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EMERGENT AND EARLY LITERACY OPPORTUNITIES FOR CHILDREN WITH
VISUAL IMPAIRMENT WITH/WITHOUT AN ADDITIONAL DISABILITY

by

Susan Kay Pope

A DISSERTATION

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(Special Education)

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Lincoln, Nebraska

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EMERGENT AND EARLY LITERACY OPPORTUNITIES FOR CHILDREN WITH
VISUAL IMPAIRMENT WITH/WITHOUT AN ADDITIONAL DISABILITY

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University of Nebraska 2020

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Introduction: This study examined implications of literacy instruction for children with visual impairment (VI) with/without an additional disability at a specialized preschool in a large Midwestern city. *Methods:* Teachers participated in interviews and revealed their perspectives for providing literacy instruction, and students were video recorded participating in literacy activities. Literacy opportunities were coded for themes. *Results:* Six themes of literacy opportunities emerged from this study (i.e., literacy opportunities, accessibility, frequency, assessment, settings, and cues for understanding). Results provide evidence of instructional strategies, challenges and strengths described by teachers, types of activities used to promote literacy and the frequency and accessibility of literacy opportunities delivered. Activities include opportunities to read, write, and practice phonological awareness, and embedded opportunities to read and/or write. *Discussion:* Perspective of expectations and barriers from teachers enlighten strengths and challenges faced when working to develop literacy skills for children with VI with/without an additional disability. Student outcomes for participation in literacy opportunities provided are reported. *Implications for Practitioners:* Collaboration is necessary among educators and service providers to provide the best opportunities for children with VI to learn to read and write. The

instructional strategies, types of activities, frequency and accessibility to literacy opportunities used could generalize to other environments.

Keywords: early literacy and vis* impair*, emergent literacy and vis* impair*, and teacher self-efficacy and vis* impair* and literacy, and parent and vis* impair* and literacy

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CHAPTER 1

INTRODUCTION

Empirical studies have documented the significance of providing preschoolers the opportunity to actively learn and practice early literacy skills (Lonigan et al., 2000). Preschoolers with visual impairment (VI), including those with additional disabilities, also need access to emergent and early literacy opportunities. Teaching reading and writing skills to children with VI gives them tools necessary to contribute to society independently and equitably alongside their peers (Koenig, 1992).

Background

Children with VI access reading and writing in many different modes (e.g., print, braille, audio). Most children with VI access text through enlargement or magnification, while others use braille, audio, tangible symbols, or a combination of these modes. In 2019, the American Printing House for the Blind (APH) reported 55,249 students using alternate media: print readers (32.9%), auditory users (10.2%), braille readers (8.4%), prereaders (18.1%), and symbolic readers (30.4%). These numbers provide context, but only represent students reported by their teacher of students with visual impairment (TSVI) as legally blind and registered with APH.

Problem Statement

Low rates of literacy among children with VI were reported in the 1990's (Koenig & Holbrook, 2000). The itinerant nature of most TSVIs and presumed lack of pedagogy by early childhood (EC) and early childhood special education (ECSE) teachers to teach children with VI may have contributed to missed opportunities to gain consistent foundational instruction in literacy skills. Preschoolers with VI need explicit literacy

instruction for most effective outcomes (Erickson, 2000). Alternate modes of communication and the use of assistive technology (e.g. magnification or text-to-speech) are needed to provide access to this instruction. Yet, little research has been conducted concerning the types, frequencies and alternative modes used for providing emergent and early literacy instruction to children with VI. Contextual information is missing that would help the understanding of best practices for providing literacy opportunities to this population (McKenzie, 2009).

Purpose of Study

The purpose of this study was to investigate elements of emergent and early literacy opportunities provided to children with VI with/without additional disabilities through teacher interviews, observations, and record reviews.

Research Questions

The guiding research question for this project was: What do reading and writing opportunities look like for children with VI with/without additional? In order to fully explore this question simpler questions were asked that could be answered qualitatively and quantitatively. Qualitative questions include: 1) What strategies, including accessibility, do teachers use to provide meaningful reading and writing opportunities? 2) What types of literacy activities do children with VI with/without an additional disability engage to develop literacy skills? and Quantitative questions include: 3) How frequent are opportunities for reading and writing and accessibility provided to children with VI with/without an additional disability?

CHAPTER 2

LITERATURE REVIEW

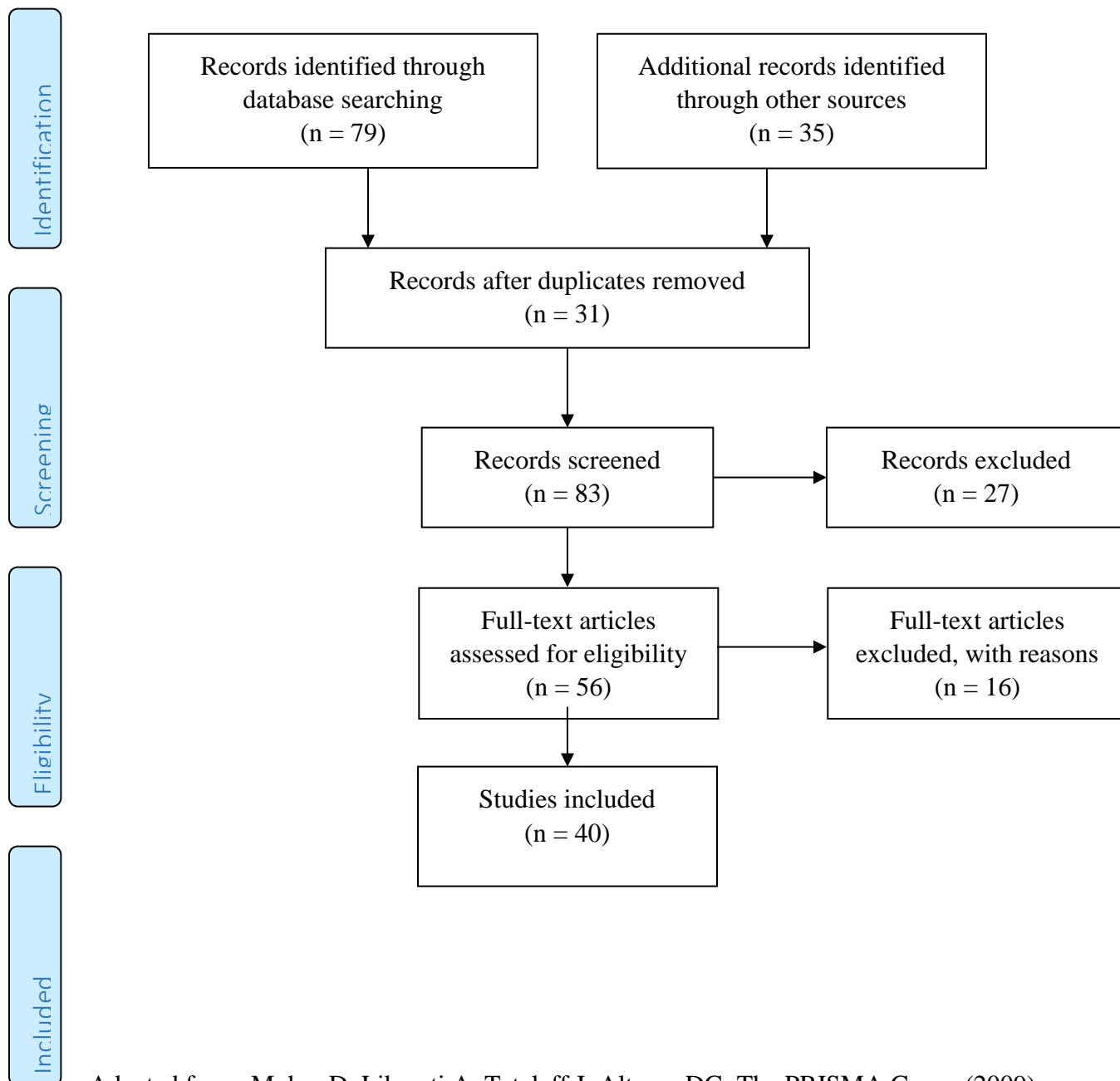
To ensure a thorough and systematic review of the literature, a search was conducted of the Academic Search Premier database using the following search terms: “early literacy” and “visual impairment”, “emergent literacy” and “visual impairment”, “teacher self-efficacy” and “visual impairment” and “literacy”, and “parent” and “visual impairment” and “literacy”. This search yielded 79 articles (see Figure 1). An additional 35 articles were found conducting forward and ancestral searches. Articles were excluded (74) if they did not include/discuss: 1) children birth through kindergarten, 2) literacy, or 3) children with VI, or 4) duplicates. The search yielded a total of 114 articles, of which 40 met all criteria. Of the 40 articles included in the literature review 13 were experimental (32.5%), 16 were practitioner perspective (40%), 4 were theoretical (10%), 4 were literature reviews (10%), and 3 were reports or editorials (7.5%).

Empirical research documenting literacy outcomes for children with VI is limited (see Table 1). We understand attitudes and views TSVIs and other special educators have about their own roles, and how they perceive the roles of others when teaching children with VI (Corn & Koenig, 2002; Dote-Kwan et al., 2001; McKenzie, 2009; Suvak, 2004). TSVIs collaborate with educators, service providers, and parents to make appropriate accommodations and modification that allow students with VI to access the educational environment and enhance participation to increase opportunity to reach their highest potential (Dote-Kwan et al., 2001; McKenzie, 2009).

Competencies necessary for TSVIs to provide service to students with VI, either as direct service or through consultation have been identified (Koenig & Holbrook, 2000).

Figure 1

PRISMA 2009 Flow Diagram



Adapted from: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009).

Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Table 1*Overview of Empirical Studies*

Study	Method	Sample	General Description	Results related to Emergent Literacy
Abner & Lahm (2002)	Survey	TSVIs (n = 72)	Survey collected data regarding educational background, years of teaching experience, students served, nature of service provided, teacher use of AT, student use of AT, and available supports in the use of AT.	Children birth-3 with VI were the smallest groups being served by TSVIs. Over half of students on respondents' caseloads (52%) had multiple or additional disabilities, and half of students (50%) used computers in their programs. Students (35%) were identified as non-readers. Almost all TSVIs (99%) agreed more training in AT is needed.
Ajuwon et al. (2016)	Survey	TSVIs (n = 247)	The researchers conducted two AT surveys: one in Texas (n=165), and one nationally (n=840). This report focused only on the qualitative comments from the survey, for which there is a smaller sample (n=247).	Across both studies, the top three themes were the same: TSVIs need more education in AT, the TSVIs proficiency in AT, and collaborating with others on AT.
Brennan et al. (2009)	Survey	Parents (n = 19)	Parents answered questions about the types of literacy activities occurring in the home and their perceptions of the professional support they received. Correlations were conducted.	Parents (85%) reported reading books to their children, but most books were print with fewer parents (25%) reporting 15 or more braille books in the home. Parents (80%) reported writing at home, few reported a braillewriter in the home (36.8%). Strong, significant correlations existed between perceptions of appropriate professional support and writing/scribbling (r = .58), letter identification (r = .64), and visiting the library (r = .58).

Corn & Koenig (2002)	Delphi Method	Experts (TSVIs and professors) (n = 40)	Rounds of surveys conducted to gain consensus on instructional considerations (consistency, time, and duration) for providing print literacy instruction in specific skill areas to children with VI. Consensus was considered 85% agreement.	Consensus was reached for emergent literacy skills requiring around 30 minutes per session at 1-3 days per week.
Craig (1994)	Survey	Experts (n = 264)	Survey collected data on support by a TSVI, parental comfort level in participation to promote literacy for their child with VI, use of equipment and materials for children with VI, frequency, and nature of literacy activities in the home, and parental expectations and barriers of literacy development.	Parents received support by a TSVI (47%) and General Specialist (36%). Between groups, parents participated in reading activities with their child (highest = print and braille, middle = print, lowest = braille). A higher mean for the print group (2.27) than the braille group (1.91) was found for visiting a library or book mobile. The print group (72%) scribbled more often than the braille group (28%). Parents of the print group were more comfortable using large print. The braille group and the print/braille group were more comfortable using braille materials and devices. All parents were comfortable using a hand-held magnifier. There were no significant differences between age and frequency. Parents' expectations for their child with VI only were for reading/writing skills, self-help skills, and communicating. Parents' expectations for their child with VI and an additional disability was for self-help skills, communicating, and reading/writing.

