
<td><img src="image2" alt="Graph" /></td>
<td><img src="image3" alt="Graph" /></td>
</tr>
<tr>
<td>Dyad 2</td>
<td><img src="image4" alt="Graph" /></td>
<td><img src="image5" alt="Graph" /></td>
<td><img src="image6" alt="Graph" /></td>
</tr>
<tr>
<td>Dyad 3</td>
<td><img src="image7" alt="Graph" /></td>
<td><img src="image8" alt="Graph" /></td>
<td><img src="image9" alt="Graph" /></td>
</tr>
</tbody>
</table>
Skibbe et al., (2011) that parents decreased their support in a home-based intervention. Skibbe and colleagues (2011) likewise posited that this may relate to increased child competence. Micro-level data provides some support to this hypothesis.

**Parent-Child Interaction Across the Intervention**

Examination of parents’ use of strategies across the course of the intervention from pre-intervention observations, through observations during the intervention, to post-intervention observations reveals that changes accompany growth in child attention, engagement (touching the book), and utterances. These changes are unique to each dyad. Figures 5.5, 5.6, and 5.7 depict the changes in parent strategy use and child responses across the 10 recording sessions.

**Dyad 1.** During the first two shared reading recording sessions Child 1 attended to the book and his mother less than 90% of the time. He said very little. Parent 1 used language development supports with occasional elaborations. Over the course of the intervention she varied in her level of language development supports but maintained this as her primary type of shared storybook reading strategy. Small, but meaningful changes in her use of print/phonological skill supports were observed throughout the intervention as well. Although these changes did not directly correspond to changes in child behavior, Child 1 demonstrated steady gains in his engagement (touching the book), and attention. By the end of the intervention he was attending and engaging between 93 and 95% of the time. His reading duration also increased across the intervention. Child 1’s utterances appeared to be increasing through the intervention but declined in the post intervention observations.

Dyad 1 also showed some unexpected decreases in behavior. For instance, all of Child 1’s behaviors decreased in the shared reading session on October 17, and a similar drop in reading duration occurred on December 5. These changes aligned with physiological challenges,
including dietary or sleep disturbances reported by Parent 1. Parent 1 also showed unexpected drops in her strategy use toward the end of the study. This decrease is similar to decreases observed by Skibbe et al. (2011) that were attributed to a loss of enthusiasm with greater familiarity with the strategies.

Figure 5.5

*Parent 1’s use of language development supports, abstract thinking supports, print/phonological skill supports, and elaborations and Child 1’s attention, engagement (touching the book), and utterances as well as length of recording session.*
Dyad 2. Like Parent 1, Parent 2 also used more language development strategies than other kind of strategies (Figure 5.6). Parent 2 showed improvement in the use of two kinds of strategies: language development and print/phonological skill supports. Her skill growth accompanied increases in Child 2’s attention (from 40-67% of intervals in the pre-intervention recordings to 75-100% in post-intervention recordings) and touching the book (finishing with two post-intervention sessions at 100%). Duration of reading increased slightly. Child 2’s utterances fluctuated throughout the intervention.

Child 2 also changed in ways not measured by the SABR tool, momentary time samples of attending behavior, and duration of reading. In early shared reading session recordings, Parent 2 frequently had to physically redirect Child 2 to engage him with the book, even when he had chosen the book. These prompts became less frequent as the intervention progressed and Child 2 responded to shared storybook reading strategies. There was also a change in the content of child utterances. Child 2 frequently requested to be “all done” in early reading sessions. Once he started requesting this it was very difficult for his Parent 2 to reengage him in shared reading. As she learned and used more strategies with him Child 2 responded better to verbal redirection to the task.
Parent 2’s use of language development supports, abstract thinking supports, print/phonological skill supports, and elaborations and Child 2’s attention, engagement (touching the book), and utterances as well as length of recording session.

Dyad 3. Like the other dyads, Dyad 3 showed changes across the intervention (Figure 5.7). Parent 3 initially used low levels of language development supports. This changed dramatically after the first group instructional session, with rates of language strategy use doubling between the September 5 and October 3 recordings. This increase aligns with increases in two child-related variables: duration of reading and child attention. Parent 3 maintained a higher rate of language development support use for the remainder of the intervention. This consistency in parent strategy use may explain some of the gains observed in Child 3. Although
the novelty of reading with mom in a school setting produced initially high levels of child attention and engagement, these dropped off dramatically after the first session before slowly rising again through the remainder of the intervention. Child 3 also showed gains in duration of reading and child utterances. Like Child 2, Child 3 also demonstrated changes in her behavior that were not captured by the measurement tools. In early sessions when Parent 3 read the text as written, Child 3 would slide off her mother’s lap or off her own chair to escape from the shared reading session. Her mother would retrieve her to continue, and Child 3 would attempt to slip away again. As the intervention progressed this behavior stopped completely, and Child 3 changed from trying to escape after a few pages of one book to finishing one book and self-selecting additional books to continue the shared reading session.
Parent 3’s use of language development supports, abstract thinking supports, print/phonological skill supports, and elaborations and Child 3’s attention, engagement (touching the book), and utterances as well as length of recording session.

Taken together, these results support the hypothesized outcome for children with visual impairments who are not actively engaging with books and who demonstrate low scores in basic book awareness. This hypothesis posits that parent implementation of dialogic reading and following the child’s lead would lead to increased attention and engagement from the child.

Child growth in attention and engagement demonstrated in this study is noteworthy as attention challenges have been observed in both young children with visual impairments (Tadić et al., 2009) and in older children with visual impairments (Bardin & Lewis, 2011). One factor in this increase may be the initially low levels of attention and engagement. Previous research on
preschool-age children had failed to observe increases in engagement, but started with child engagement occurring over 90% of the time (P. S. Dale et al., 1996). The success of the intervention in developing attention is similar to the success that Cooper et al. (2014) demonstrated in his study of shared reading with infants and may be attributed to the parent following the child’s lead in the shared reading task. Thus, teaching parents of young children this one skill may promote positive outcomes.

Moderators Influencing Shared Storybook Reading Intervention

Research question four examined moderating effects based on person-characteristics. It was hoped that child participants would represent a variety of preschool children with visual impairments, including children with mild, moderate and severe disabilities and children with and without additional disabilities. Unfortunately, at the time of recruitment, all children receiving vision services in the district also had additional disabilities. Nevertheless, the researcher attempted to recruit children with a variety of amounts of usable vision. Alas, family situations prevented families of children with severe visual impairments from participating in the study, despite stated interest. Thus, this question could not be adequately addressed in this study.

Another potential moderator was the presence of siblings in the home. All of the child participants in this intervention had older siblings. Child 3 also had a younger sibling who turned two during the intervention. This did not appear to make a difference in either outcome or process variables.

A final possible moderator was the employment of the parent participant. Parent 2 was the only parent employed outside the home. Parent 3 was self-employed and worked from the home. Parent 1 described her occupation as “mom”. Although Child 1 demonstrated the greatest growth on the curriculum-based assessment, it is not possible to ascertain whether this is related
to parental employment status. Analysis of child attention, vocalizations, and engagement suggests no difference between Child 1 and the other children.

