2021

THEORY AND PRACTICE: PHONOLOGICAL AWARENESS INSTRUCTIONAL METHODS USED IN DEAF EDUCATION

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THEORY AND PRACTICE: PHONOLOGICAL AWARENESS INSTRUCTIONAL METHODS USED IN DEAF EDUCATION

A dissertation submitted in partial fulfillment

of the requirements for the degree of

DOCTOR OF PHILOSOPHY

to the faculty of the

DEPARTMENT OF EDUCATION SPECIALTIES

of

THE SCHOOL OF EDUCATION

at

ST. JOHN'S UNIVERSITY

New York

by

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Date Submitted 02/10/2021 Date Approved 05/19/2021

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ABSTRACT

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Mary Sorola Cantino

An inequality in literacy rates exists between deaf children and their hearing peers. Research indicates that visual phonic interventions such as Visual Phonics used alongside a phonics program enhances grapheme-phoneme correspondence. That practice in turn improves overall literacy achievement. However, as rates deaf literacy continue to lag ongoing research indicates that teachers may be ill prepared to use research-based interventions. This study seeks to identify the frequency of teacher implementation of Visual Phonics interventions as well as their exposure to these interventions via teacher education and professional development. This study will investigate if the presence of these elements by using data collected through online surveys of educators of the deaf who have received Visual Phonics training.

DEDICATION

This dissertation is dedicated to my longsuffering husband, Nic, who persistently motivated and encouraged me to complete this project. This dissertation is also dedicated to my family for always supporting my education endeavors.

ACKNOWLEDGEMENTS

I would like to thank my committee members for providing thoughtful feedback and support at each juncture of this project. I would also like to thank ICLI and See the Sound's certified trainers for their willingness to cooperate and assist with survey distribution. I also would like to thank my sister, Rebecca, for being willing to accept calls and requests for proof-reading at any time. Additionally, I would like to thank my alumni professors, mentors, and colleagues for encouraging me to continue my education.

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Chapter 1: Introduction

Background

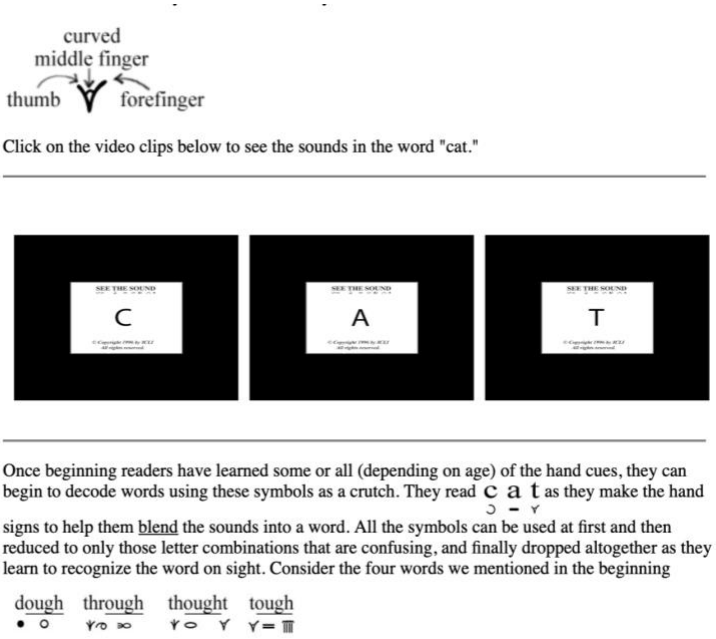
Visual-spatial strategies in phonological awareness instruction are proven successful in aiding deaf readers, as deaf students routinely struggle with phonological awareness (Eissa, 2015). Phonological awareness interventions often integrate some multi-modal practices to target phonemic awareness skills in improving articulation (Roberts, 2005). Phonological awareness and articulation are routinely linked in determining positive outcomes of phonological awareness interventions (Pieretti et al., 2015). However, studies by Petitto et al. (2001) indicate that the "identical brain tissue as hearing speakers when processing identical linguistic functions (e.g. phonetic-syllabic units in sign) are processed in the identical secondary auditory tissue as hearing people even though this tissue has never processed sound in the deaf signers (p. 460)." American Sign Language's (ASL) visual phonological structure collapse the previous understanding that phonological development requires an auditory language (Allen et al., 2014).