Dote-Kwan et al. (2001)	Survey	Teachers (n = 121)	Survey collected teaching experience, certification/licensure, educational background, caseloads (children birth-60 months) and feedback regarding 12 recommended competencies outlined by the Division of Early Childhood.	Experienced teachers held master's degrees certified as ECSE or TSVIs. A majority served children with additional disability. A majority ranked TSVIs' role as consultant. TSVIs primarily served children with VI only. ECSE primarily served children with VI and an additional disability, and the TSVI served as a related service. Respondents agreed (90.5%) children birth-60 months should receive services from a TSVI. Significant positive correlation was found between years of teaching experience and role of developing literacy skills for children with VI.
Erickson et al. (2007)	Mixed Methods	Teachers (n = 2) Children (n = 3)	Record reviews of IFSPs were conducted to identify goals and services. Early interventionists were interviewed to understand practices of emergent literacy. Observations & field notes of interventionists working with children (17-26 months) with VI for 22 hours over 8 weeks was collected.	Record Reviews, Teacher Interviews, Participant Observations, and Field Notes revealed interventionists and parents collaborate using family-centered practices to support growth in emergent literacy for children with VI.
Koenig & Holbrook (2000)	Delphi Method	Experts (TSVIs and professors) (n = 40)	Rounds of surveys to gain consensus on instructional considerations (consistency, time, and duration) for providing braille literacy instruction in specific skill areas to children with VI. Consensus was considered 85% agreement.	Consensus was reached for emergent braille literacy skills requiring around 30 minutes per session at 1-3 days per week and for early pre-braille skills requiring around 30 minute-1 hour per session daily.

McDonnell et al. (2014)	Survey	Head Start teachers (n = 273)	National survey of Head Start teachers' views and practices related to emergent literacy, including questions about students with disabilities, including blindness was conducted.	Of the 273 respondents, 254 (93%) had preschoolers with disabilities in their classrooms. Of those 254 teachers, 19 (7.5%) had at least one child with VI in their classroom. Of those teachers, 52.6% positioned materials for optimal performance on a daily or weekly basis; 21.1% adjusted lighting on a daily basis; and 15.8% provided adapted books on a daily basis. Providing access to braille books was selected as a strategy used 1-2 times per month by 10.5% of the teachers, and no one reported providing braillewriters for writing/scribbling.
McKenzie (2009)	Mixed Methods	School Personnel (n =32)	Observed classrooms of children with VI and additional disabilities (n = 29) to examine characteristics of environment, teachers, and other personnel. Student records were examined to identify assessments used for educational programming and interviewed personnel about their role in developing emergent literacy skills.	Overall, there were discrepancies between observations, interviews, and reviews of documents regarding the teaching strategies for emergent literacy.
Murphy et al. (2008)	Survey	Teachers (n = 192)	Survey obtained teachers' characteristics, resources, services, and strategies used to promote literacy skills including communication & language, text and book concepts, motor skills and dexterity, word reading skills, phonological awareness,	Most TSVIs served children with VI ages birth-6 years in the home or specialized preschools. Frequency of services ranged from every day to twice per month. Literacy practices included family literacy, accessibility and assistive technology,

			writing, accessibility, and resources for children with VI.	literacy resources, shared reading, alphabetic knowledge, concept development, phonological awareness, writing, and fine motor skills. They provided support to families (74%), and adaptations to accessibility (55%).
Suvak (2004)	QSA	Teachers (n = 174)	Survey collected information regarding instructional practices, classroom placement, types of support, and nature of service delivery.	Top priorities for hours of service included braille reading & writing instruction, materials adaptation, braille preparation and language arts skills. Lowest priorities included assistive technology training, large print reproductions, teacher-parent contact, and ordering accessible books and materials. Multiple placements included public general and special education and residential schools. TSVIs provided direct instruction (45%) for one half hour or less per week.
Wall Emerson et al. (2009)	Mixed Methods (3 yrs.)	Students (n = 45)	Literacy opportunities for students with VI in PreK – grade 4 were observed throughout a school day 2 times per year for 3 years. TPRI, BRI, Brigance, conducted to gain data on reading skills, and ABLIS was conducted to gain data on braille skills of children with VI.	Reading assessments revealed children achieved foundational reading skills from Kindergarten until grade 2, but began to show deficiencies with higher level decoding skills. Expected gains of 1 year for every year of school in vocabulary (26%) and spelling (44%) were achieved. Struggles with reading skills increased with age. Reading rates did not keep pace with sighted peers across years of study.

Note: TSVI = teacher of students with visual impairment, AT = assistive technology, VI = visual impairment, ECSE- early childhood special education, QSA = questionnaire, IFSP = Infant Family Service Plan; TPRI = Texas Primary Reading Inventory, BRI = Johns Basic Reading Inventory, Brigance = Brigance Comprehensive Inventory of Basic Skills - Revised, ABLIS = Assessment of Braille Literacy Skills

While the large majority of children with VI have low vision, instruction in braille to students who are blind takes a lot of direct service provided by TSVIs (Koenig & Holbrook, 2000; McKenzie, 2009; Suvak, 2004; Wall Emerson et al., 2009). Braille instruction is sometimes thought of as separate from teaching reading and writing; but there are conflicting views on whether or not that is an appropriate role for the TSVI (Blankenship, 2008; Holbrook, 2008). Further, the frequency and amount of service provided by a TSVI can vary depending on age, ability, and skill of the child (Koenig & Holbrook, 2000).

There is not strong evidence to support the introduction of braille contractions at a certain point of learning to read and write, but there is evidence early exposure to braille contractions improves skills in both spelling and vocabulary. In addition to the alphabet, the braille code has 180 symbol combinations known as contractions. The use of contractions has not shown impact on oral reading fluency; however, reading rates of children with VI fall behind their sighted peers as they encounter more complex reading, beginning about third grade (Wall Emerson et al, 2009).

Assistive technology (AT) specifically designed to enhance learning for individuals with VI can improve access and development of literacy for children with VI. Unfortunately, training for teachers and children in the use of specific AT for VI is limited and only used about half the time (Abner & Lahm, 2002; Ajuwon et al., 2016; Murphy et al., 2008; Suvak, 2004). When surveyed, TSVIs reported a need for more training in matters relating to low vision (e.g., characteristics, causes, symptoms) and treatments or devices (tinted glasses for light sensitivity, contrast, magnifiers, and large-print) to assist in using residual vision. They also reported a lack of confidence and

support in using AT specific to the field of VI (Abner & Lahm, 2002; Suvak, 2004). Their lack of knowledge and confidence using technology could negatively impact the use of technology as a tool of access by children with VI. Currently, focused professional development and workshops are the only format of training available, and they have been found to be short-term and of low impact (Abner & Lahm, 2002).

When experts in the field of VI support parents' use of literacy activities at home, literacy development improves for their child (Brennan et al., 2007; Craig, 1994; Erickson et al., 2007; Murphy et al., 2008). Collaborations between teachers and families are improving as we begin to understand what families face in development of literacy for their child with VI (Brennan et al., 2009; Craig, 1994; Erickson et al., 2007). However, when surveyed, TSVIs reported a need for more training on working with parents and educators in the use of early literacy activities like sound and word games (Chen & Dote-Kwan, 2018; Murphy et al., 2008).

Children with VI are at risk for deficits in early oral language, listening skills, and concept development as compared to their sighted peers (Chen & Dote-Kwan, 2018; Stratton, 1996). The diversity within this population makes it difficult to pinpoint a trajectory for development of literacy skills (Erickson & Hatton, 2007b). Teaching reading and writing skills to children with VI gives them tools necessary to contribute to society independently and equitably alongside their peers (Koenig, 1992). Researchers of emergent and early literacy for children with VI believe it is important to identify evidence-based strategies for delivery of literacy instruction in order to provide recommendations and implications for practice for children with VI (Douglas et al., 2011). However, data collected from large group studies providing evidence on reading

outcomes for children with VI is scarce and outdated. Building on Patterns curriculum is the only field-tested instructional strategy for teaching reading to children with VI. The efficacy of teaching reading using a dual mode (i.e., braille and print) approach for children with VI is not established, nor disputed, empirically (Koenig, 1992).

Additionally, little evidence of writing outcomes exists for young children with VI. We do know children who participate in early writing activities reinforce their acquisition of letter knowledge and the sound structure of language (Johnston et al., 2008). Literature in the field of VI offers recommendations for teaching literacy to children with VI, but does not have evidence of effectiveness.

Oral Language

Language for children with VI is complicated by having fewer opportunities to safely explore their surroundings and perceive visual, nonverbal communication (Erickson & Hatton, 2007b; Stratton, 1996). Infants with VI babble less often than sighted infants, and toddlers with VI often fall behind their sighted peers in the use of one- and two-word combinations. Further, children with VI often repeat other's speech long past infancy, use pronouns incorrectly, and ask more questions to gain information. Literature suggests parents and teachers can positively affect growth of oral language skills as they interact with the child with VI by using rich verbal descriptions and feedback as they explore their environment and engage in developmentally appropriate activities (Chen & Dote-Kwan, 2018; Erickson & Hatton, 2007b; Stratton, 1996; Wormsley, 1997). Parents and teachers interacting with infants with VI should discern early communicative intent of the infant by gauging their eye gaze, facial expressions, and gestures to guide their interaction to promote language (Erickson & Hatton, 2007b).

Acquisition of Literacy

Access to visual information is the main obstacle children with VI encounter, because they are less likely to have access to written materials (Craig, 1999; Johnstone et al., 2008). It is the role of the educator, in collaboration with a TSVI, to minimize this barrier by utilizing appropriate accommodations (Douglas et al., 2011; Geruschat, 2007).

Fewer opportunities to engage in literacy, rather than vision loss, may be the reason for delays in acquisition of literacy skills in children with VI (Erickson & Hatton, 2007b). Evidence exists to support the claim that crucial components of conventional emergent and early literacy proceeds for children with VI in the same way it does for sighted peers (Chen & Dote-Kwan, 2018; Erickson & Hatton, 2007a, b; Stratton, 1996). It stands to reason, instructional strategies implemented to promote literacy for children with sight can be applied to children with VI, with appropriate accommodations for vision (Erickson & Hatton, 2007b).

Children with VI build concepts on prior knowledge and experiences. Connecting known concepts and familiar experiences allows them to engage in the process of emergent literacy and begin to understand what is happening around them (D'Andrea & Farrenkopf, 2000). Then, they begin to understand concepts of reading and writing, and develop a desire to read. This will cause them to adopt a positive attitude about reading, and move toward reading for pleasure and becoming lifelong readers (Stratton, 1996). If children with VI do not build concepts about their environment and make connections with written language they are less likely to choose to participate in shared reading, engage in pretend reading, retell stories, dictate stories, make comments or ask questions during book sharing (Craig, 1996; McDonnel et al., 2014).

Children with VI learn best by doing and should be provided specific skills to access unifying concrete experiences that encourage the development of emergent literacy skills (D'Andrea & Farrenkopf, 2000). What children with sight are able to obtain through pictures and incidental learning, must be taught explicitly to children with VI (Campbell, 2016; Koenig, 1992; Koenig & Farrenkopf, 1997; Stratton & Wright, 1991). Children with VI need to be able to relate to what they are reading or writing; otherwise, what they manage to read or write may not hold meaning for them (Koenig & Farrenkopf, 1997; Swenson, 2009). With the gamut of VI, comprehension of storybooks can range from complete understanding to no understanding at all (Stratton & Wright, 1991). Children with VI learn concepts through a multisensory approach (e.g., models, toys, tactile object, smell, sound), and interaction (e.g., conversation, dramatic play) about what they are learning. Building from concrete, to symbolic, to abstract experiences gives them a realistic frame of reference and helps them connect one experience to another (Koenig & Farrenkopf, 1997; Wormsley, 1997). As they begin to develop conceptual knowledge they are able to associate experiences with meaning and written words, make comparisons, differentiate similarities and differences, increase memory, exercise judgement, identify sequence, interpret and predict cause and effect, and comprehend a story (Stratton & Wright, 1991). It is important to find ways to build accurate concepts of early literacy through experiences with literature that enables them to extend vocabulary, communication and language, concepts about books/text, word-reading skills, and phonological awareness (Campbell, 2016; Miller, 1959; Murphy et al., 2008; Stratton & Wright, 1991). Experts maintain using specific strategies, such as repeated readings, direct instruction in phonics, and decoding benefits children with VI

(Erickson & Hatton, 2007a, b). Children with sight and those considered at risk due to VI can be taught alongside each other when instruction includes adaptation for access to literacy opportunities (D'Andrea & Farrenkopf, 2000).