One way in which employment of the parent participant seems to have influenced this study is in the completion and submission of home reading logs. Parent 1 returned significantly more logs than either Parent 2 or Parent 3, though Parent 3 also returned logs. This suggests a conceivable connection between log completion and employment. The size of the sample, however, precludes more definitive conclusions regarding moderators of shared storybook reading intervention.

**Parental Perceptions of Shared Storybook Reading Intervention**

The final research question considered the perspective of parent participants. Study of behavioral Table 5.4

*Codes present in post-intervention parent interviews.*

<table>
<thead>
<tr>
<th>Code</th>
<th>Parents with this code</th>
<th>Total instances of code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child learned</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Parent learned</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Followed my child’s lead</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Shared reading experience improved</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Helpful (general statements)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Child more interested</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>All strategies useful</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Convenience of intervention</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Camaraderie with fellow parents</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>More time with my child</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Familiarity with researcher</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note:* This table shows the frequency of codes from parent statements in these interviews. All parents had codes that they used more often so both overall code frequency and the number of parents with comments indicative of the code are depicted.
changes in shared storybook reading and increases in preliteracy skills provide analysis based on outward indicators, however, another variable important to understanding this intervention is parent viewpoint. This information was gathered through six open-ended interview questions and through comparing parental priorities and practices before and after the intervention. Questions considered the effect of participation on reading with their child, parents’ perceived value of the experience, and aspects of the study to continue or change. Parent responses indicated certain codes related to parent perceptions of the intervention. These codes are listed with their frequency on Table 5.3.

**Effect of Intervention on Shared Reading**

Parents mentioned several ways that their reading with their child changed. These effects were noted through codes delineated in Table 5.3 applied to parent responses related to following the child’s lead, child interest, and improvement. Parental statements to this effect varied, but on the whole related that changes were positive and helpful.

The first code, following the child’s lead, related to the effects of the intervention on the shared reading experience. This emerged in parent responses related to following the child’s lead to build interest in reading. All three parents mentioned the importance of following their child’s interest as part of their shared reading experience. Parent 1 said, “when he's fascinated by something, we keep going there. . . . instead of just whisking past not knowing . . . so we understand really what he is fascinated with or curious about.” Parent 3 observed, “I do it based on [her] interests and just elaborate a little bit more or kind of ask her questions.” This was also key to Parent 2’s experience. She described, “before I didn't really see the need of him being interested, I thought it was just like, sit down. Do this . . . And now I know that I need to just kind of let him lead instead of forcing him.”
The second code, child interest, reflected changes parents noticed in their child during reading as they used the shared reading strategy of following their child’s lead. Parents commented that understanding their child’s interest changed what their child learned from reading. Parent 1 noted, “I think that that has been part of what's made it open up some of his language a little more.” Parent 2’s said that following participation in the study her son was more interested in reading. This kind of interest was similarly observed by Parent 3, “using the strategies . . . kept her attention longer and she's interacting.” She saw this as a bridge to development of emergent literacy, “I think she knows a lot more about books than she did . . . beforehand.”

The final code, improvement, pertained to parent descriptions of positive changes in the general experience of shared reading facilitated through the intervention. Parent 2 and Parent 3 observed that using shared storybook reading strategies made reading less stressful and easier. Parent 1 likewise indicated, “I feel like there are definitely things that have improved.”

Value of Shared Storybook Reading Intervention

All three parents indicated that the expenditure of time related to the study was worthwhile. One reason for this was the opportunity for parent learning. Parent 1 described:

The information [learned through participation in the intervention] you don't get anywhere else, really. I mean, I read to my other kids and they're great readers, but I did it differently, but they also needed different things. And so, for [Child 1] needing things the way that he needs them, this has been really necessary, I think.

Parent 3 observed that the utility of the content extends beyond reading with Child 3, “it's going to help me more . . . with my kids or with other kids . . . I work with.” She later described how her younger child was responding to the strategies that she learned, “[her younger sibling]'s even
doing it which is really cool. . . . And he's not even the one being studied but . . . he brings books to me all the time and starts turning the pages and points and stuff . . . and he's only two.” Parent 2 similarly noted that she knows how to keep her child’s interest and what to ask him.

Another way that this intervention was valuable to parents was as a vehicle to child learning. Parent 1 said that she thought her child was “getting more out of the book” and vocalizing more. Parent 3 echoed this saying that her child “[knew] a lot more about books than she did before [the intervention].” Parent 2 linked her child’s learning the development of routines around reading with him. She explained, “I think . . . he learned more structure and . . . a routine. . . . I think that it showed him a new type of routine with books.”

**Aspects of the Intervention to Retain and Possible Improvements**

To understand which strategies and kinds of instruction were most useful, parents were asked about their preferences in instruction, which strategies that would continue to use, and what changes they would recommend.

Parents’ tended to view all of the strategies as useful and expressed the intention of continuing to use them. Although Parent 2 indicated more specific strategies, her response and that of Parent 3 seemed to echo this sentiment as expressed by Parent 1 who said, “As many of them as I can think of at the time because there is, you know, there's such a big handful of them.”

Unity of sentiment was not found when parents were asked about the type of instruction that they found most valuable. Parent 2 favored individual instruction and coaching because, “I'm more open and more talkative when it's just me and one other person. So when I'm in a group setting, I tend to not be as . . . participating.” In contrast to her preference, Parents 1 and 3 attested to liking both, but spoke more about the group instruction. Parent 1 valued the association with other parents of children with visual impairments and other disabilities.
indicating,

with the group thing is just the camaraderie of like, okay, because even though each of our children are in different places on a reading scale, it's just it's just nice to see that we're all aiming for the same thing.

Whereas Parent 3 appreciated the exemplars.

I liked being able to see the other parents interact with their . . . own . . . kids too. To kind of gauge . . . what I'm doing compared to what to what they're doing and . . . by seeing them do it they've been able to give me ideas on how to work with and read to [Child 3]”

These sentiments echo the need for social support and connection that researchers have observed in parents of children with visual impairments (Leyser & Heinze, 2001; Tröster, 2001). However, as this sentiment was not equally experienced by all parents, future interventions must consider the needs for parents who prefer one on one settings.

When parents were asked specifically for recommendations for future interventions, the initial response was that things had worked well and that they would not make significant changes. Parents specifically mentioned appreciating flexibility in scheduling, the intervention being located at a convenient location, and the child’s familiarity with the researcher. As Parent 3 discussed these qualities of the current study she suggested one recommendation, “doing a home visit or two,” to make the study even more convenient.

The sentiments of these parents in discussing the intervention pointed to the parents’ appreciation for learning strategies that they could use in helping their children. This learning did not occur in a single moment, but incrementally and through both group instruction and individual coaching experiences. Parent 1 summarized her learning in these words:

It's been good because I think some of the training stuff that I—they’re just things I've
never thought about, and it's not rocket science. But once you kind of just see the point of it and then you do it. It makes a lot of sense and it helps a lot.

**Analysis for Presence of Shifts in Parental Priorities**

To determine whether there were changes in priorities or home reading practices, parents were asked about their priorities and practices before and after participating in the evaluation. Parent responses reflected no changes in priorities from before the intervention. In contrast to this lack of change, there were changes in reading practices.