In their 2014 study, Messier and Jackson discovered that educators of the deaf displayed dismal results in their own awareness of phonological and phonemic awareness; indicating gaps in their own education (p. 528). This present study seeks to further investigate educators' knowledge and familiarity with visual-spatial and multimodal approaches to phonological awareness instruction in light of recent findings that indicate the success of these approaches and the discovery that articulation is not necessary in the phonological awareness instruction process.

In the pursuit of promoting phonemic awareness and phonological awareness in deaf learners, one multi-modal and visual-spatial program has emerged. Visual Phonics is self-described as a 3-dimensional, visual representation of IPA charts of symbols that represent the sounds of English (What Is See the Sound, 2011). Figure 1 below offers an illustration from See the Sound's website of the visual sound representations for the word "cat:"

Figure 1

Visual Phonics Illustration



(seethesound.org)

Visual Phonics' aim is to enhance letter-sound correspondence through hand symbols that represent each sound in a word. These hand symbols are distinct from American Sign Language, and are not intended to replace any natural language. Woolsey et al. (2006) explain that this program was invented by a mother of deaf children with the hopes of giving these children, "access to a visual, written, and tactile form of the sounds

they could not hear." While this program has enjoyed success since its arrival on the educational scene nearly 30 years ago, Woolsey et al. (2006) caution that few studies have researched this approach.

Statement of the Problem

Phonological awareness continues to present as a challenge to young deaf readers. The inaccessibility to sound because of their disability often excludes deaf children from well researched intervention strategies aimed at boosting phonological awareness. However, recent study findings indicate that Direct Instruction using visual-spatial strategies, such as, Visual Phonics incorporation in the early reader's classroom can improve literacy achievement for young deaf readers (Wang et al., 2013).

A consensus has emerged that early language is a key predictor of literacy success for deaf and hard-of-hearing (DHH) students (Skotara et al., 2012; Clark, 2016). Further, language proficiency overall is found to be a predictor for phonological awareness skills (McQuarrie & Abbot, 2013). Allen et al. (2014) found that early language exposure, regardless of visual or auditory modality, impacted the developing brain in the same region and is equally phonologically processed. Early language is key to developing this important language processing process (Cummins, 1979). However, due to the nature of the disability, early auditory language is not always available for the majority of deaf children born into hearing families and may result in language deprivation (Hal, 2017).

However, there remains a deficiency of evidence that auditory input and articulation output by deaf students contribute to overall literacy or phonological awareness skills that are superior to visual input and overall literacy output. Despite

evidence in support of visual language processing, auditory methods of instruction, and articulation gains surround current literacy endeavors (Ehri, 1998). Major language and literacy proficiency assessments all incorporate hearing and articulation measures as key components (Luckner, 2013). These continued practices only serve to reinforce a continuance of unsuccessful practices that discourage more research into ASL's role in phonological development skills for deaf learners (Hall, 2017).

Educators of the deaf will benefit from further research into visual instructional approaches that harness visual rather than auditory pathways. Research indicates that educators are not always informed of key aspects relating to phonological awareness and development (Messier & Jackson, 2014). Additionally, studies found that educators of the deaf are not always linguistically or educationally qualified to be working with deaf populations (Heimann & Rudner, 2017). Inquiries and research such as this endeavor may serve to bring awareness of research-based practices that enhance deaf literacy, as well as signal a need for greater teacher training and professional development support. Much of the problematic aspects of current barriers facing deaf learners are rooted in the history surrounding deaf education.