Teachers of Students with Visual Impairment

A TSVI is a unique position that requires knowledge of braille, specialized teaching skills for access to written language, daily living skills, and how to assist students in academic subjects. They must know how to obtain materials in large print or braille through transcription or adaptation (D'Andrea & Farrenkopf, 2000; Erickson & Hatton, 2007a; Murphy et al., 2008; Suvak, 2004). They need skills in providing direct or consultative services, and need to work closely with parents and educators of children with VI in a variety of placements (Corn & Koenig, 2002; Suvak, 2004).

Parents of Children with Visual Impairments

Literature reports parents recognize the significance of building a foundation for literacy in the home, and are an integral part in the early development of their child's communication and language skills (Brennan et al., 2009; Murphy et al., 2008). However, many parents do not read stories with their children with VI (Stratton & Wright, 1991). Research supports evidence that parents would exhibit more confidence using braille books if they received guidance from an expert (Craig, 1999; McComiskey, 1996).

Families' face scarcity of personnel available to work with children with VI. Parents reported in a survey a desire for training in braille and how to foster development of literacy for their child (Craig, 1994). One study found a need for parents to learn how to communicate effectively with their child. The study reported children 1 to 3 years old with severe VI were given significantly more directives (e.g., Take off your coat.) than

were sighted children because they did not pick up on incidental learning. Also, they were provided obscure descriptions (e.g., that's an alarm clock.) that did not provide adequate cues to build conceptual knowledge (Stratton & Wright, 1991).

Collaboration

Children with VI benefit when professionals and families collaborate (Brennan et al., 2009). Parents are the first to influence their child's attitude about books and love of reading. Teachers are key in teaching a child to read and write. A TSVI plays a key role in the education of a child with VI (D'Andrea & Farrenkopf, 2000; Holbrook, 2008). Working together, professionals and families of children with VI can support language and concept development while addressing sensory input (Erickson et al. 2007b).

Interdisciplinary teams working together with families share goals and strategies to provide meaningful services to a child with VI and additional disabilities (Ajuwon et al., 2016; Dote-Kwan et al., 2001). Teams should plan for literacy rich environments and activities in the home by identifying interests of the child and their family and incorporating meaningful literacy activities into their everyday routine (Brennan et al., 2009; Chen & Dote-Kwan, 2018). Teams should consider literacy experiences that involve families' values and belief about literacy (Craig, 1999). Professionals should build rapport with families by listening to and supporting families' ideas and help plan appropriate intervention strategies (Erickson et al., 2007; Murphy et al., 2008). The goal is to promote preliteracy, emergent literacy, and early literacy skills of infants, toddlers, and children with disabilities and delays using evidence-based practices (Anthony, 2017).

Without support from professionals, parents may not encourage their child with a VI to engage in literacy activities like writing, scribbling on a braille writer, or to

discriminate between letters in braille (Brennan et al., 2009), or may avoid activities involving books or braille (McComiskey, 1996). Parents would benefit from training in supporting literacy skills for their child, and there are many ways to collaborate via web-based telecommunication (e.g., FaceTime, Skype, or Zoom) and avenues beyond home visits to stay connected and continue progress in building literacy skills (Anthony, 2017).

In consultation with a TSVI, EC or ECSE makes sure children with VI utilize devices or instructional strategies necessary to access literacy tasks during the school day. Close collaboration to adjust instructional strategies, activities, and environment to the child's sensory needs increases success in developing early literacy skills. Teachers need assistance in understanding how to build literacy opportunities for children with VI including experiences building braille readiness. Otherwise, the joy of reading may be lost (McComiskey, 1996). Teachers and TSVIs should collaborate to make sure the most appropriate media for the child is being used to support the child in obtaining emergent and early literacy skills (Corn & Koenig, 2002). Partnership and a mutual understanding of the child's abilities, preferences, and needs for engaging in meaningful experiences in rich environments is essential (Anthony, 2017).

Environment

Literature suggests children with VI have less opportunity to explore their environment or engage in literacy opportunities as compared to their sighted peers (Craig, 1999; Erickson & Hatton, 2007a; Koenig & Holbrook, 2002), and do not learn incidentally requiring guidance to interact within their environment (Brennan et al., 2009; Erickson & Hatton, 2007a; Koenig & Farrenkopf, 1997).

Creating a literate environment that provides as much meaning to a child with VI as that experienced by sighted peers takes time and careful planning (Swenson, 1999). Studies of home literacy environments for children with VI show activities such as interactive book sharing, including tactile books, and pretend writing provide primary opportunities for exploration and play leading to a child internalizing concepts of literacy (Brennan et. al., 2009; Chen & Dote-Kwan, 2018; Stratton, 1996; Swenson 1999). Children are nurtured through play with others during activities using real objects or miniature models and technology devices. These interactions help the child gain interest, knowledge, and confidence resulting in increased skills to communicate and describe experiences in words (Drezek, 1999; Murphy, et al., 2008; Stratton, 1996). When designing an environment suitable to develop literacy for children with disabilities, teams should assess the child's preferred media and response options to determine best literacy tools and modes of access to embed reading and writing opportunities (Langley, 2000). Ease of access to a variety of books: storybooks, picture books, board books, alphabet books, nursery rhyme, factual books, (Murphy et al., 2008), print and braille books, story boxes, large-print books, and books of various genres and in many languages should be included in the child's environment (Jacko et al., 2013). Evidence shows the amount of time children with VI spend reading and writing increases 3 to 10 times when they are provided a literacy-rich environment (Johnston, et al., 2008). The earlier an environment can be arranged with space and materials to encourage movement and exploration the earlier the child can begin to develop emergent literacy similar to those of sighted peers (Erickson et al., 2007a; Stratton, 1996; Stratton & Wright, 1991). An environment conducive to children with VI participating in literacy opportunities designed to develop

emergent and early literacy skills through the use of materials (e.g., tactile), equipment (e.g., braillewriter or magnifier) and instructional strategies (e.g., color contrast or positioning) should be implemented (McDonnell et al., 2014; Murphy et al., 2008).

Literacy Activities

Like sighted peers, early literacy activities that lead to the ability to read involve singing, read aloud, book-sharing, blending and segmenting words, playing word games, and scribbling (Brennan, et al., 2009; Langley, 2000; Stratton & Wright, 1991). Through the process of immersion (variety of texts used), demonstration (role models reading and writing), expectation (same literacy goals for all children), responsibility (access to tools and materials for independent and interactional experiences), practice (daily motivation), approximation (modeling techniques), and response (supportive feedback from others in the know) children with VI can achieve emergent and early literacy skills (Koenig & Holbrook, 2002). Literature suggests the processes of reading and writing are complementary and each supports the other (Stratton, 1996).

Early opportunities to foster desire and ability to read involves book concepts (i.e., turning pages, reading left-to-right, understanding top and bottom, front from back, images and words have meaning), interactive reading (e.g., read aloud, book sharing, dialogic reading), pretending to read, retelling a story, and modeling reading (e.g., newspaper, recipe, favorite book) (Murphy et al., 2008; Swenson, 1999). When activities interesting to the child is coupled with access to reading materials in their preferred medium children with VI develop the ability and desire to read (Murphy et al., 2008).

Studies have shown reading aloud to children from birth is an effective way to build future reading success (Stratton, 1996; Stratton & Wright, 1991), and should be

included in the daily routine of families of children with VI (Brennan et al., 2009; Wormsley, 1997). Careful selection of relatable stories that peak a child's interest and adapting books and strategies will motivate children to listen and increase comprehension (Miller, 1959; Stratton, 1996; Stratton & Wright, 1991). Reading aloud leads to expansion of language and understanding that written language is about communicating a message (Brennan et al., 2009). Reading aloud includes tactile exploration and rich description (Craig, 1996). Purposeful interaction during reading aloud teaches joint attention and engages the child to develop oral language skills (Erickson, & Hatton, 2007b), print concepts, and alphabetic knowledge (Murphy et al., 2008).

It is necessary to development of emergent literacy to grasp concepts of writing and its purpose. Research indicates children begin to understand writing concepts at an earlier age than previously assumed. They are able to draw conclusions about the function of writing by participating in writing activities with others (e.g., write letters to friends or family, writing beginning letters of favorite items) and actively experimenting in writing themselves (e.g., scribble on braille writer, electronic braille device, with bold writing utensils, slate and stylus) (Brennan et al., 2009; Murphy et al., 2008; Stratton, 1996; Swenson, 1999). Progress in developing literacy is evident when the child understands the goal of writing is to communicate (Stratton & Wright, 1991).

Literacy Modes

A variety of accommodations are available to provide children with VI access to print. Optical devices for individuals with residual vision (e.g., magnifiers, monocular), and non-optical techniques (e.g., adjustment of lighting, use of bold-line pens, contrast, audio output, tactile options, large print and braille) can be used to access academic or

functional tasks (D'Andrea & Farrenkopf, 2000). However, evidence is limited whether one type of accommodation is more effective than another (Douglas et al., 2011).

Experts in the field remind us teaching early literacy is about reading and writing, and braille is a code used by individuals with VI to access written language. Educators and parents often ask when a child with VI is ready to learn braille. Individuality should be considered, but research indicates children are ready to write when they are ready to share ideas and experiences in written form whether in braille or print, and they understand 'bumps' and 'symbols' have meaning (Henderson, 1960; Stratton & Wright, 1991; Swenson, 2009). Experts in the field believe braille instruction should begin when the educational team deems braille is the best media for the child, and should occur 1½ to 2 hours per day for one or more years. In years following, braille instruction should continue 1 to 3 days per week in short sessions of one-half hour to 1 hour. Experts contend children using braille should receive the same amount of literacy instruction as their sighted peers (Corn & Koenig, 2002; Koenig & Holbrook, 2000).

A study provides evidence that when a TSVI consistently provided direct or indirect service 4 to 5 days per week the braille learner achieved the same level of development in literacy as their same-age sighted peers using print. Further, they far exceeded children receiving infrequent braille instruction or those children with VI utilizing print with residual vision (Koenig & Holbrook, 2000).

Teachers and parents need to build a foundation of literacy skills such as tracking, tactile discrimination, positional concepts, and familiarity of reading and writing processes for children with VI before beginning formal braille instruction (Swenson, 1999). Authentic contexts should be used during braille instruction to demonstrate

purpose and provide motivation (Koenig, & Holbrook, 2000). The Braille Readiness Skills Grid systematically identifies areas of development to build upon, and provides sequential milestones parents and teachers can use to offer early experiences that foster success and enthusiasm for reading (McComiskey, 1996).

Children utilizing braille face adversity not experienced by sighted peers. The nature of tactile reading is on average one-third the average rate for reading print (Stratton & wright, 1991). Braille materials are not as prevalent as print; therefore, opportunities for incidental interactions with braille reading or learning the braille alphabet are fewer than for sighted peers using print. Equipment (e.g., braille writers, electronic braille devices) necessary to access braille directly (e.g., scribble or read) is reduced (Erickson, & Hatton, 2007b).

Tactile pictures and objects add depth of conceptual knowledge and allow children with VI to access literacy alongside their sighted peers (Stratton & Wright, 1991). While listening to a story, a child with VI may explore objects or simple tactile illustrations related to a story. Children may be encouraged to handle books by adding tactile labels for ease of identification. Interacting with tactile books strengthens literacy concepts, oral language, and fosters interest in books (Swenson, 1999).

Children with VI utilizing print need instruction in the use of low vision devices (e.g., magnifiers, monocular, electronic magnification) from trained personnel in order to optimize residual vision. Regular assessment in the use of low vision devices will ensure the most effective access to print. Findings show low vision affects the reading process quantitatively and not qualitatively (Corn & Koenig, 2002; Douglas et al., 2011).

Research also showed the use of low vision devices with standard print is as effective, or more effective, than using large print (Corn & Koenig, 2002; Douglas et al., 2011).