Parent 1 reported that Child 1 was read to three to four times per week by his parents or other adults and one to two times per week by siblings both before and after the intervention. Child 1 read to himself more than four times per week prior to the intervention, but only three to four times after. Thus, although there was no change in parent and sibling reading, Child 1 chose to read less after the intervention than before.

In contrast to the reduction in reading reported regarding Child 1, Child 2 and Child 3 experienced positive changes in home reading practices. Parent 2 reported that parents or other adults in the home read to Child 2 three to four times per week before the intervention and more than four times per week after the intervention. He was likewise read to by his siblings three to four times per week before the intervention and more than four times per week after. Child 2 read to himself only one to two times per week before the intervention but read to himself three to four times per week after the intervention. These changes suggest that Child 2 increased his home reading experiences over course of the intervention. This increase aligns with Parent 2’s relating that participating in the study made Child 2 more interested in reading.

Like Parent 2, Parent 3’s responses also indicated that home reading experiences increased from before the intervention to after the intervention. Parents or other adults in the
home read to Child 3 three to four times per week both before and after the study. Siblings read to Child 3 less than one time per week prior to participation in the study. This increased to one to two times per week after the study. Child 3 read to herself one to two times per week before the intervention and increased her reading to three to four times per week after. Her increased reading at home corresponds to increased interest in reading in shared reading recording sessions. At the beginning of the study she would attempt to escape after one or two pages, but at the end of the intervention she would select two to three books before turning her interest to another activity.

**Discussion**

This study is the first to attempt to ameliorate emergent literacy skill delays in preschool children with visual impairments. Although previous research on shared storybook reading interventions observed that they may be beneficial for children with a variety of disabilities (Crain-Thoreson & Dale, 1999; van Bysterveldt et al., 2006), studies have deliberately excluded children with visual impairments (Towson & Gallagher, 2014). This exclusion may be based on the unique literacy needs of children with visual impairments (Craig, 1999), but is unfortunate given the propensity for literacy delays in this population (Craig et al., 2002).

The overall purpose of this study was to explore shared storybook reading as an intervention to improve preliteracy skills and ultimately literacy outcomes for children with visual impairments. To understand the effectiveness of this intervention it is essential to triangulate results from different variables (Collins et al., 2006). This triangulation considers growth in emergent literacy skills, changes for the parent and child behaviors in the shared reading experience, and the perceptions of the parents.

As a group the children in the present study showed modest progress, similar to other
preschool children who were not in the study, on the district’s curriculum-based assessment, which might suggest that this intervention was not effective for this population. However, this study was designed to help parents use shared storybook reading strategies that aligned with child emergent literacy level and needs and current parent strategy use, rather than focusing on increasing a pre-specified preliteracy skill and quantifying this with a measure sensitive to change in this construct. Thus, although the district CBA will pick up broad changes, it will be less sensitive to changes in some emergent literacy areas. Analysis of previous shared reading interventions suggests that this kind of intervention will tend to show a smaller effect size than interventions with measures more directly aligned with the parent instruction (Trivette et al., 2012). Additionally, the logic model for this intervention suggests that changes in preliteracy skill will follow increases in attention and engagement.

This study examined attention and engagement as child behavioral indicators in shared reading video recordings. Attention and engagement in shared storybook reading increased for all child participants across the study. These improvements co-occurred with changes in parent shared reading strategy use both within shared reading sessions and across sessions. Therefore, this indicator would suggest that this was a successful intervention.

The next marker to consider in determining whether this was a successful intervention was parent perceptions. Previous research suggests that parent perceptions can determine the success (Pillinger & Wood, 2014) and feasibility (Justice, Skibbe, et al., 2010) of a shared reading intervention. The parents who participated in this study universally saw this study as worthwhile. All parents saw the strategies learned as valuable and believed that their use of these strategies was producing learning in their children. Hence, this element of the study also supports shared storybook reading as an efficacious intervention for this population.
Taken together, parent perceptions and improvements in parent strategy use and child attention and engagement during shared storybook reading lead to the conclusion that shared storybook reading is useful in promoting emergent literacy in preschool children with visual impairments notwithstanding the lackluster results on the CBA.

**Limitations**

Single case research is limited in generalizability as it cannot be assumed that responses of three dyads to an intervention represent the results for all dyads with mild visual impairments and additional disabilities. An additional threat to generalization is due to characteristics of the available sample at the time of recruitment. Child participants in this study failed to adequately represent either the range of severity of visual impairments (from no usable vision to mild visual impairment) or the full range of additional disabilities (from severe additional disabilities to no additional disabilities).

Another limitation of this study was in the veracity of results. Two potential factors interfering with the validity of conclusions are reactivity to the experimental situation and experimenter expectancies (Shadish, Cook, & Campbell, 2002). Thus, parents may have responded to experimental situations by giving what they thought were “correct” answers to correspond to what they perceived that the researcher wanted. This could potentially have contributed to overwhelmingly positive interview responses at the end of the study.

Experimenter expectancies may have colored the responses of parents or children in recording sessions as the researcher may have unconsciously conveyed the expectation of improvement. One indicator that this may have occurred came in a comment of Parent 1 in the post-intervention interview. She said:

I know he has enjoyed like the video tapings and stuff because I guess part of his being
social he just seems to really get a kick out of it. So, our readings during those times actually do better than some-- than a lot of them at home do.

In contrast, Parent 2 indicated midway through the study that readings at home went more smoothly than recording sessions. These observations suggests that experimenter expectancies may have had an impact on some, but not all, results.

**Implications for Research**

The present study suggests that shared storybook reading interventions may be feasible for preschool children with visual impairments, an area wherein little research has been conducted (Erickson & Hatton, 2007b). However, further research is needed to examine this type of emergent literacy intervention with larger samples and a greater variety of preschool children with visual impairments including those with less usable vision and those with no additional disabilities. Additionally, research is also needed to evaluate long term effects of shared storybook reading intervention on literacy growth.

**Implications for Practice**

This study provides preliminary indications that shared storybook reading interventions may facilitate parent skill development which promotes engagement in emergent literacy activities. Parents indicated that the information and skills learned in the intervention were not readily available to them in other settings, though all these children had participated in early intervention prior to their third birthday. This suggests that parent-implemented emergent literacy activities may be beneficial in promoting literacy growth for preschool children with visual impairments. Shared storybook reading intervention may provide an avenue for parent-teacher collaboration in emergent literacy and make a difference for these children.
Conclusion

This dissertation addressed the problem of emergent literacy delays in preschool children with visual impairments. Although literacy lags have been well established in school age children with visual impairments (Douglas et al., 2002; Lusk & Corn, 2006b; Tobin & Hill, 2012), emergent literacy delays in preschool children with visual impairments have only been explored in components, such as oral language (McConachie & Moore, 1994; Reynell, 1978), phonological awareness (Tobin & Hill, 2012), print concepts (Kulp et al., 2016), and in literacy environments (Craig, 1996, 1999). This dissertation examined the emergent literacy of preschool children with visual impairments and factors surrounding emergent literacy development. Key factors included attention challenges (Tadić et al., 2009) in children with visual impairments, oral language differences (Moore & McConachie, 1994), and environmental emergent literacy supports (Craig, 1996, 1999; Marvin & Mirenda, 1993).