Theoretical Framework

A minority group suffering from lack of linguistic rights and the consequences of educational decisions made decades ago, deaf students have faced silence along many sectors. They have been victim to educational decisions that were made by well-intentioned legislators, misguided clinicians, and eugenicists (Valente & Boldt, 2016; Kristoffersen & Simonsen, 2014; Bell, 2019). The culmination of this tumultuous history has resulted in a disjunct between theory and practice in deaf literacy education. Despite

research findings that support visual language equality to auditory language in neurological processing, phonological awareness skills remain auditory centric; even for deaf learners (Allen et al., 2014; Luckner, 2013).

Utilizing Critical Theory principles, Critical Pedagogy is an educational approach that seeks to reimagine traditional concepts of authority in the classroom, and instead promote a critical democracy. Noted proponent of Critical Pedagogy, Henry Giroux (1986), elaborated that this concept positions teachers as "bearers of critical knowledge, rules, and values through which they consciously articulate and problematize their relationship to each other, to students, to subject matter, and to the wider community (p. 103)." In his work titled "Pedagogy of the Oppressed" (1970), Critical Pedagogy founder Paulo Freire presents a compelling case for the implementation of critical pedagogy among oppressed groups. Education history has favored auditory processes in instruction and assessment (Good et al., 2003). This practice continues despite studies such as Mayberry et al. (2011) that indicate that spoken phonological skills account for small amounts of variance in reading ability. This pervasive practice fails to incorporate research-based practices for teaching deaf children key foundational elements of literacy in a modality best suited to their needs. The structured binary of privileged hearing versus deaf continues to create barriers for deaf leaners.

Subset of Critical Pedagogy

This study will seek to incorporate Critical Pedagogy in an attempt to identify gaps between research and practice in the form of pedagogical contradictions. In addition to Freire's key figure in the critical pedagogy debate is Joe Kincheloe. In a review of Kincheloe's works, Agnello and Reynolds (2016) noted that through Kincheloe's critical

lens, “teachers as researchers are professionally driven by critical, self-, and social reflection (p. 74).” Through inquiry, this study will take account of the knowledge teachers of the deaf have regarding visual interventions for phonological awareness building skills when teaching children. The results of this study will identify if teachers have been adequately taught and trained and if they are incorporating these practices in their classrooms. Findings may allow for further development of teacher education programs for the deaf, and professional development opportunities.

While Kincheloe views teachers as researchers, Henry Giroux views teachers as transformative intellectuals. This perspective allows for a shift in the authority and power balance that allows them to address issues of injustice and oppression to form solidarity. Giroux calls this new role for transformative intellectuals, emancipatory authority (Giroux, 1986). This democratic shift from traditional outlooks on pedagogy create a liberating environment of learning that seeks to disrupt institutions of oppression.

Another founding member of the Critical Pedagogy movement and coauthor with Paulo Freire, is Ira Shor. Shor participates in applying the critical lens to another subset of Critical Pedagogy called Critical Literacy. Unrau and Alvermann (2013) define Critical Literacy’s intent as to, “emancipate and empower those who have become subordinated and marginalized.” Shor recognizes the marginalization that occurs within the literacy field. He objects to the inequality born from Standard Usage’s disregard of “lesser” dialects or even revered canons that marginalize and prioritize literary works (Shor, 2017). Shor’s application of Critical Pedagogy in the classroom allows for students and teachers to “act as agents of social change (Breunig, 2011).”

Studies using Critical Pedagogy

Critical Pedagogy has been applied to serval types of studies. In her autoethnographic narrative, Basabe (2019) uses Critical Pedagogy as a framework to critique and deconstruct her own teaching practices in the English language classroom. She allows this deconstruction to propel a more student-generated setting with greater transparency in her engagement with students regarding her teaching practices (p. 68). Spear and da Costa (2018) incorporate a critical pedagogy approach in examining teacher training programs and transforming gender norms in schools.