Children gain print awareness during opportunities to independently explore print or by adult supported interactions with print materials. They can engage in the same exploratory repertoire of activities as sighted peers when given the opportunity. It is necessary to provide books in the child's preferred media and match the frequency and variety of literacy exploration as afforded to sighted peers. Research reports sighted peers learn to recognize an average of 10 letters during preschool years, whereas children with VI on average do not recognize any letters (Erickson & Hatton, 2007b).

While information gathered from the review of existing research is invaluable, much is yet to be learned about literacy opportunities provided to children with VI. There are currently few empirical studies to provide evidence of shared practices among student team members for the benefit of young children with VI. Further research regarding practices to teach early and emergent literacy skills to children before entering kindergarten is needed.

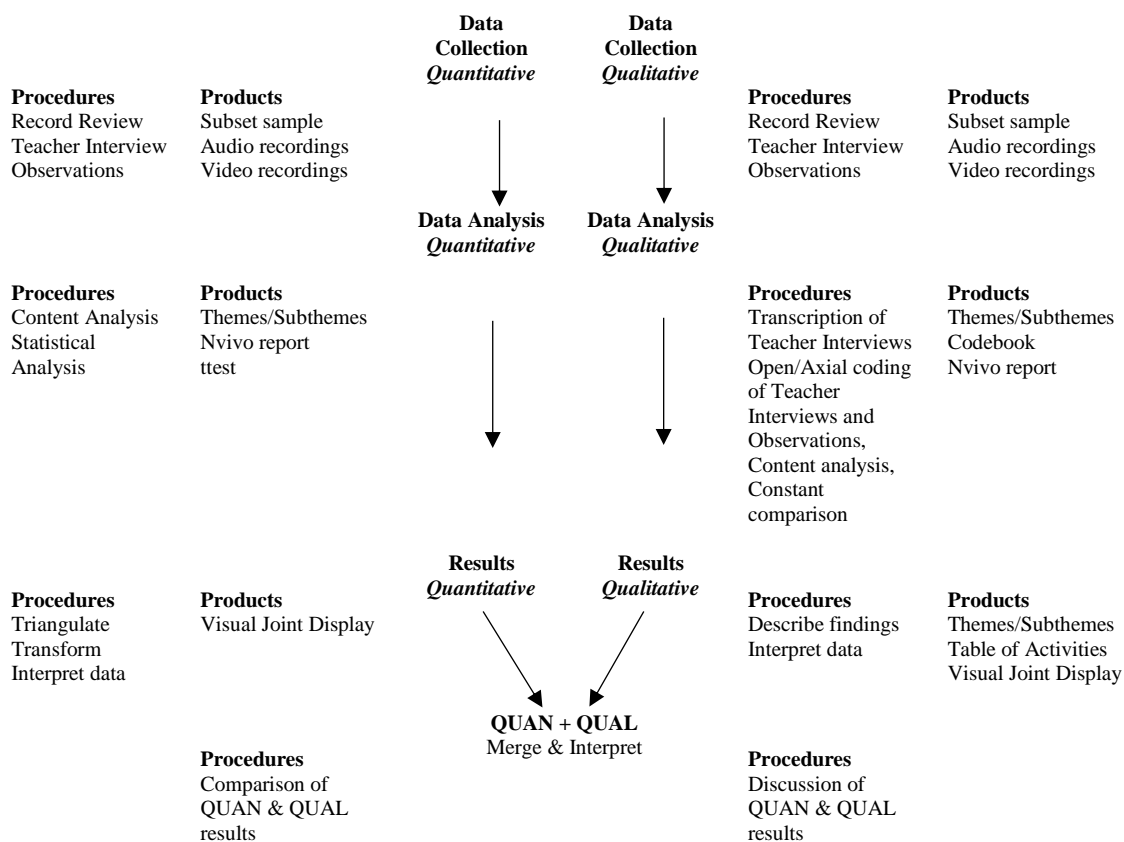
CHAPTER 3

METHOD

It has become increasingly popular for fields like education to utilize qualitative research methods (Babchuk & Badiee, 2010). Case study was used to investigate the literacy opportunities provided to children with VI with/without an additional disability. Case study is designed to investigate real-life occurrences bounded by one community through detailed, in-depth data collection involving methods such as observations, interviews, and record reviews (Luck et al., 2006).

Intentional integration of qualitative and quantitative data collection was used to best address the research questions. Data was collected in parallel, analyzed separately, and merged during analysis (Creswell & Plano Clark, 2011; Plano Clark & Ivankova, 2015). Data was collected concurrently due to limited time and expense placing equal value on both types of data. Additionally, it was manageable to collect both types of data at the same time. A convergent approach was used to offset weaknesses of using only one method (Bryman, 2006; Greene, et al., 1989; Plano Clark & Ivankova, 2015) to see what themes emerged for comparison and interpretation between quantitative and qualitative data (Bazely, 2006 & 2009; Creswell & Plano Clark, 2011; Plano Clark & Ivankova, 2016). Data was transformed and triangulated to interpret and describe more valid conclusions about findings regarding literacy opportunities provided to preschoolers with VI (Bryman, 2006; Greene, et al., 1989; Plano Clark & Ivankova). Using both qualitative and quantitative methods provides more in-depth understanding of outcomes obtained and lends credibility to findings within this study (see Figure 2). Approval for this study was obtained from the Institutional Review Board (IRB) of the author's institution.

Figure 2

Joint Display of Observations and Teacher Interviews

Adapted from Davis, D. (2014). Fidelity of Implementation Teacher Perspectives and Child Outcomes of a Literacy Intervention in a Head Start Program: A Mixed Methods Study" Open Access Theses and Dissertations from the College of Education and Human Sciences. Paper 201 pg. 53. <http://digitalcommons.unl.edu/cehsdiss/201>

Setting

The site of this study was a specialized preschool for children with VI with/without an additional disability learning alongside sighted peers. It was an ideal environment to observe instructional practices of teachers, accessibility needs of children,

and collaboration concerning the development of literacy skills using specific strategies, resources, and activities that best promote literacy skills for children using alternate formats to access print. It seems reasonable that if the norm for this facility is to incorporate as many strategies as possible for children with VI with/without additional disabilities and their sighted peers, then their practices could warrant similar outcomes for children in other private or public institutions serving children with VI with/without additional disabilities and their sighted peers.

Upon arrival at the preschool, I was met by the administrator and provided a tour of the facility. I observed children identifying their classrooms by locating their name either in large print or braille outside their classroom door. The administrator explained this was a form of collecting attendance. During the tour of the preschool, the administrator provided me with a schedule to maximize observation of literacy opportunities occurring in the classrooms throughout the day and week, though the schedule changed several times to include only the classrooms that provided consent to participate and then changed again due to a snow day closure during the data collection week (Appendix G). The final schedule included times determined as having the most literacy opportunities occurring in the classrooms.

Many faculty and staff asked what I wanted to see, and it was explained that observations were meant to see naturally occurring literacy opportunities as planned. In this way, members of the community determined what a literacy opportunity looked like. Since this is a specialized preschool for children with VI and included their sighted peers,

it was considered to encompass a high level of support for practice in providing literacy opportunities engaging all children at the same time no matter the characteristics of the child. It seems reasonable that if the norm for this facility is to incorporate as many strategies as possible for children with VI with/without additional disabilities and their sighted peers, then their practices could warrant similar outcomes for children in other private or public institutions serving children with VI with/without additional disabilities and their sighted peers.

The preschool is accessible, with wide doorways and hallways with large labels for each area, equipped with color-contrast and braille. Some families chose to travel over an hour so their child could attend this preschool; therefore, families were provided a room equipped with a lounge area and kitchenette. This area included amenities (e.g., coffee, newspaper, etc.) to sustain parents and siblings if they choose to stay and wait for their child to complete their school half-day or full-day.

As children identified their classrooms, they were accompanied into the classroom by a parent, Para educator, or an adult volunteer where they began their day at their labeled cubby. The classrooms have similar areas, with centers for play, small libraries (including books with braille), whole-group rug areas, and large tables (of appropriate height for a group of children) for activities with kid-sized chairs. Teachers have small stools that can be pulled up to assist a child. An assistive technology area is available, with video magnifiers (CCTV) used for enlarging images and text and a light box used to illuminate objects. The classrooms also have teacher desks, storage cabinets with a sink, and restrooms. There are bulletin boards with weekly information, two-way mirrors for observation, a swing for proprioceptive needs, and doors that lead to a

courtyard. The classrooms have suspended, upturned fluorescent light fixtures that provide adequate lighting without producing glare on the environment. There is one wall of windows in each classroom. The ceiling, flooring, and walls are all light in color. Teachers are able to adjust the lighting by dimming the lights, using lamps, or adjusting the shades on the windows. In this way, there is sufficient lighting while also minimizing glare that could cause difficulty with viewing.

Each day (half and full) begins with semi-structured activity called free play, as children arrive in a staggered manner. During free play, children are preparing for the day, receiving therapy (e.g., physical therapy, occupational therapy, speech language therapy) or specialized instruction (e.g., orientation and mobility, assistive technology, braille), or independently choosing an activity. Free play is usually followed by a literacy block that includes circle time, literacy centers, or literacy activities. Snack time follows the literacy block and is rich with opportunity for developing oral language. Children are often encouraged to read and/or share a book as they finish their snack, and the day ends with free play. Full day opportunities include a lunch, more time for additional subjects (e.g., science, technology and math-STEM) activities, recess, music, physical education), and additional time for therapy and/or specialized instruction.

Participants

Five teachers (averaging 4.6 years of experience) and parents of 42 children provided consent to participate in the study. Table 2 provides context for the children and teachers in each classroom. Children enrolled in classrooms (averaging 12 per class) have a wide range of abilities and are grouped by age and not disability. Table 3 displays the etiologies of all child participants.

All five classrooms had children with cortical visual impairment (CVI), a brain-based condition that is the most prevalent visual impairment in young children (Hatton et al., 2013), accounting for 40% of this sample. Four of the five participating teachers have degrees in early childhood special education while one holds a degree in elementary education. Two are certified as TSVIs, and two are working toward certification.

Table 2
Student and Teacher Demographics by Classroom

	C1	C2	C3	C4	C5	Total (%)
Student Demographics						
Attendance						
Half day	9	1	0	0	11	21 (60.0)
Full day	0	3	4	7	0	14 (40.0)
Gender						
Male	3	1	4	5	4	17 (48.6)
Female	6	3	0	2	7	18 (51.4)
Ethnicity						
Caucasian	4	2	2	4	9	21 (60.0)
African America	1	1	2	1	1	6 (17.1)
Bi-racial	1	1	0	1	1	4 (11.4)
Other	1	0	0	1	0	2 (5.7)
Hispanic	2	0	0	0	0	2 (5.7)
Age of children (in years)						
2 - 3	5	2	1	0	9	17 (48.6)
4 - 5	4	2	2	4	2	14 (40.0)
6 - 7	0	0	1	3	0	4 (11.4%)
Additional Disability	3	3	4	5	8	23 (65.7%)
English Language Learner	3	0	0	0	0	3 (8.6%)
Teacher Demographics						
Education Level						
Bachelor's	X	X	X	X	X	5 (100.0%)
Master's		X		X	X	3 (60.0%)
Endorsement(s)						
Early Childhood Sped	X	X		X	X	4 (80.0%)
Elementary Education			X			1 (20.0%)
TSVI	IP		IP	X	X	2 (40.0%)
Years of Experience	2	2	7	7	8	

Note. C = classroom, TSVI = teacher of students with visual impairments, IP = in progress

Data Collection

Procedures for collecting data included a record review of participating students, audio-recorded teacher interviews, and video-taped observations of classroom activities. The collection of student demographics, teacher interviews, and observations were not interdependent. Data was collected separately and merged during analysis.