To address these needs, this dissertation implemented a shared storybook reading intervention, as was posited to have a beneficial effect for preschool children with visual impairments (Erickson & Hatton, 2007a; Murphy, Hatton, & Erickson, 2008). Parents were provided specific instruction in shared storybook reading strategies (Sim et al., 2014; van Bysterveldt et al., 2006; What Works Clearinghouse, 2007) appropriate to their child’s development, as well as instruction in following their child’s lead (P. J. Cooper et al., 2014). The result of this intervention was behavioral changes in shared reading, including increased attention and engagement behavior in shared reading.

This dissertation contributes to extant literature in several ways. First, it provides evidence of emergent literacy delays in preschool children with visual impairments. Next it demonstrates that although parents may be reading to their preschool children with visual
impairments, strategies typically used by parents to read with typically sighted children may not be sufficient to develop engagement in shared reading for this population. This suggests the need for interventions to focus on emergent literacy skill development, address attention challenges, and consider the child’s unique characteristics related to their visual impairment and additional disabilities. One way to do this is through building parents’ capacity to follow their child’s lead. When parents receive this kind of instruction it improves the shared storybook reading experience for both parent and child. Parents who participated felt that the experience of participating in the study was valuable and worthwhile for themselves and their children.
References


Topics in Early Childhood Special Education, 33, 249–259. doi:10.1177/0271121413477498


182


Zebehazy, K. T. (2014). Functional literacy for students with visual impairments and significant cognitive disabilities: The perspective of teachers of students with visual impairments. 


doi:10.1177/1540796914566712
Parents want to help their child, but are underutilizing shared reading interventions that are effective for other preschool children. Children with visual impairments (VI) may benefit from interventions that focus on developing reading and writing skills, including phonological awareness, oral language, and print referencing or phonological awareness. The Logic Model outlines the following steps:

**Inputs**
- Time
  - Trainer to develop, arrange, provide training
  - Parent to be observed reading to their child
  - Staff or volunteers to interact with children
- Data collector
- Classroom for training
- Materials for training
  - Handouts
  - Books

**Activities**
- Researcher will train 2-4 parents in following the lead of a child with VI and to use basic dialogic reading strategies during shared reading during four 1-hour parent trainings and three individual coaching sessions. Sessions will alternate with each other and observations of shared reading in from Sept. through Dec.

**Outputs**
- Parents of children who are not actively engaging with books and who demonstrate low scores in basic book awareness
- Parent implements print referencing or other preliteracy skill development in shared reading context

**Participation**
- Child engages in preliteracy tasks, practices preliteracy skills, shows increased language elicitation

**Short**
- Child increases in attention and language use in shared book reading.

**Medium**
- Parent implements following child’s lead and basic dialogic reading in shared book reading.

**Long**
- Parent sees their child enjoying shared reading and gaining skills through the activity and is motivated to continue, feels the activity is worthwhile and beneficial.

**Assumptions**
- Parents want to help their child, but are underutilizing shared reading interventions that are effective for other preschool children. Children with VI may benefit from interventions that focus on developing reading and writing skills, including phonological awareness, oral language, and print referencing or phonological awareness.

**External Factors**
- Children with VI and additional disabilities
- Parental reading skill or disabilities
- Lack of participants
- Parent implementation of shared storybook reading strategies
### Appendix B

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Instrument</th>
<th>Data collection</th>
<th>Data Analysis</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. What influence does training parents of preschool students with visual impairments in shared storybook reading strategies have on parental use of shared storybook reading strategies? a) Do parents use strategies that they have been taught in observations of shared reading? b) Do parents report using strategies that they have learned when reading with their child at home? c) Do parents continue to use strategies learned while they gain additional strategies and after</td>
<td>Attendance</td>
<td>Attendance at group training, Attendance at individual coaching</td>
<td>Correlation</td>
<td>QUANT</td>
</tr>
<tr>
<td></td>
<td>SABR</td>
<td>Coding video of parent reading to child</td>
<td>Visual analysis of data</td>
<td></td>
</tr>
</tbody>
</table>
instruction and coaching sessions have concluded?

3. What influence does parental use of shared storybook reading strategies in reading with preschool students with visual impairments have on the attention and elicitation of language of preschool children with visual impairments during shared storybook reading?

   | Observation | Coding of parental utterances and behavior (SABR) | Coding of child’s verbalizations/behavioral responses |
   | QUANT |

4. How are the effects of a storybook reading intervention on children with visual impairments moderated by the absence, type, and extent of additional disabilities?

   | Observations | Compilation of graphs used in analysis of question 3 |
   | QUANT |

5. What are parents’ perceptions on the usefulness of a shared storybook intervention on the preliteracy skills of their preschool student with visual impairments?

   | Interviews | Transcription of interviews |
   | QUAL | Inductive reasoning |

   a) Do parental priorities for their preschool child with a visual
impairment shift in any way following participation in a shared storybook reading intervention?
Appendix C

Protocols
TEACHER SURVEY ON VISUAL IMPAIRMENTS

I. TEACHER BACKGROUND
1. Age: ________
2. Gender: ________
3. Marital Status: ________
4. Number of years in preschool department: ________
5. Highest Education:
   ________ High School Graduate/GED and CDA (Child Development Associates)
   ________ Some college and CDA
   ________ Bachelor’s degree
   ________ Graduate degree
6. What foundation do you have in teaching students with visual impairments?
   ________ coursework
   ________ in-service training
   ________ readings
   ________ direct experience
   ________ other______________________________________________________
7. What previous experience have you had with people with visual impairments or blindness?
   Indicate how many people would fit a category and whether the individuals were children (C) or adults (A).
   ________ in immediate family
   ________ in neighborhood
   ________ in church
   ________ previously taught
   ________ other______________________________________________________
8. Do any of your current students have a visual impairment, such that they still do not see as well as typical children do even while wearing their glasses (if they have glasses)?
   ________ yes
   ________ no
9. What does it mean when a child has a visual impairment?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
    
10. Are all visual impairments the same?
    __________________________________________________________________________
    __________________________________________________________________________
    __________________________________________________________________________

II. OPINIONS & FEELINGS
11. How do you teach a student with a visual impairment?
    __________________________________________________________________________
    __________________________________________________________________________
    __________________________________________________________________________

12. What would be your two major concerns if a child with a visual impairment were to become a student in your class?
    __________________________________________________________________________
    __________________________________________________________________________
13. What would be your two major concerns if a child who is blind were to become a student in your class?
________________________________________________________________________
________________________________________________________________________

14. What modifications would you have to make if a child with a visual impairment joined your class?
________________________________________________________________________
________________________________________________________________________

15. What is the best educational placement for most visually impaired students? Blind students? (Write VI and BL beside the appropriate choices)

<table>
<thead>
<tr>
<th></th>
<th>VI</th>
<th>BL</th>
</tr>
</thead>
<tbody>
<tr>
<td>regular classroom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>special class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>special school (e.g., school for the blind)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suppose that the preschool coordinator over your classroom contacted you indicating that one (or more) of the children in your preschool class have visual impairments. The special education consultant was with you at the time and is similarly receiving this news for the first time. After receiving this information, you would feel __________. (Choose the word(s) in each row that best describes your feelings in this situation.)