Critics of Critical Pedagogy

Critical Pedagogy is not without its opponents. Several critics object to the implementation of Critical Pedagogy, claiming it to be too ideological or a vehicle to promote radical political activism. Philosopher John Searle argues that Critical Pedagogy's belief that the Western-centric canon is lacking in diversity and oppressive in nature is hardly the responsibility of education. He states, "it is not the aim of education to provide a representation or sample of everything that has been thought and written, but to give students access to works of high quality. [Education therefore] is by its very nature 'elitist' and 'hierarchical' because it is designed to enable and encourage the student to discriminate between what is good and what is bad, what is intelligent and what is stupid, what is true and what is false (Searle, 1990)." A fellow objector, Maxine Hairston (1993) finds the incorporation of Critical Pedagogy at the writing level destructive to freshman English courses, and the likely fault of writing courses being housed in the English department. She goes on to further object that users of this theory are merely using it to create a political stronghold in the "lower floors of English departments (p.

183).” O’Dair (2003) also rejects Critical Pedagogy what she sees as potential unintended consequences in encouraging students to identify implicit bias. She argues that in doing this, they may experience an alienation from their own cultures or religions that are proponents of the bias. Thus, she argues, the empowerment intent of Critical Literacy may damage the characteristics of home cultures (p. 184). In addition to O’Dair et al. (2018) applied Critical Pedagogy to teacher education to research the disruption of problematic practices in health education teacher education (p. 511).

Application to a research study

Like the aforementioned researchers, this study will also incorporate Critical Pedagogy to identify if there are any lingering practices in deaf educational practice from historically oppressive institutions. This survey seeks to identify if gaps in research-based practices stem from a need for more empowering practices to be implemented in teacher training and professional development opportunities for teachers of the deaf. By integrating this framework, survey results from this study can be processed with a critical approach to identifying marginalizing approaches to phonological awareness skill instruction when teaching deaf students.

Significance of the Study

Research is still needed to gauge the effectiveness of phonological interventions for the deaf and hard-of-hearing (Eissa 2017). Deaf and hard-of-hearing students routinely lag behind their hearing peers (Marscharket al., 2011). Recent findings indicate new ways to view phonological awareness in the deaf brain as well as successful visual interventions (Allen et al., 2014). However, there exist gaps in educators’ knowledge of this area of literacy (Messier & Jackson, 2014). In Stevenson’s (2014) study, they noted

that an incorporation of Visual Phonics in conjunction with a phonics program improved grapheme-phoneme correspondence. This study is significant because it investigates educators of the deaf and the frequency in their incorporation practices of visual interventions such as Visual Phonics to promote phonological awareness through visual means rather than auditory means to promote articulation.

The study will impact deaf education by potentially illuminating a lack of research-based visual intervention practices. Through the lens of Critical Pedagogy, this study will seek to identify if any oppressive practices of auditory assessment that persist in deaf education have any impact on teacher training and their usage of visual interventions when teaching phonological awareness skills. Findings from this study may assist districts and schools to include more teacher training and professional development that provides access and training support to teachers who are not currently using this method or who have not been taught to use this type of intervention. Educators will benefit from the findings of this study as it will affirm their training and education or expose gaps and a greater need for their administration to provide more training and materials to support phonological awareness skills training. Students will also benefit from the study as it includes educators and teachers in the conversation regarding historical factors that may be still guiding phonological awareness skills instruction. Depending on results of the study, students may benefit from greater knowledge of a gap between research and practice surrounding phonological awareness skill instruction. Should the results of the study indicate that teachers are already practicing this method, this study can benefit students by providing more opportunities to research other reasons that might be contributing to current lags in deaf literacy.

Purpose of the Study

The purpose of this study is to determine the frequency of visual interventions during phonological awareness skill instruction, and the access to phonological awareness instruction from teacher training and professional development.