Table 3

<i>Etiologies</i>	C1	C2	C3	C4	C5	C6	Total and %
Albinism	0	0	0	0	1	1	2 (4.8%)
Anophthalmia	0	0	0	0	0	1	1 (2.4%)
Brain Injury	1	0	0	1	0	0	3 (7.1%)
Cataract	1	0	0	0	0	1	2 (4.8%)
CHARGE	0	0	0	0	0	0	1 (2.4%)
CVI	3	2	3	2	3	1	17 (40.5%)
Duane's Syndrome	1	0	0	0	0	3	1 (2.4%)
Esotropia	0	1	0	0	0	1	1 (2.4%)
Exotropia	0	1	0	0	0	0	1 (2.4%)
Hyperopia	0	0	0	1	0	0	1 (2.4%)
Myopia	0	1	0	0	0	0	1 (2.4%)
Nystagmus	1	0	0	0	0	0	1 (3.4%)
Ohtahara Syndrome	0	0	0	0	0	1	1 (2.4%)
Optic deficits	0	2	0	0	1	0	4 (9.5%)
Retinal damage or detachment	0	1	1	0	1	1	3 (7.1%)
Not available	0	1	0	0	1	1	2 (4.8%)

Record Review

A record review was conducted to obtain descriptive information about the children (see Tables 2 and 3). Records reviewed included the child's demographics, eye report, and IFSP or IEP. Assessment of reading readiness was conducted for each child, but results were not recorded for this study. No other assessments were found at the time of this study. Data provides insight into the dynamics and diversity of classrooms.

Teacher Interviews

Five classroom teachers were interviewed one-on-one to gather their perspective of providing literacy instruction to children with VI with/without additional disabilities ages 2-7 years. Interviews were conducted during times when students were participating in activities outside the classroom (e.g., recess, music, physical education, lunch). Interviews were audio recorded and teachers responded to a semi-structured set of questions composed by the first author (see Appendix E).

Observations

In order to maximize opportunity to observe naturally occurring literacy opportunities in participating classrooms they were visited each day, for three days, according to the schedule provided by the administrator that identified times when literacy activities were occurring. Observations of activities were video recorded using a hand held video camera to gather perspective on literacy opportunities provided (e.g., strategies, activities, and frequency). Impromptu opportunities to observe braille class taught by a TSVI were also video recorded. Each day was saved on an SD card that could be downloaded onto a secure server and further analyzed using Nvivo software to organize data. Raw data (i.e., audio recordings of teacher interviews, video recordings of classroom observations, and demographics) was collected by the first author, a doctoral student with experience as a TSVI and general education teacher.

Data Analysis

Content analysis was used to analyze and interpret teacher interviews and observations for description of literacy opportunities provided to preschoolers with VI with/without an additional disability in a specialized preschool. Transcribed teacher

interviews and raw video footage from observations were uploaded to Nvivo 12 (2010), a software program used to code and analyze qualitative data. Data analysis began with teacher interviews to establish perspective of what teachers' described as literacy opportunities in comparison to what was observed during observations. Context of literacy opportunities provided by teachers lent a priori for empirical observation of student participation in described literacy opportunities. Data was coded to identify themes (i.e. open coding) and subthemes (i.e., axial coding) to provide in-depth description and analysis of literacy opportunities (Creswell & Poth, 2018). Analysis of teacher interviews and observations included transforming and triangulating data for interpretation and discussion. Data was compared and contrasted and used to corroborate what was described by teachers and what was observed during observations.

Coding Teacher Interviews

The first author transcribed each audio recorded interview with teachers. To ensure transcriptions were reliable, a research assistant also transcribed 20% of the interviews. A second, independent research assistant compared the same teacher transcripts between the first author and first research assistant for inter-observer agreement. Agreement was approximately 95% between the two transcribers with differences occurring primarily for punctuation. Teacher interviews ranged from 9 minutes 24 seconds to 18 minutes 38 seconds ($M = 13.63$ minutes).

Transcripts were independently open-coded (a process of developing categories to refine data and categorize based on observable characteristics) (Creswell & Poth, 2018) sentence by sentence by the research team consisting of the first author, the author's advisor, and a second graduate assistant to identify information relevant to the research

questions. The research team then used a constant comparison method (Biggs, et al., 2019) to agree on identified references of literacy opportunities. A constant comparison method was used to promote confidence and consistency in the results and minimize observer bias. A consensus of relevant information was achieved and the identified references were categorized by themes. An iterative process was followed as the research team then axial coded the transcripts phrase by phrase to further refine the categorization of themes to include subthemes of the literacy opportunities (Creswell & Poth, 2018). The constant comparison method was again implemented to ensure accuracy of identified subthemes of literacy opportunities.

A codebook defining themes and subthemes was created by the author. For example, *code as equipment/resources if an educational tool or device is provided to the student to promote access to activities for persons due to a limitation in sight or motor ability. It does not include behaviors used to promote access.* To facilitate analysis, the research team then independently coded the teacher transcripts using the codebook in conjunction with Nvivo to document the open and axial coding. The constant comparison method was used once again as the team met to compare coding of each literacy opportunity to achieve consensus and promote reliability. A report of teacher references by theme and subtheme was created using Nvivo including frequency of opportunity and strategies used by teachers to provide literacy opportunities to their preschoolers. Six primary themes for strategies used by teachers to provide meaningful reading and writing experiences emerged from the data. Each theme was refined further to include subcategories as needed to fully explore and capture the essence of the literacy opportunities as described by teachers during independent interviews. In general,

teachers' responses were similar in nature, reflecting consistent literacy opportunities provided to children at this preschool.

Coding Observations

Classrooms were observed and video-taped for 429 minutes. Eighty-one percent (349 minutes) were time-stamped as windows of literacy opportunities by the first author. The constant comparison method was used by the team to minimize observer bias and achieve consensus on the windows of literacy opportunities. The codebook for the teacher interviews was used in conjunction with Nvivo to code time-stamped windows of literacy opportunities. An iterative process was used to revise the codebook to include themes or subthemes not identified during coding of the teacher interviews. For example, *code phonological awareness for literacy opportunities that make possible the ability to become familiar with the sounds letters make and how these sounds make words used in oral language*. Other (i.e., student communicates expressive/receptive engagement to a literacy opportunity via voice, sign language, gestures, or a communication device when print, braille, audio, or tangible were not available) language mode and Phonological Awareness was added to the codebook to illustrate observations that were not presented during teacher interviews.

Literacy opportunities observed were compared with teacher interviews. Audio recorded teacher interviews and video-taped observations were transformed into a visual joint display. In order to interpret and describe the data it was triangulated to enhance understanding and lend credibility to results. Reflection of the data provides frequency of strategies used and draws a mental picture of what was heard from the perspective of the teachers with the actions that were seen in the classrooms.

Statistical Analysis

A significant positive correlation was found between years of teaching experience and role of developing literacy skills for children with VI (Dote-Kwan et al., 2001). This lends theoretical reason to investigate post hoc whether a significant statistical difference occurred between groups; teachers with VI endorsement (n = 2) and teachers without or working toward VI endorsement (n = 3) with regard to the number of references made about adaptations provided to preschoolers. Using responses from the teacher interviews, a post hoc two-tailed independent t-test between groups was conducted in order to determine if being certified as a TSVI or not impacted the number of references made by teachers for providing adaptation to children with VI during activities designed to develop literacy skills. The Nvivo report provided frequency of references to adaptations made by each teacher during teacher interviews. Adaptations include references to equipment/resources and instructional accommodations.

CHAPTER 4

RESULTS

Six themes/subthemes emerging from this study are compared with what was referenced by teachers and what was observed in practice (see Table 4). Frequency of occurrence(s) within theme and by total percent of literacy opportunities were calculated to show comparison between observations and teacher interviews. During teacher interviews, literacy opportunities that could not definitively be coded as reading, writing, or embedded were coded at the theme level (3.6%).

Table 4
Coding Themes and Subthemes

Literacy Opportunity	Frequency	Settings	Accessibility	Cues for Understanding	Assessment
Reading	Daily	One-on-	Curriculum/Planning	Student	Reading
Writing	Weekly	One	Language Mode	Teacher	Writing
Embedded	Monthly	Pairs	Braille		
Phonological Awareness		Small group	Print		
		Whole group	Audio		
			Tangible Objects		
			Other		
			Adaptations		
			Equipment/Resources		
			Instruction		

Strategies Teachers Use for Literacy Instruction

Teachers' referenced reading (53.6%) nearly twice as often as writing (25%), while embedded (reading or writing opportunities within a subject where reading and writing was not the focus) accounted for 17.9% of literacy opportunities. Reading opportunities (31%) were observed to occur as often as writing opportunities (33%). Students were observed to participate in nearly equal numbers of reading activities (12) as writing activities (10). Embedded activities (19%) such as interactive calendar

occurred less often than when instructional focus was on reading and writing. "There's literacy embedded in our calendar time." The remaining 11% of literacy activities involved phonological awareness. "We play a lot of rhyming games . . . tell me something that rhymes with man."

Frequency

Since observational data was not collected beyond three days, categorization of daily activities was coded using teacher references, only. Frequency of occurrence was categorized as daily (20.8%), weekly (58.3%), and monthly (20.8%). Primarily, teachers mentioned weekly activities such as a letter of the week bag nearly three times as often as daily or monthly activities. "I have a day that we do our writing or where we focus on the letter of the week." Daily activities were observed nearly twice as often as weekly activities. "One that we do every day is . . . practicing just drawing lines and even holding a pen or pencil." Monthly activities were referenced once during observations. "For reading, we use monthly curriculum boxes."

Settings

Teachers described varying the number of students participating in activities, but spoke most often of grouping students in small groups (71.4%), and much less as a whole group (28.6%). However, students were observed to receive instruction most often one-on-one (41.6%), followed closely by whole group (35.1%). Pairs (11.7%) and small groups (i.e., more than 2 students, and less than the whole class; 5.2%) were observed to be utilized less often. Additionally, within the one-on-one setting, five children shared a favorite book of their choice with the researcher (6.5%). At times, students worked one-on-one, "We'll do a lot of one-on-one with the story", in pairs, small groups, "Having

those small focus groups help make sure that everyone is getting the necessary instruction that they need and adaptations and modifications", and whole group "As a class, we learn how to build it in print and build the letter in braille".

Accessibility

The category of Accessibility included: Language Mode (i.e., braille, print, audio, tangible, other), Adaptations (equipment/resources and instruction), and Curriculum/Planning.

Equipment/resources (68.6%) referenced by teachers was considered an educational tool or device (e.g., switch, iPad, CCTV, adaptive chair, Picture In a Flash, etc.) used to provide access to activities for persons due to a limitation in sight or motor ability. "I have a foam black box ... I place the items inside ... to make them easier to view". Equipment/resources was provided during 16 activities (76.2%).

Instructional adaptations (31.4%) referenced by teachers was considered actions taken by adults or peers to promote access to activities for persons due to a limitation in sight or motor ability related to a disability. This could include individual adaptations to instruction and/or materials for specific students (e.g., highlighting a letter, reducing number of items for viewing, etc.). Equipment/resources (90%) were observed more often than instructional modifications (10%). "For some . . . kiddos we'll cut it in half and just the line will be on one page, and on the back instead of four letters they have to write it might just be one letter." Instructional accessibility was provided during nine activities (42.9%), eight activities also offered accessibility via equipment/resources (38.1%).

Teachers ($n = 5$) provided years of experience and educational background during independent interviews. Of the five teacher participants, two hold endorsements as

TSVIS, two are working toward certification of TSVI, and one does not hold a certificate for TSVI. A t-test showed there were no significant statistical differences found in the number of references about the use of adaptations between teachers with/without an endorsement to teach children with visual impairment ($t = -0.111$, $df = 3$, $p = 0.92$).

When considering language mode, half of the students were observed to prefer print (49%), "We have done cut out letters of their names that they are able to trace". Print was provided in all activities except those involving phonological awareness. A little more than one fourth (26.9%) were observed to prefer braille, "We practice tracking it correctly with two hands". Braille was provided during 13 activities. Tangible items (17.3%) were observed to enrich literacy opportunities by allowing a hands-on approach during eight activities. "We also have items from the story ... as we are reading the story we talk about the characters, and we pass around tactile items that are within the stories". Other (4.8%) opportunities were observed to be utilized during activities five times. "I have a student that has a really, really hard time sitting, or just has to move constantly. So, we also have to adapt to move around the room. We do literacy moving around the room, or reading moving around the room, or in the swing." Audio (1.9%) was used at times to augment other language modes. There were no instances of audio modes of language observed independently from other modes available.

Teachers referenced Curriculum/Planning (e.g., *Teachers Pay Teachers*, *Teaching Visually Impaired*, *Pinterest*, *Google* search, *APH* material, self-created materials) 31 times. Examples referred to by teachers include, "We have a curriculum called, *Read It Once Again*.", "We follow the *Handwriting Without Tears*, curriculum.", and "I follow the *Unique*, curriculum." Of the 21 activities observed across three days in five

classrooms, braille and/or print was available for 20, and the one activity without braille or print was of a phonological nature. More than a third of the activities observed included a tangible mode (38.1%), and more than one fourth (24%) included Other as the language mode. "We talk about the picture on the page."