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>Enthusiastic</td>
<td>Somewhat enthusiastic</td>
<td>Neutral</td>
<td>Somewhat unenthusiastic</td>
<td>Unenthusiastic</td>
</tr>
<tr>
<td>17.</td>
<td>Scared</td>
<td>Somewhat scared</td>
<td>Neutral</td>
<td>Somewhat fearless</td>
<td>Fearless</td>
</tr>
<tr>
<td>18.</td>
<td>Anxious</td>
<td>Somewhat anxious</td>
<td>Neutral</td>
<td>Somewhat relaxed</td>
<td>Relaxed</td>
</tr>
<tr>
<td>19.</td>
<td>Comfortable</td>
<td>Somewhat comfortable</td>
<td>Neutral</td>
<td>Somewhat uncomfortable</td>
<td>Uncomfortable</td>
</tr>
<tr>
<td>20.</td>
<td>Angry</td>
<td>Somewhat angry</td>
<td>Neutral</td>
<td>Somewhat not angry</td>
<td>Not angry</td>
</tr>
<tr>
<td>21.</td>
<td>Unwilling</td>
<td>Somewhat unwilling</td>
<td>Neutral</td>
<td>Somewhat willing</td>
<td>Willing</td>
</tr>
<tr>
<td>22.</td>
<td>Interested</td>
<td>Somewhat interested</td>
<td>Neutral</td>
<td>Somewhat disinterested</td>
<td>Disinterested</td>
</tr>
<tr>
<td>23.</td>
<td>Confident</td>
<td>Somewhat confident</td>
<td>Neutral</td>
<td>Somewhat overwhelmed</td>
<td>Overwhelmed</td>
</tr>
<tr>
<td>24.</td>
<td>Nervous</td>
<td>Somewhat nervous</td>
<td>Neutral</td>
<td>Somewhat calm</td>
<td>Calm</td>
</tr>
<tr>
<td>25.</td>
<td>Pleased</td>
<td>Somewhat pleased</td>
<td>Neutral</td>
<td>Somewhat displeased</td>
<td>Displeased</td>
</tr>
<tr>
<td>26.</td>
<td>Weak</td>
<td>Somewhat weak</td>
<td>Neutral</td>
<td>Somewhat powerful</td>
<td>Powerful</td>
</tr>
<tr>
<td>27.</td>
<td>Annoyed</td>
<td>Somewhat annoyed</td>
<td>Neutral</td>
<td>Somewhat indifferent</td>
<td>Indifferent</td>
</tr>
<tr>
<td>28.</td>
<td>Accepting</td>
<td>Somewhat accepting</td>
<td>Neutral</td>
<td>Somewhat opposing</td>
<td>Opposing</td>
</tr>
<tr>
<td>29.</td>
<td>Prepared</td>
<td>Somewhat prepared</td>
<td>Neutral</td>
<td>Somewhat unprepared</td>
<td>Unprepared</td>
</tr>
<tr>
<td>30.</td>
<td>Resistant</td>
<td>Somewhat resistant</td>
<td>Neutral</td>
<td>Somewhat cooperative</td>
<td>Cooperative</td>
</tr>
<tr>
<td>31.</td>
<td>Happy</td>
<td>Somewhat happy</td>
<td>Neutral</td>
<td>Somewhat unhappy</td>
<td>Unhappy</td>
</tr>
<tr>
<td>32.</td>
<td>Pessimistic</td>
<td>Somewhat pessimistic</td>
<td>Neutral</td>
<td>Somewhat optimistic</td>
<td>Optimistic</td>
</tr>
</tbody>
</table>
### III. RESOURCES TO HELP CHILDREN WITH VISUAL IMPAIRMENTS ACCESS PRELITERACY INSTRUCTION

33. What services/resources are available for teachers that have students who are blind or visually impaired in their classes?

______________________________________________________________________________

34. Would you need any additional training or assistance than you have now to teach students with visual impairments? Explain.

______________________________________________________________________________

### IV. STRATEGIES CURRENTLY USED IN TEACHING PRELITERACY SKILLS TO STUDENTS WITH VISUAL IMPAIRMENTS (Only for those with current students with visual impairments)

What strategies are you currently using to facilitate preliteracy skill development for your students with visual impairments?

<table>
<thead>
<tr>
<th>Strategy</th>
<th>No use</th>
<th>1-2 Times per month</th>
<th>1-2 times per week</th>
<th>Daily</th>
<th>Not appropriate</th>
<th>Not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. Position materials and use other strategies to help child see materials (e.g. book stands, CCTV, Light Box, Markers)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>36. Lighting intensity increased or decreased for individual needs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>37. Provide tactile books or books adapted to provide tactile cues (e.g. texture added to books, memory books with real objects from field trips)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>38. Draw children’s attention to environmental braille</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>39. Provide braille books or books with braille added to print</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>40. Provide a braillewriter, slate and stylus, for “scribbling” and early braille writing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>41. Provide verbal description or explanation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
What additional strategies that were not listed are you currently using with your students with visual impairments?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________
FAMILY SURVEY OF READING AND WRITING PRACTICES

Please answer each of the questions in the following sections by placing a check to the left of the statement, circling your answer, or by filling in your response in the space provided.

I. INFORMATION ABOUT YOUR CHILD WHO ATTENDS PRESCHOOL

1. What is your relationship to your preschool child (mother, father, sibling, etc.)?  
2. What is your child’s date of birth? ____________________________  
3. What is your child’s age? _________  
4. What is your child’s gender? _______ girl _______ boy  
5. Which of the following exceptionalities or disabilities does your child have in addition to visual impairment (check all that apply)  
   _____ Speech impairment  ____ mental handicap or autism  
   _____ orthopedic handicap  ____ learning disability  
   _____ behavior disorder  ____ other _________________  
   _____ hearing impairment  ____ not applicable (N/A)  
6. Which of the following statements describe your child’s visual ability? (check all that apply)  
   _____ recognizes family members and friends visually, prior to talking  
   _____ uses vision to locate objects in the home  
   _____ verbally labels objects before touching them  
   _____ shows interest in pictures  
   _____ is able to see light  
   _____ my child has no vision  

II. INFORMATION ABOUT YOUR FAMILY

7. What is your occupation? _____________________________________________  
8. What is your highest level of education?  
   _____ some high school  ____ training  
   _____ high school diploma/GED  ____ college degree  
   _____ some college or vocational  ____ graduate degree(s)  
9. Spouse’s occupation? _______________________________________________  
10. Spouse’s highest level of education?  
    _____ some high school  ____ training  
    _____ high school diploma/GED  ____ college degree  
    _____ some college or vocational  ____ graduate degree(s)  
11. Are there siblings or any other children living in your home? ____Yes ____No  
12. (a) Which of the following types of special education services or support does your family currently receive or has received in the past? Write C for current P foo past  

202
(b) To what extent have these services involved you or your family in your child’s reading and writing development?