Cues for Understanding

One teacher spoke briefly about observing her students for signs of understanding. "He would hit his switch always at the correct time to say a gingerbread man phrase and smile super big about it. We didn't know how much he loved stories before. We look for when he shows a consistent enjoyment of an activity. His eyes change a bit and he just looks more engaged." Other teachers did not mention noticing cues for understanding during the interview, but cues for understanding were observed by students (92.2%) during observations. Therefore, interaction was coded between the student and the instructor (beyond following directions) when the student provided nonverbal or verbal indication of understanding. Nonverbal cues for understanding were coded if a student provided an indication of understanding and enjoyment of an activity (e.g., smile, giggle, motion for more, nod, vocalizations, and facial expressions. If enjoyment of an activity was not clearly expressed by the child, cues for understanding was not coded. Verbal cues for understanding were coded if a student provided an indication of understanding of an activity such as completing an activity, answering a question, or seeking clarification. Cues for understanding were not considered as formal or informal assessment of learned skills. It was evidence that if a literacy opportunity or adaptation were not provided, capabilities would remain unknown. Students were observed to provide cues of understanding during 18 activities.

Teachers were observed to notice student understanding (7.8%) during observations of activities four times. These episodes were coded if a signal or evidence indicating understanding or enjoyment of a learned activity was expressed by the teacher (e.g., "You like this.") General praise or other types of feedback by the teacher, para, and volunteer was not coded as a cue for understanding.

Assessment

Few opportunities for reading assessment (2.4%) were described during teacher interviews. "We do comprehension questions afterwards that go along with story." One opportunity for reading assessment was observed (1.3%). Yet, more than half of activities observed (57.1%) involved reading. Writing assessments were not described by teachers, nor observed during observations. However, nearly half of activities observed involved writing (47.6%). Teachers were not asked explicitly about assessment during the interview. Unless they chose to mention it, they were not provided an opportunity to describe the structure or process for assessing reading and writing of their preschoolers. If the opportunity had been provided, teachers may have talked more about assessment. Although, assessment of reading and writing was not observed during the three days of observation, it may have occurred outside of collecting data for this study. Based on the data gathered in this study, assessment of reading and writing skills for children with VI is worth further investigation.

Classroom teachers referenced during interviews, and displayed during instruction, strong collaboration among themselves and additional personnel crucial to each child's team (e.g., TSVI, occupational therapist, physical therapist, speech/language pathologist, assistive technology specialist, certified orientation and mobility specialist,

adapted physical educator, parents, etc.). Having utmost respect for one another, they worked together to build the best environment and educational opportunities they could; enriching every opportunity with all expertise to enhance the learning opportunities for each child. Each member of the educational team held high expectations for the children and themselves as they constantly sought the most up-to-date, and innovative ways to teach their students.

Challenges and Strengths

During interviews, teachers shared challenges as those involving preliteracy skills, communication, access, time, adaptation, and technology. Interestingly, all five reported their love of reading as their strength for teaching literacy to preschoolers with VI with/without an additional disability. All five teachers described their enjoyment of books as their strength for teaching literacy skills to their students. One teacher called herself the ‘Scholastic Lady’, claiming to “enjoy looking for new books for my kids and expanding the library, experience new topics and new books, striving to grow my diversity in my literacy in the classroom”. They drew inspiration from their enjoyment of books, and passed it along to their students. “I love to read myself, and so I want my student so also learn to read, and enjoy.”

Challenges to Teaching Preliteracy Skills

Some questions expressed by teachers when attempting to teach preliteracy skills to their students were: “How can I tell they understand the content?” “Are they ready for literacy exposure?” “How do I understand their comprehension?” “How do I, figure out how they are ready for more direct instruction?” Summarizing, “How they understand

material is a challenge.” Teachers raise important questions beyond the scope of this study, but should be considered in future research.

Challenge of Communication

Teachers expressed challenge with how to communicate instruction to some students, and how to gain feedback from the student that would provide evidence of understanding. “I don’t have an established language system for him, don’t have a consistent accept/reject... [He] has more receptive than expressive language as is common, [but] doesn’t have a consistent language.” Understanding how to identify and document student cues of understanding could shift focus from teacher to student needs.

Challenge of Access

Teachers expressed difficulty with providing access to all activities in a timely manner. Several eluded to the difficulty of obtaining braille, or tools necessary to make all activities accessible to all students at all times. They also expressed trepidation with holding knowledge needed to fulfill access needs for all students. “The world around us isn’t full of braille, but it is full of print.” While teachers described accessibility as a challenge, they were observed to transcend it with equipment/resources, instructional strategies, and use of multiple language modes.

Challenge of Time

Teachers expressed not having enough time to fully prepare for all lessons as difficult. They desire more time to gather materials, and prepare for instructional activities. “I wish I could buy books and they be [readily] adapted for everyone.”

Challenge of Adaptation

Teachers described the volume of adaptations and the diversity of adaptations (e.g., braille, large print, regular print, technology, contrast, tangible objects, and sign language) as overwhelming. While they were up for the challenge, they were faced with additional stress of adapting each lesson to meet the needs of each student. “We just need an easier path of literacy.”

Challenge of Technology

Teachers expressed the use of technology as difficult, but were encouraged by having the opportunity to collaborate with an in-house expert in assistive technology specific to children with VI. Although, they did describe frustration with the stability of using technology. “If technology could be a little bit simpler, or if it could work when we want it to work out.”

Strengths

All five teachers described their enjoyment of books as their strength for teaching literacy skills to their students. One teacher called herself the ‘Scholastic Lady’, claiming to “enjoy looking for new books for my kids and expanding the library, experience new topics and new books, striving to grow diversity in my literacy in the classroom”. They drew inspiration from their enjoyment of books, and passed it along to their students. “I love to read myself, and so I want my students to also learn to read, and enjoy.”

Types of Activities Used to Promote Literacy

Activities children participated in to promote literacy included opportunities for reading (e.g. reading one’s own name), writing (e.g., writing letters), embedded (e.g., updating an individual calendar), and phonological awareness (e.g., rhyming words). Many more activities such as learning initial letter sounds and letter names by exploring

objects that begin with a letter and building pictorial reading reflections following a read aloud also provided practice for developing literacy skills. Types of reading and writing activities engaged in by children with VI with/without an additional disability are correlated to Themes/Subthemes and displayed in Table 5.

Frequency of Literacy Opportunities and Accessibility

Strategies teachers use emerging from this study are presented in a visual joint display with observations to compare what was referenced by teachers and what was observed in practice. To help describe and provide context for the teacher interviews and observations the percentage of occurrences within themes and percent of total opportunities is jointly displayed (Table 6). Frequency of occurrence(s) within theme and by total percent of literacy opportunities were calculated to allow for comparison across observations and teacher interviews.

Table 5***Literacy Activities Across Themes/Subthemes***

Theme	Build letter	Calendar	Letter ID/ CVC	Jobs	Letter sound	Weekly letter bag	Mail	Object w/ letter sound	PRR	Read Aloud	Read Name
Literacy Opportunity											
Reading			X			X	X	X	X	X	X
Writing	X		X					X	X	X	
Embedded		X		X					X		
PA					X						
Accessibility *											
Language Mode											
Braille		X	X	X		X	X	X		X	X
Print	X	X	X	X		X	X	X	X	X	X
Audio											
Tangible	X	X		X		X		X		X	
Other		X		X	X						
Adaptation											
Equipment/Resources	X	X		X	X		X	X		X	X
Instruction	X		X	X	X			X			
Frequency											
Daily	X	X	X	X						X	X
Weekly					X	X	X			X	
Monthly										X	
Assessment *											
Settings											
One-on-one	X		X		X					X	X
Pairs	X		X							X	
Small Group	X		X							X	
Whole Group	X	X	X	X	X	X	X			X	
Cues for											
Understanding											
Student	X	X	X	X	X		X	X	X	X	X
Teacher				X	X						

Theme	Read Write	Rhyme	Share Books	Tarheel Game	Tarheel Reader	Trace letter	Track/discrim	Weather	Write letter	Write name
Literacy Opportunity										
Reading	X	X	X		X		X			
Writing		X		X		X			X	X
Embedded PA		X	X					X		
Accessibility *										
Language Mode										
Braille	X		X				X	X	X	
Print	X	X	X	X	X	X	X	X	X	X
Audio										
Tangible						X		X		
Other		X						X		
Adaptation										
Equipment/Resources	X	X	X	X	X	X		X	X	
Instruction		X		X	X				X	
Frequency										
Daily	X		X			X		X		
Weekly		X			X					
Monthly										
Assessment *										
Settings										
One-on-one	X	X	X	X	X	X	X			
Pairs		X	X		X	X				
Small Group		X	X			X				
Whole Group		X	X	X		X		X	X	
Cues for										
Understanding	X	X	X		X	X		X	X	X
Student						X				X
Teacher										

Note: ID = identification, CVC = consonant vowel consonant words, PRR = Pictorial reading reflection, discrim = discriminate, PA = Phonological Awareness

Table 6
Results of Observations and Teacher Interviews by Theme/Subtheme

Themes and Subthemes	Observations		Teacher Interviews	
	occurrence % within Theme	% of Total	occurrence % within Theme	% of Total
Literacy References	77 windows of opportunity		293 total references	
Literacy Opportunities	84		84	28.7
Reading	26 (31%)	33.8	45 (53.6%)	15.4
<i>Student & Researcher</i>	5 (6%)	6.5		
Writing	28 (33%)	36.4	21 (25%)	7.2
Embedded	16 (19%)	20.8	15 (17.9%)	5.1
Phonological Awareness	9 (11%)	11.7		
Frequency			24	8.2
Daily			5 (20.8%)	1.7
Weekly			14 (58.3%)	4.8
Monthly			5 (20.8%)	1.7
Settings	77		14	4.8
One-to-One	32 (41.6%)	41.6	0 (0%)	0
<i>Student & Researcher</i>	5 (6.5%)	6.5		
Pairs	9 (11.7)	11.7	0 (0%)	0
Small Group	4 (5.2)	5.2	10 (71.4%)	3.4
Whole Group	27 (35.1)	35.1	4 (28.6%)	1.4
Accessibility	162		144	49.1
<i>Language Mode</i>	102		78	26.6
Braille	28 (26.9%)	36.4	27 (34.6%)	9.2
Print	51 (49%)	66.2	22 (28.2%)	7.5
Audio	2 (1.9%)	2.6	9 (11.5%)	3.1
Tangible	18 (17.3%)	23.4	19 (24.4%)	6.5
Other	5 (4.8%)	6.5		
<i>Adaptations</i>	60		35	12
Equipment Resources	54 (90%)	70.1	24 (68.6%)	8.2
Instructional	6 (10%)	7.8	11 (31.4%)	3.8
<i>Curriculum Planning</i>			31	10.6
Cue for Understanding	51		3	1
Student	47 (92.2%)	61	0 (0%)	0
Teacher	4 (7.8%)	5.2	3 (100%)	1
Assessment	1		7	2.4
Reading	1 (100%)	1.3	7 (100%)	2.4
Writing	0 (0%)	0	0 (0%)	0
Challenges			11	3.8
Strengths			6	2

CHAPTER 5

DISCUSSION

Literacy activities depicted in Table 5 correspond to instructional strategies teacher used to promote literacy for children with VI with/without an additional disability. Observations provide evidence that children with VI need hands-on, multisensory approach to access opportunities to learn to read and write. Children were given the opportunity to practice reading and writing skills leading to the development of literacy skills in several ways.

Strategies Teachers Use for Literacy Instruction

Teachers used a variety of strategies and activities to teach their students to read and write and build connections to access the world around them in a meaningful way. They were consistent in utilizing specific curriculum offering a hands-on approach to teach emergent or early literacy to their students. They also sought other sources such as collaborating with a TSVI or other specialists to provide well rounded literacy opportunities. The personnel at the preschool displayed extraordinary precision in providing a multitude of supports by way of equipment/resources and instructional strategies to adapt activities. At no time was a student left sitting out of an activity. All students regardless of disability or typical development were engaged and participated to their fullest potential alongside each other at all times.

Several language modes were used for each activity to allow access for all children. Teachers utilized expected language modes like print, braille, and audio, but an unexpected language mode emerged as teachers described and utilized tactile objects. On

rare occasions, they also utilized sign language, body language, and gestures for students with residual vision.

It is possible that years of experience could affect development of literacy skills for children with VI (Dote-Kwan, 2001). However, this study did not detect a significant statistical difference in the number of references to adaptation between teachers with VI endorsement ($n = 2$) and teachers without or working toward VI endorsement ($n = 3$). It may be possible that a significant difference was not found because this group of teachers has a lot of support within the specialized school to offset lack of knowledge or inexperience supporting literacy development for children with VI. Most likely, a statistical difference was not found due to low statistical power which limited the ability to draw conclusions based on response rate.

Students were situated in a variety of settings, and participated daily, weekly, and monthly to access literacy opportunities. Although, teachers most highly referenced utilizing small group instruction, one-on-one opportunities for learning was most often observed. Additionally, students working in pairs was observed, but not referenced at all. Finally, teachers rarely referenced teaching students as a whole group, but whole groups accounted for one-third of the instructional settings.

Students provided cues for understanding with verbal and non-verbal communication. Nonverbal cues consisted of participating in or completing an activity (e.g., write letter, read name, update calendar), vocalization, (e.g., laugh at sound of letter); body language, (e.g., body moves to demonstrate what is happening in story such as running like The Little Gingerbread Man), gestures (e.g., shake head to answer yes or

no, or tap table and say /t/), hand-under-hand (e.g., trace letters), and use of a switch or iPad to make a choice (e.g., choose a song).

Verbal cues were evidence by a response to a question (e.g., rhyme words or sing along such as Days of the Week sung to the tune of The Addams Family Theme song), asking clarifying questions (e.g., ask why something in a story is the way it is described), explaining one's own mistake, (e.g., "I tapped the 'R' too fast" while brailleing name), justifying a choice (e.g., "I'm labeling the table with [name] in braille."), verbally reflecting on an activity, (e.g., explain what is happening in a story and define meaning of words used during reflection of shared reading), making personal connections to an activity (e.g., "I love this story."), and showing and describing an emotional response to a literacy opportunity (e.g., Exclaim, "Oh, no!", when 'the monkey fell off the bed).

Teachers were also found to provide verbal cues of understanding on behalf of the child. Teachers' validated student learning with phrases like "good job" after successfully meeting the objective of a lesson such as correctly verbalizing the sound of a letter. Teachers' also confirmed student learning by verbalizing student choice such as, "I saw your head move side to side for answering no." or "I see you are touching attendance on your left. Thank you for showing me your choice by patting the one on the left." Given the high percentage of cues of understanding observed, teachers may have modeled behaviors of understanding so that students began to respond for themselves. This would have to be further investigated for confirmation.

While functional visual assessments (FVA) and learning media assessments (LMA) may have been implemented, it was not observed during this study, nor found in the record review. It could be the preschool encouraged the use of multiple forms of

media for each activity so the child would demonstrate a preference during real time activity. It has been found that children demonstrate a mode of preference as they experience written language (Ferrell et al., 2014; McCall et al., 2011).

Challenges and Strengths

When teachers were asked about challenges and strengths they encountered while teaching literacy to children with VI and possibly additional disabilities, they referenced challenges more often than strengths. Rather than address strengths, teachers asked the researcher questions about pedagogy, and wanted to know more about how to support their students. They were eager to learn so they could provide best practices for their students. They found it easier to talk about what they wanted to know rather than about their own strengths. One teacher was her own critic when she said, “I’m fairly, hard on myself as a teacher.”

Types of Activities Used to Promote Literacy

Literacy activities depicted in Table 5 correspond to instructional strategies teachers used to promote literacy for children with VI with/without an additional disability. Observations provide evidence that children with VI need a hands-on, multisensory approach to access opportunities to learn to read and write. Children were given the opportunity to practice reading and writing skills leading to the development of literacy in several ways. They identified letters and words, including their own and their peers’ names. They associated letter names with letter sounds, and connected meaning of written language by engaging in read alouds and exploring objects. They were given the opportunity to promote literacy skills in an authentic way by updating the calendar, choosing a job to complete in the classroom each day, describing the weather, and

writing, delivering and reading mail. They engaged in the act of reading and writing independently and with others building purpose and pleasure for reading and writing. By utilizing multisensory avenues of access such as through vision, tactile, or audio modes for each child, no child was left out of an opportunity to learn.

Frequency of Literacy Opportunities and Accessibility

The nature of having a visual impairment often dictates utilizing alternate forms of media to access print. Embedding various forms of media was not only suggested by teachers during interviews, but practiced by students as evidenced during observations. Braille, enlarged print, audio, tactile, and other (e.g., body language or sign language) gave students with VI an avenue to learn in the same manner as their sighted peers.

Collaboration

Collaboration is essential for all involved in developing literacy skills for children with VI. Teachers need to share knowledge and experiences to provide best opportunities for children with VI to learn to read and write. Parents need to be aware of goals and expectations in order to support development of their child's skills, and be aware of the meaning of literacy opportunities to build conceptual knowledge. Working together will enhance the opportunities for children with VI to learn to read and write.

Limitations

A limitation to the study is that teachers spoke generally about literacy opportunities rather than specifically. This provided a broad overview of the types and frequencies of literacy opportunities provided to child participants. Teachers were not asked to respond to opportunities used to assess reading or writing. Three teachers referenced assessment seven times on their own which brought attention to this

limitation. This study would have been strengthened if teachers were asked about how cues for understanding and assessment of reading or writing was provided. This study would also have been strengthened by interviewing service providers.

Interactions between teachers and parents was not observed. Therefore, it is unknown what types of support via equipment/resources, instruction or personnel for developing literacy skills is being provided by teachers for children to complete at home. The level of support parents are being asked to provide, nor was their comfort level in supporting the learning of literacy with their child with a VI with/without an additional disability known.

Curricula utilized by teachers at this preschool have some research based evidence to support positive growth in reading and writing skills for preschoolers. Findings for *Read It Once Again* suggest it may be effective for improving early literacy skills of preschoolers at risk for significant early learning difficulties (Correa et al., 2013). Findings for *Handwriting Without Tears* suggest children utilizing this program consistently outperformed a control group across all skill areas (Donica, 2017). Parents and teachers observed higher academic and functional achievement of children with cognitive disabilities while engaging in the *Unique Learning* program (Condon, 2017). However, there is no empirical evidence to demonstrate these curricula have a positive impact on learning for children with VI. Empirical evidence to suggest activities implemented by the preschool to promote literacy for children with VI with/without an additional disability to have a positive impact on developing literacy skills is not available. While these practices seemed to promote literacy for children at this preschool, there is no evidence to support carryover of positive results to other environments.

Preschoolers with VI is a low incidence population and may not generalize beyond the setting described in this study. The qualitative nature does not permit minimizing possible threats to observational bias or interpretation. Member checking was used to minimize threats to interpretation and observer bias.

Implications

The goal of this study was to describe literacy opportunities provided to preschoolers with VI. While TSVIs are trained in providing specific strategies for children birth through 21 to access written language, they are not trained in teaching emergent or early literacy skills. Additionally, caseloads of TSVIs vary and they may never, or rarely, have a preschooler on their caseload. Early childhood educators are trained in teaching literacy to preschoolers, but are not trained in how to provide access to written language to children with VI. Collaboration is necessary among educators and service providers to provide best opportunities for children with VI to learn to read and write. Some children with VI are provided consultative services by a TSVI within their home or local preschool. However, disconnect in communication about what literacy opportunities are being provided to children with VI can occur when team members are housed in different locations. This study had a unique opportunity to explore a large sample of children with various eye etiologies with/without additional disabilities engaging in literacy opportunities with consistency across strategies and activities as all involved were working together in one location. The instructional strategies, types of activities, frequency of literacy opportunities and modes used could generalize to other environments.

Future Research

One suggestion emerging from this study is the need for protocol of recognition and documentation of student cues of understanding. When a child provides verbal and nonverbal communication of their understanding of concepts, it could be systematically collected and analyzed for future lesson planning. Since cues for understanding were observed but not mentioned during interviews, it may be an area worth exploring for professional development or organized training. There was little reference in knowing the depth of students' understanding. It is important to know what a student understands so that teachers are aware of the skills they need to teach and knowledge can build for the child (De La Harpe, & Radloff, 2000). This would provide a clear understanding of the child's strengths and needs which could be used for effective lesson planning, leading to positive growth trajectory.

There is need for research in assessment of literacy skills for children with VI. Cues of understanding by either the child or the teacher provide information in the moment if learning is occurring. However, without formal assessment of learning it is unclear if the child gains enough understanding to move forward in conceptual learning, or act independently. Understanding how and when to collect formal assessment of children with VI is worth further investigation.

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APPENDIX A: PARENTAL CONSENT

IRB #: 18602

Study Title:

Literacy Instruction for Early Childhood Students with Visual Impairment

Authorized Study Personnel

Principal Investigator: Susan Pope, MA Office: (402) 472-2145

Secondary Investigator: Mackenzie Savaiano, Ph.D. Office: (402) 472-3801

Key Information:

If you agree to participate in this study, the project will involve:

Researchers from the University of Nebraska – Lincoln will observe literacy opportunities naturally occurring in the classroom for students ages 3-6 with visual impairment that would not be different than what teachers/students would normally do during a school day. Researchers request consent to video record literacy lesson during five consecutive days for the purpose of gathering general knowledge about the literacy opportunities experienced by children with visual impairment before they enter kindergarten. Student information will be deidentified with minimal risk associated with participation. Every effort will be made to exclude capturing a child on video if parental consent for inclusion is not obtained. This will be done by the researcher using a mobile video camera to avoid recording children without parental consent. There will be minimal risk to recording of a name of a student pronounced during taping. Audio recorded interviews between the teacher(s) of CCVI participating in the study and the researcher will further provide information regarding literacy opportunities provided in the classroom. Children participating in the study will interact with the researcher to share a favorite book or writing activity. Parents will be asked to complete a questionnaire sent home with their child from CCVI regarding the literacy experiences of their child with visual impairment and shared with the researcher via sending it back to CCVI with their child. Data analysis of observations of literacy activities naturally occurring in the classroom will be reported for general knowledge learned. You will not be paid for your participation. You will be provided a copy of this consent form.

Invitation

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask the Principal Investigator listed above.

Why are you being asked to be in this research study?

You are being asked to participate in this study because you have a child with visual impairment enrolled at CCVI.

What is the reason for doing this research study?

CCVI is a unique facility designed to provide educational opportunities to children with visual impairment before entering kindergarten. Therefore, it provides an ideal situation to explore literacy opportunities provided to children with visual impairment before entering kindergarten. Little research exists concerning reading and writing outcomes for children with visual impairment before entering kindergarten.

Researchers at the University of Nebraska – Lincoln (UNL) are interested in exploring the literacy opportunities provided to children with visual impairment before they enter kindergarten. Therefore, researchers from UNL are seeking to observe the naturally occurring lessons at CCVI. Researchers from UNL invite parents to complete a questionnaire to ascertain information about their child's reading and writing activities as a student with visual impairment. Researchers will also participate in a literacy activity with your child during their normal day at CCVI.

While no direct benefit would be gained by children participating in the study, information gathered could lead to assisting future literacy activities within CCVI. Further, results could be shared with other existing early intervention facilities to increase quality literacy opportunities for students with visual impairment before entering kindergarten.

What will be done during this research study?

You will be invited to complete a questionnaire about your child's reading and writing skills which should take no more than 15 minutes. Children will be asked to share a favorite story with the researcher. Classrooms will be video recorded during normal everyday activities at CCVI for the duration of five school days.

How will my [data/samples/images] be used?

Data collected will not be sent to researchers outside of the University of Nebraska-Lincoln. Any personal information that could identify you and/or your child will be removed before the data is shared for the purpose of explaining what reading and writing activities occur with children that are visually impaired.

What are the possible risks of being in this research study?

There is no more than minimal risk of loss of confidentiality regarding you or your child's experiences with reading and writing activities at CCVI. Steps will be taken to safeguard confidentiality (e.g. parent questionnaires are not identifiable and student information will be deidentified).

What are the possible benefits to you or other people?

While there will not be a direct benefit for you in this study, information could lead to additional effective reading and writing lessons for children at CCVI or other early childhood center-based facilities for children with visual impairment.

What are the alternatives to being in this research study?