_____ no involvement
_____ little involvement
_____ occasional involvement
_____ extensive involvement

III. SURVEY OF HOME LITERACY EXPERIENCES
13. At this time, do you believe your child will be: (check only one)

_____ primarily a print reader (answer questions 14 through 23 then skip to 32 and continue)
_____ primarily a braille reader (skip to question 22 and continue)
_____ both print and braille reader (continue and answer all the questions)

Print readers begin here
14. Does your child wear glasses? _____ yes _____ no
15. Has your child received a clinical low vision evaluation? _____ yes _____ no
16. Which of the following low vision devices have been made available to your child for use in the home? (check all that apply)

_____ hand held magnifier
_____ telescopic device or monocular
_____ closed circuit TV (CCTV)
_____ magnifying glasses
_____ other________________________
17. How many books does your child own?

_____ 0 _____ 1-4 _____ 5-9 _____ 10+
18. Of these books, how many have simple pictures and/or large print?

_____ all or almost all _____ more than half _____ a few _____ none
19. Do you label objects in your home in large print? _____ yes _____ no
20. Which of the following print materials does your child regularly use, or see you and others using in the home? (check all that apply)

_____ children’s books
_____ letters addressed to a child
_____ cookbooks/instruction manual
______ picture books for children
______ notes (refrigerator notes)
______ advertisements
______ books received as gifts
______ letters addressed to an adult
______ playing cards or board games
______ magazines
______ adult dictionary/encyclopedia
______ novels/other adult books
______ newspapers
______ catalogues
______ birthday cards addressed to child
______ computer to access preliteracy games
______ computer to produce or access documents (e.g. Word, Google Docs, etc.)
______ computer to read email/surf the internet
______ other

21. Which of the following statements describes how your child participates in reading at home using visual or audio material? (check all that apply)
______ chooses books to read or be read aloud
______ listens quietly as someone else reads aloud
______ listens to audiobooks
______ looks at books
______ asks questions or makes comments about books during reading
______ points to pictures
______ turns pages in books or magazines
______ retells stories or pretends to read using print
______ reads independently in print

22. How does your child participate in writing activities at home using print or visual material? (check all that apply)
______ plays with or “writes” with magnetic or felt letters
______ scribbles with pencils, magic markers, paint brushes, etc.
______ tells stories for others to write down in print
______ plays with writing and drawing toys (Etch-a-Sketch, Magna-Doodle, etc.)
______ copies letters or words in print
______ writes text independently using pencil, pen, or typewriter
______ writes text independently using computer
______ writes or draws using apps on a tablet

23. Which of the following indicates how your child is aware that reading and writing in print occurs in your family? (check all that apply)
______ watches as adults or siblings read or write

204
 listens intently as adults or siblings read or write 
 asks what adults or siblings are doing
 attempts to imitate your actions by writing or scribbling in print
 other

Braille readers begin here

24. Do you or does anyone in your home read braille? _______yes _______no

25. Has anyone provided you or your child with special early reading materials such as shape books, touch books, or children’s books in braille? _______yes _______no

26. How many braille or braille and picture books does your child own?
 0 _______1-4 _______5-9 _______10+

27. Of these books, how many have textures and braille?
  all or almost all _______more than half _______a few _______none

28. Do you label objects in your home with braille? _______yes _______no

29. Which of the following braille devices have been made available to your child for use at home? (check all that apply)
  writer
  slate and stylus
  labeler
  toys such as alphabet computer games adapted with braille
  computer with braille output device
  other

30. Which of the following braille materials does your child regularly use, or observe you and others using in the home? (check all that apply)
  playing cards or board games
  letters addressed to an adult
  children’s books
  letters addressed to a child
  novels/other adult books
  bills
  adult dictionary/encyclopedia
  cookbooks/instruction manual
  catalogues
  birthday cards addressed to the child in braille
  advertisements
  notes (refrigerator notes)
  books received as gifts
  magazines
31. Which of the following statements describes how your child participates in reading at home using tactual or audio material? (check all that apply)

- chooses books to read or be read aloud in braille
- listens quietly as someone else reads aloud
- listens to audiobooks
- examines books by touch
- asks questions or makes comments about books during reading
- points to or examines pictures you can feel
- retells stories or pretends to read using braille
- reads independently in braille

32. How does your child participate in writing activities at home using braille or tactual material? (check all that apply)

- plays with or “writes” with toy computers labeled with braille
- scribbles in braille using braille writer or slate and stylus
- tells stories for others to write down in braille
- uses screen board with crayons or raised line drawing kit
- copies letters or words in braille
- writes text independently using braille writer or slate and stylus
- writes text independently using computer with braille display or output

33. Which of the following indicates how your child is aware that reading and writing in braille occurs in your family?

- places hands on the braille material being read by adults or siblings
- listens intently as adults or siblings read or write in braille
- asks what adults or siblings are doing
- attempts to imitate the actions of others in the home by writing/scribbling in braille

Everyone continue here

Please circle the number which best reflects your family’s experience concerning the following statements:

<table>
<thead>
<tr>
<th></th>
<th>Less</th>
<th>1-2</th>
<th>3-4</th>
<th>More</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

206
### Reading and Writing Activities

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. How often do you or other adults in your home read aloud to your child?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>35. How often do siblings or other children read to your child?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>36. How often does your child read by himself or herself in the home?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>37. How often does your child do some kind of writing, drawing, or “pretend writing” at home?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>38. How often do you or others take your child to the library/bookmobile?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>39. As a family, how often do you spend time reading and talking about books?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>40. How often do you and your child order braille or audiobooks from state library services for the blind?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>41. How often does your family go on outings to places such as the park, zoo, pool, visit relatives, or go shopping?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>42. How often does your child listen to stories in an audio format?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>43. How often does your child watch educational television?</td>
<td>1, 2, 3, 4, 5</td>
</tr>
</tbody>
</table>

### Comfort Levels

How uncomfortable would you be if your child used:

<table>
<thead>
<tr>
<th>Level</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Uncomfortable</td>
<td>Neutral</td>
</tr>
<tr>
<td>Question</td>
<td>Uncomfortable</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>44. large print material for reading?</td>
<td>1</td>
</tr>
<tr>
<td>45. a hand-held magnifier for reading?</td>
<td>1</td>
</tr>
<tr>
<td>46. a telescopic aid for reading?</td>
<td>1</td>
</tr>
<tr>
<td>47. a closed-circuit TV for reading?</td>
<td>1</td>
</tr>
<tr>
<td>48. braille material for most reading?</td>
<td>1</td>
</tr>
<tr>
<td>49. a braille writer for most writing?</td>
<td>1</td>
</tr>
<tr>
<td>50. a slate and stylus for writing?</td>
<td>1</td>
</tr>
</tbody>
</table>

**How comfortable would you be?**

51. helping your child complete homework assignments in braille

| 1             | 2           | 3           | 4           | 5           |
IV. CHILD LITERACY INTEREST

52. How often does your child ask to be read to?
   _____ Hardly ever
   _____ Once or twice a month
   _____ Once or twice a week
   _____ Almost daily
   _____ More than once per day

53. How much does your child enjoy being read to?
   Not at all   Very much   N/A (no one reads to my child)
   1   2   3   4   5   N/A

V. PARENTAL EXPECTATION ITEMS

54. Please indicate the three most important goals that you have for your child at this time. Number from 1 to 3 (1 being the most important, 3 bring the least important).
   _____ learning self-help skills (feeding, dressing, toilet training, moving independently, etc.)
   _____ communicating independently
   _____ learning to read and write
   _____ making friends
   _____ developing recreational interests and skills
   _____ developing vocational skills
   _____ other

55. How many years of school do you expect your child to complete?
   _____ less than ninth grade
   _____ some high school, but not finish
   _____ high school graduation or GED
   _____ high school + some college or trade school
   _____ four-year college degree
   _____ beyond college

56. How far do you think your child might go with his/her reading development in either print or braille?

   ________________________________________________________________
57. What do you see as the major barrier(s) facing your child in meeting this expectation?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Comments:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

VI. POST INTERVENTION INTERVIEW

Repeat questions from sections IV and V. then continue to the following:

58. How has participating in this study changed reading with your child?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

59. In what ways have strategies you have been taught been helpful or not so helpful?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

60. In this study you have participated in sessions designed for a group of two or more parents and individual coaching sessions, what training have you found most valuable? Why?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

61. What strategies, if any, will you continue to use in reading with your child?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
62. Was participating in this study worth the investment of time both in instructional and coaching sessions and in reading with your child? What made it worthwhile or not?

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

62. Supposing that I were to do this study again with other parents and children, what should I do differently?

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________
### Data Collection Template: SABR with modifications to child behavioral indicators

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Language Development</th>
<th>Abstract Thinking</th>
<th>Elaborations</th>
<th>Print/Phonological Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Notice, label, or describe story actions (i.e., verbs); perceptually present</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b. Ask for or provide noun label, locate, or notice (no modifier, but can include preposition; includes rote counting)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1c. Ask for or provide noun description/characteristics (any modifier, including possession; selective focus on parts of noun)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1d. Ask for or provide a word definition (&quot;this means&quot;; &quot;this is&quot; + essential quality/synonym/category; example/non-example)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1e. Expands/extends C's utterance (includes change in grammatical form, adding an idea, or eg Q added to C's utterance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a. Model or ask to compare and contrast (show differences and likenesses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. Model or ask for judgements, evaluations, inferences, or character's point of view</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2c. Model or ask for hypotheses or predictions about future story events or revisit/confirm prediction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2d. Model or ask for reasoning, analysis, or explanation (e.g., conditions, cause, effect, draw conclusions, explain how/why)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a. Ask for or provide a word elaboration (rich discussion, contextualize, dramatize for word meaning)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b. Text-to-life connection (link to child or adult’s personal experiences or to other texts)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3c. Encourage C to dramatize/imitate/pretend (includes pretend talk to characters)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3d. Follows C spontaneous initiation with contingent verbal response that continues C’s topic (P must do more than repeat C’s utterance or offer a vague acknowledgement)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3e. Emotion modeling using feeling words to discuss character emotions, emotion words in text, or own emotive responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4a. Discuss book or print conventions (title, author, illustrator, cover, spine, read left to right, read page, how to read)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4b. Discuss letter sounds in the text (includes single letter sounds, digraphs—sh, ch, th, wh—or letter pairs/blends—e.g. sl, br, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4c. Discuss letters or words including counting words (letter, upper/lower-case, capital, ABC’s, alphabet, word/print)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4d. Discuss sounds of words including rhyme, syllables, beginning sounds, phonemes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructs</td>
<td>Coding Categories</td>
<td>Intervals...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Session</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Climate</strong></td>
<td>5a. Models respect (please, thank you, you’re welcome, responds to C’s signals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sensitively and promptly)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5b. Positive feedback (Do not code Yeah, Yes, Uh huh, okay, must include a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>positive/affirming word or phrase)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Child</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Behaviors</strong></td>
<td>5c. Child touches the book (with P’s permission or in response to interaction,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not to close book, mechanically turn pages)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6a. Attention: The child positioning his or her body so it is oriented toward or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>focused on book or interaction partner during shared book reading. Code using</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>momentary time sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6b. Child utterances type in child statements or V for each discrete unintelligible vocalization (do not code crying)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OTHER VIDEO INFORMATION:** For how much of the video were you able to clearly hear and parse the parent’s utterances? Almost all, Some, Little/None
Momentary Time Sampling Data Sheet (used in Chapter 2 Needs Assessment)

Session Number: __________________ Observer: ____________________________
Book(s): ______________________________________________________________
Obs. Start time: _____________ Stop time: ______________ Interval: 15 seconds

Target Behaviors: Attention: The child positioning his or her body so it is oriented toward or focused on book or interaction partner during shared book reading.

<table>
<thead>
<tr>
<th>Interval</th>
<th>Attention</th>
<th></th>
<th>Interval</th>
<th>Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>No</td>
<td>31</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>No</td>
<td>32</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>No</td>
<td>33</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>No</td>
<td>34</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>No</td>
<td>35</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>No</td>
<td>36</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>37</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>No</td>
<td>38</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td>No</td>
<td>39</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
<td>No</td>
<td>40</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Yes</td>
<td>No</td>
<td>41</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>Yes</td>
<td>No</td>
<td>42</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>No</td>
<td>43</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Yes</td>
<td>No</td>
<td>44</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Yes</td>
<td>No</td>
<td>45</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>Yes</td>
<td>No</td>
<td>46</td>
<td>Yes</td>
</tr>
<tr>
<td>17</td>
<td>Yes</td>
<td>No</td>
<td>47</td>
<td>Yes</td>
</tr>
<tr>
<td>18</td>
<td>Yes</td>
<td>No</td>
<td>48</td>
<td>Yes</td>
</tr>
<tr>
<td>19</td>
<td>Yes</td>
<td>No</td>
<td>49</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>Yes</td>
<td>No</td>
<td>50</td>
<td>Yes</td>
</tr>
<tr>
<td>21</td>
<td>Yes</td>
<td>No</td>
<td>51</td>
<td>Yes</td>
</tr>
<tr>
<td>22</td>
<td>Yes</td>
<td>No</td>
<td>52</td>
<td>Yes</td>
</tr>
<tr>
<td>23</td>
<td>Yes</td>
<td>No</td>
<td>53</td>
<td>Yes</td>
</tr>
<tr>
<td>24</td>
<td>Yes</td>
<td>No</td>
<td>54</td>
<td>Yes</td>
</tr>
<tr>
<td>25</td>
<td>Yes</td>
<td>No</td>
<td>55</td>
<td>Yes</td>
</tr>
<tr>
<td>26</td>
<td>Yes</td>
<td>No</td>
<td>56</td>
<td>Yes</td>
</tr>
<tr>
<td>27</td>
<td>Yes</td>
<td>No</td>
<td>57</td>
<td>Yes</td>
</tr>
<tr>
<td>28</td>
<td>Yes</td>
<td>No</td>
<td>58</td>
<td>Yes</td>
</tr>
<tr>
<td>29</td>
<td>Yes</td>
<td>No</td>
<td>59</td>
<td>Yes</td>
</tr>
<tr>
<td>30</td>
<td>Yes</td>
<td>No</td>
<td>60</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Totals

Percentage

Procedure: Observe every 15 seconds whether target child is attending.
Home Reading Log

Instructions: complete one section per day.