There is not an alternative of being in this research study. However, participation is voluntary, and can be revoked at any time.

What will being in this research study cost you?

There is no cost to you to be in this research study.

Will you be compensated for being in this research study?

Participation in this study is voluntary and no compensation will be provided.

What should you do if you have a problem during this research study?

You and your child's welfare are the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and confidentiality of study data. Data will be stored in a locked cabinet in the investigator's office and will only be seen by the research team during the study and for 2 years after the study is complete. Data will be stored electronically through a secure server and will only be seen by the research team during the study and for 2 years after the study is complete.

The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form.

For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):

Phone: 1(402)472-6965

Email: irb@unl.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or may stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with CCVI or your child's enrollment at CCVI, nor will any relationship you have with the investigator or with the University of Nebraska-Lincoln be affected.

You will not lose any benefits to which you are entitled.

You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep.

Participant Feedback Survey

The University of Nebraska-Lincoln wants to know about your research experience. This 14 question, multiple-choice survey is anonymous. This survey should be completed after your participation in this research. Please complete this optional online survey at: <http://bit.ly/UNLresearchfeedback>.

Participant Name:

Participant email address:

(Name of Participant: Please print)

Participant Signature and date:

Participant phone number:

Signature of Research Participant and Date

APPENDIX B: CCVI PERSONNEL CONSENT

IRB #: 18602

Study Title:

Literacy Instruction for Early Childhood Students with Visual Impairment

Authorized Study Personnel

Principal Investigator: Susan Pope, MA Office: (402) 472-2145

Secondary Investigator: Mackenzie Savaiano, Ph.D. Office: (402) 472-3801

Key Information:

If you agree to participate in this study, the project will involve:

Researchers from the University of Nebraska – Lincoln will observe literacy opportunities naturally occurring in the classroom for students ages 3-6 with visual impairment that would not be different than what teachers/students would normally do during a school day. Researchers request consent to video record literacy lesson during five consecutive days for the purpose of gathering general knowledge about the literacy opportunities experienced by children with visual impairment before they enter kindergarten. Student information will be deidentified with minimal risk associated with participation. Children will be separated, or not captured on the video, if parental consent for inclusion is not obtained. Audio recorded interviews between the teacher(s) of CCVI participating in the study and the researcher will further provide information regarding literacy opportunities provided in the classroom. Children participating in the study will interact with the researcher to share a favorite book or writing activity. Parents will be asked to complete a questionnaire sent home with their child from CCVI regarding the literacy experiences of their child with visual impairment and shared with the researcher via sending it back to CCVI with their child. Data analysis of observations of literacy activities naturally occurring in the classroom will be reported for general knowledge learned. You will not be paid for your participation. You will be provided a copy of this consent form.

Invitation

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask the Principal Investigator listed above.

Why are you being asked to be in this research study?

You are being asked to participate in this study because you teach children with visual impairment enrolled at CCVI.

What is the reason for doing this research study?

CCVI is a unique facility designed to provide educational opportunities to children with visual impairment before entering kindergarten. Therefore, it provides an ideal situation

to explore literacy opportunities provided to children with visual impairment before entering kindergarten. Little research exists concerning reading and writing outcomes for children with visual impairment before entering kindergarten.

Researchers at the University of Nebraska – Lincoln (UNL) are interested in exploring the literacy opportunities provided to children with visual impairment before they enter kindergarten. Therefore, researchers from UNL are seeking to observe the naturally occurring lessons at CCVI. Researchers from UNL invite you to participate in a one-to-one interview to ascertain information about their student's reading and writing activities as a child with visual impairment. These interviews will occur on the final day of the study at CCVI. Researchers will also participate in a literacy activity with your student during their normal day at CCVI.

While no direct benefit would be gained by children participating in the study, information gathered could lead to assisting future literacy activities within CCVI. Further, results could be shared with other existing early intervention facilities to increase quality literacy opportunities for students with visual impairment before entering kindergarten.

What will be done during this research study?

You will be invited to participate in a one-to-one interview about your student's reading and writing skills which should take no more than 20-30 minutes. Children will be asked to share a favorite story with the researcher. Classrooms will be video recorded during normal everyday activities at CCVI for the duration of five school days.

How will my [data/samples/images] be used?

Data collected will not be sent to researchers outside of the University of Nebraska-Lincoln. Any personal information that could identify a participant will be removed before the data is shared for the purpose of explaining what reading and writing activities occur with children that are visually impaired

What are the possible risks of being in this research study?

There is no more than minimal risk of loss of confidentiality regarding your or student's experiences with reading and writing activities at CCVI. Steps will be taken to safeguard confidentiality of data collected (e.g. parent questionnaires, student information, and teacher information will be deidentified).

What are the possible benefits to you or other people?

While there will not be a direct benefit for you in this study, information could lead to additional effective reading and writing lessons for children at CCVI or other early childhood center-based facilities for children with visual impairment.

What are the alternatives to being in this research study?

There is not an alternative of being in this research study. However, participation is voluntary, and can be revoked at any time.

What will being in this research study cost you?

There is no cost to you to be in this research study.

Will you be compensated for being in this research study?

Participation in this study is voluntary and no compensation will be provided.

What should you do if you have a problem during this research study?

You and your student/parent's welfare are the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and confidentiality of study data. Data will be stored in a locked cabinet in the investigator's office and will only be seen by the research team during the study and for 2 years after the study is complete. Data will be stored electronically through a secure server and will only be seen by the research team during the study and for 2 years after the study is complete.

The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form.

For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):

Phone: 1(402)472-6965

Email: irb@unl.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or may stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with CCVI, the investigator or with the University of Nebraska-Lincoln (list others as applicable).

You will not lose any benefits to which you are entitled.

You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep.

Participant Feedback Survey

The University of Nebraska-Lincoln wants to know about your research experience. This 14 question, multiple-choice survey is anonymous. This survey should be completed after your participation in this research. Please complete this optional online survey at: <http://bit.ly/UNLresearchfeedback>.

Participant Name:

Participant email address:

(Name of Participant: Please print)

Participant Signature and date:

Participant phone number:

Signature of Research Participant and Date

APPENDIX C: STUDENT DEMOGRAPHICS

1. Gender Male Female

2. Ethnicity (*Choose more than 1 if he/she is multi-ethnic*)

- Hispanic/Latino/a
 Black/African American
 Caucasian
 Asian
 Hawaiian or other Pacific Islander
 Other (Specify): _____

3. English Language Learner? Yes No

If yes, what is child's first language?

4. Age _____

5. Eye Condition

6. Age of Onset _____

7. Age Introduced to Braille _____

8. Distance Visual Acuity: Right eye _____ Left eye _____ Both eyes _____

9. Near Visual Acuity: Right eye _____ Left eye _____ Both eyes _____

10. Dual Media Learner (print/braille)? Yes No

11. Total Number of Direct VI Service Minutes from IEP _____
 (please indicate whether minutes are per week or per month)

12. Additional Disabilities? Yes No

If yes, what additional disabilities?

ID Code _____

APPENDIX D: SEMI-STRUCTURED TEACHER INTERVIEW

Interview Questions & Prompts

School personnel: Respond to the following with regard to your student(s) learning literacy.

1. Tell me about literacy opportunities at the center.
 - a. Prompts:
 - i. What does a reading opportunity look like?
 - ii. What does a writing opportunity look like?
 - iii. What other literacy opportunities can you share?
2. Can you give me an example of a literacy opportunity?
 - a. Prompts
 - i. May I take pictures of student work with the name removed to document the outcome of literacy opportunities at CCVI?
3. Tell me more about literacy opportunities.
 - a. Prompts
 - i. Do you use a curriculum?
 - ii. Have you developed your own curriculum?
 - iii. Where do you draw your inspiration for literacy instruction?
4. Tell me about the biggest challenges you experience with regard to literacy instruction.
 - a. Prompts:
 - i. Do you have the tools you need?
 - ii. If not, what do you feel you need?
 - iii. Are there other challenges you face?
5. How do you meet these challenges?
 - a. Prompts:
 - i. Do you have 'go to' people, places, sites?
 - ii. What other ways do you meet these challenges?
6. What are some strategies you use to meet these challenges?
 - a. Prompts:
 - i. Do you have practices in place?
 - ii. Is there something you always wished you could do?
7. In a perfect world, what do you need to have the highest success possible with literacy?

APPENDIX E: MEMBER CHECK FORM

Dear Parent or Guardian,

Please find enclosed a report of the data collected via video/audio by the researchers during the study: Literacy Instruction for Early Childhood Students with Visual Impairment. Please indicate agreement with, or provide edits to the report, and return it in the sealed envelope to CCVI with your child to give to his/her teacher. If edits are made, another report addressing the edits will be sent home to you with your child in a sealed envelope. At that time, please check the report of data once again and indicate agreement of the data collected and return it in the sealed envelope to CCVI with your child to give to his/her teacher. All sealed envelopes returned to CCVI via your child will be collected by the director and mailed to the researchers at UNL, unopened.

Thank you so much for your participation in this study.

Sincerely,

Susan Pope
Doctoral student
University of Nebraska - Lincoln

Enclosure

APPENDIX F: OFFICIAL APPROVAL LETTER FOR IRB



Official Approval Letter for IRB project #18602 - New Project Form

December 5, 2018

Susan Pope
Department of Special Education and Communication Disorders

Mackenzie Savaiano
Department of Special Education and Communication Disorders
BKC 202A, UNL, 685830738

IRB Number: 20181218602EP
Project ID: 18602
Project Title: Literacy Instruction for Early Childhood Students with Visual Impairment

Dear Susan:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

- o Review conducted using expedited review categories 6 & 7 at 45 CFR 46.110
- o Date of Approval: 12/05/2018
- o Date of Expedited review: 11/03/2018
- o Date of Acceptance of Revisions: 12/05/2018
- o Funding (Grant congruency, OSP Project/Form ID and Funding Sponsor Award Number, if applicable): N/A
- o Consent waiver: N/A
- o Review of specific regulatory criteria (contingent on funding source): 45 CFR 46
- o Subpart B, C or D review: Subpart D, Research involving children, not greater than minimal risk approved under 45 CFR 46.404

You are authorized to implement this study as of the Date of Final Approval: 12/05/2018. This approval is Valid Until: 12/04/2019.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- * Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- * Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- * Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- * Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- * Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The Investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Rachel Wenzl, CIP
for the IRB



APPENDIX G: OBSERVATION SCHEDULE

Original Observation Schedule-Early Literacy Research Project Schedule													
Day	8:30-9:00	9:00-9:30	9:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:30	12:30-1:00	1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30
M	C1	C1	C3	C3	C4	C1	Lunch			C6		C2	C1
T	C1	C5	C5	C5	C6	C1	Lunch			C6	C6	C6	C1
W	C1	C1	C3	C3	C4	C1	Lunch			C6	C5	C2	C1
R	C1	C1	C4	C4	C4	C1	Lunch			C6		C2	C1

Amended Observation Schedule (changed upon arrival)-Early Literacy Research Project Schedule													
Day	8:30-9:00	9:00-9:30	9:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:30	12:30-1:00	1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30
M	C5	C5	C5	C5	C5	C5	Lunch	C2	C2	C2	C4	C4	C4
T	C6	C6	C6	C4	C4	C4	Lunch	C6	C6	C6	C6	C6	C6
W	C3	C3	C3	C3	C3	C3	Lunch	C1	C1	C1	C5	C5	C5
R	C2	C2	C2	C1	C1	C1	Lunch	C6	C6	C6	C3	C3	C3

Last minute changes to Observation schedule (due to Snow Day)-Early Literacy Research Project Schedule													
Day	8:30-9:00	9:00-9:30	9:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:30	12:30-1:00	1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30
M	C5	C5	C5	C5	C5	C5	Lunch	C2	C2	C2	C4	C4	C4
T	C6	C6	C6	C4	C4	C4	Lunch	C6	C6	C6	C6	C6	C6
W	C3	C3	C3	C3	C3	C3	Snow Day	C1	C1	C1	C5	C5	C5
R	C2	C2	C2	C2	C2	C2	Lunch	C6	C6	C6	C5	C5	C5

Note: M = Monday, T = Tuesday, W = Wednesday, R = Thursday, C1 = Classroom 1, C2 = Classroom 2, C3 = Classroom 3, C4 = Classroom 4, C5 = Classroom 5, C6 = Classroom 6