Date: _______________________  Time spent reading:__________________________

Book(s) read:___________________________________________________________

Strategies used:_________________________________________________________________

Challenges encountered:_______________________________________________________

Date: _______________________  Time spent reading:__________________________

Book(s) read:___________________________________________________________

Strategies used:_________________________________________________________________

Challenges encountered:_______________________________________________________

Date: _______________________  Time spent reading:__________________________

Book(s) read:___________________________________________________________

Strategies used:_________________________________________________________________

Challenges encountered:_______________________________________________________

Date: _______________________  Time spent reading:__________________________

Book(s) read:___________________________________________________________

Strategies used:_________________________________________________________________

Challenges encountered:_______________________________________________________
Intervention Fidelity Observation Sheet

Group Instruction Sessions

Date of session: ___________________________________________________

Topic of session: _______________________________________________________________

Length of session: ______________________________________________________________

Number of participants: _________________________________________________________

Did the instructor

1) … introduce the topic of the session?  
   Yes  No
   □  □

2) … explain why this is important?  
   Yes  No
   □  □

3) … describe the strategy?  
   Yes  No
   □  □

4) … model the strategy with verbal description of what she was doing?  
   Yes  No
   □  □

5) … answer questions about the strategy  
   Yes  No
   □  □

6) … facilitate opportunities for participants to practice with an adult?  
   Yes  No
   □  □

7) … scaffold parents practice with their child?  
   Yes  No
   □  □

8) … summarize session with participants?  
   Yes  No
   □  □

9) … state expectation for home practice?  
   Yes  No
   □  □

10) … provide participants with home reading logs?  
    Yes  No
      □  □
Intervention Fidelity Observation Sheet

Individual Coaching Sessions

Date of session: ____________________________________________________________

Topic of session: __________________________________________________________

Length of session: _________________________________________________________

Participant code: __________________________________________________________

Did the instructor

1) … introduce the topic of the session?  Yes  No
   0  0
2) … show video examples of positive practice?  Yes  No
   0  0
3) … show an example of a strategy that could be improved?  Yes  No
   0  0
4) … describe how the strategy should be used?  Yes  No
   0  0
5) … answer questions about the strategy?  Yes  No
   0  0
6) … model the strategy?  Yes  No
   0  0
7) … scaffold parent practice with their child?  Yes  No
   0  0
8) … summarize session with participants?  Yes  No
   0  0
9) … provide participants with home reading logs?  Yes  No
   0  0
EDUCATION

DOCTOR OF EDUCATION
SPECIALIZATION: MIND, BRAIN, & TEACHING
Johns Hopkins University
Dissertation: Preliteracy development of preschool children with visual impairments: Shared storybook reading intervention
JULY 2019
Baltimore, Maryland

MASTER OF SCIENCE IN SPECIAL EDUCATION & ENDORSEMENT IN VISUAL IMPAIRMENTS
Utah State University
Thesis: From intervention to friendship
JANUARY 2012
Logan, Utah

EARLY CHILDHOOD SPECIAL EDUCATION LICENSE
Utah State University
DECEMBER 2007
Logan, Utah

BACHELOR OF SCIENCE IN EARLY CHILDHOOD (DEVELOPMENT)
Weber State University
MAY 2000
Ogden, Utah

HONORS AND AWARDS

ONLINE EDD MERIT SCHOLARSHIP
Johns Hopkins University
FALL 2016-SPRING 2019
Baltimore, Maryland

TEACHING EXPERIENCE

PRESCHOOL VISION SPECIALIST
Granite School District
AUGUST 2011-PRESENT
Salt Lake County, Utah

Evaluated students identified by an eye care professional as having a visual impairment. This includes functional vision assessment, literacy media assessment (i.e., determining whether braille or print is appropriate), and screening for orientation and mobility service needs. Wrote IEP goals and provides direct and consultative services to facilitate growth in several areas including compensatory skills, i.e., braille; independent living skills, i.e., pouring water into a cup; sensory efficiency skills; and self-determination skills, i.e., getting their own vision needs met. Worked with classroom teams to implement appropriate accommodations to classroom instruction and assessment. Acted as a liaison to the Utah School for the Blind (USB), attends IEP meetings for Granite preschoolers attending USB, collaborates with deaf-blind specialists and orientation and mobility specialists, and facilitates transition between the district preschool and USB.

PRESCHOOL SECTION 504 COORDINATOR
Granite School District
AUGUST 2017-PRESENT
Salt Lake County, Utah

Worked with general education classroom teams and related services personnel to develop plans delineating appropriate accommodations and services for eligible students in general education settings.

STUDENT TEACHER SUPERVISOR
2012-PRESENT
Mentored development of teaching skills for students seeking certification to work with students with visual impairments from birth through age 5. Modeled individualized lessons with preschool students with visual impairments. Encouraged active reflection on teaching strategy use and development of teaching competencies. Facilitated authentic opportunities to demonstrate competency in appropriate assessment.

**Preschool Special Education Teacher**  
Granite School District  
August 2008-Present  
Salt Lake County, Utah

Provided services as a consultant for students in the general education setting and as classroom teacher in special classes for preschool students with disabilities. Collaborated with regular education teachers to adapt activities and routines to meet goals for individual students. Identified eligible students, discussed and developed Individualized Education Programs (IEPs) with IEP teams.

**Kindergarten Aide**  
Millville Elementary-Cache School District  
Spring Semester 2005  
Millville, Utah

Enriched the learning and academic growth of extended day kindergarteners by planning and teaching mathematics and vocabulary activities and by implementing Early Reading Intervention curriculum for their afternoon session.

**Infant Caregiver/Teacher Assistant**  
Time for Families  
August 2001-December 2005  
Kaysville, Utah

Enhanced development of children in the infant/toddler class by implementing age appropriate activities and maintaining an atmosphere of growth.

**Tutor/Therapist**  
Teresa Cutler under direction of Redwood Learning Center  
1999-2000  
Layton, Utah

Taught age appropriate play and academic material to preschool age child with Pervasive Developmental Disorder using Applied Behavioral Analysis techniques.

**Presentations**


Murdock, A., & Scholes, S. (2014, January). *Snack is more than eating (Based on a presentation by Sarah Rosten).* Presentation for the Preschool Conference Granite School District, Salt Lake City, UT.

**Professional Affiliations and Service**

**American Educational Research Association**  
2018-Present

**Council for Exceptional Children**  
Division for Early Childhood  
2006-Present
CONFERENCE PROPOSAL REVIEWER 2019
Division for Early Childhood’s 35th Annual International Conference on Young Children with Special Needs and Their Families

VOLUNTEER EXPERIENCE

CHILD LIFE/ RECREATION THERAPY VOLUNTEER 2000-2005
Shriners Intermountain Hospital  Salt Lake City, Utah

Worked collaboratively with Child Life Specialists and Recreation Therapists to enhance patients’ development and coping by facilitating recreation and play experiences.

ASSISTANT BROWNIE GIRL SCOUT LEADER (SPECIAL NEEDS TROOP) 2002-2003
Girl Scouts of Utah

Assisted the Brownie Leader in carrying out activities and events to help girls with disabilities participate in Girl Scouts.

VOLUNTEER/ JUNIOR VOLUNTEER SUPERVISOR 1993-2005
Davis Hospital and Medical Center  Layton, Utah

Supervised junior volunteers in volunteer duties including assisting medical staff in patient transportation, record delivery, and transit of specimens in the hospital.