Research Questions

1. How frequently do teachers of the Deaf incorporate research-based practices of visual interventions during phonological awareness instruction?
2. Do educators of the deaf perceive Visual Phonics to have tangible benefits on deaf students' overall literacy?
3. When do educators of the deaf believe they should be exposed to Visual Phonics?

Hypothesis

Teachers trained to use Visual Phonics frequently integrate this intervention when instructing phonological awareness skills due to their perceived benefit of the program to the overall literacy performance of their deaf students. Further, educators of the deaf advocate for more training opportunities within pre-service and in-service settings.

Definition of Terms

Deaf: In their article entitled "Deafness and learning loss," the World Health Organization (WHO) categorizes 'deaf' people as people with profound hearing loss that often use sign language to communicate.

Hard-of-Hearing: The WHO uses this term to categorize people with mild to severe hearing loss who often use spoken language and assistive devices to communicate.

Visual Phonics: Similar to a visual representation of the International Phonetic Alphabet, Visual Phonics is a system of 52 hand symbols that represent the sounds of English (What Is See the Sound).

Limitations

The study will be sampling from a group who have already been trained in Visual Phonics. This may affect their opinion of its perceived benefits to overall literacy. However, assurances of anonymity will potentially alleviate this disclosure. Additionally, teachers reporting the frequency of usage of this program may be inflated as teachers could feel pressured to exaggerate usage. Again, anonymity measures will be set in place to mitigate this issue.

Summary

The continuing disparity between deaf literacy and their hearing peers persists despite advancements and discoveries in interventions to address phonological awareness, and a new perspective that allows for literacy gains to be made without articulation or use of hearing. Educators of the deaf may not yet have the support or training to implement these new frameworks within their classrooms. This study seeks identify the frequency of this particular program and its perceived benefits to overall literacy. Additionally, further survey questions will identify whether training in this intervention occurred during pre-service or in-service education, and what setting teachers believe this training would be beneficial.

Chapter 2: Review of Literature

This review of literature examines the history and philosophical debates that surround deaf literacy and the role of phonological awareness instruction for the deaf learner. Gaps between current research and practice indicate reasons for deaf educators still struggling to align theory with practice in the continuously changing field of deaf literacy (Easterbrooks et al., 2015). The historical, and even global, debate surrounding deaf education has been heavily influenced between an oralist (Bell, 1929) versus natural sign language divide (Cummins, 1991). As the bilingual/bicultural model of incorporating sign language to teach English emerges from a language interdependence theory foundation (Humphries et al., 2014; Cummins, 1991), fractures continue in the literacy debate over whole language versus direct instruction for phonological elements of language (Power & Leigh, 2000) and the use of multimodal interventions in place of audio centric instructional methods that focus only on articulation gains.

While the method of approach remains ongoing, more challenges face educators and researchers alike. One is the fact that while language interdependence has become a more acceptable mode of deaf education; preferred over oralism, over 90% of deaf children are born to hearing parents (NIH, 2016). This places deaf children at a unique place of risks they may not immediately have exposure to a natural sign language as parents are initially unprepared to meet their child's language needs (Lutz, 2017). This period of language delay, while parents consider auditory language via cochlear implants or hearing aids, American Sign Language, a manual version of English, or some combination of the above approaches can lead to an increased risk of language deprivation (Hall, 2017).

A further barrier in implementing the language interdependence approach is ASL's lack of a print form (Goldin-Meadow & Mayberry, 2001). This lack combined with the unique language delay risks of deaf students as well as the ongoing challenges and struggles between oralist and ASL proponents can result in a range of gaps between theory and practice for educators of the deaf.

Organization of Literature

The following review of literature seeks to first explore historical events that created theories and debates surrounding deaf literacy methods. The review seeks to explain why varied approaches and disconnect may still remain within current practice. Organization of this review will be thematic.

This chapter also seeks to address the ongoing phonological awareness delays in D/HH students (Eissa, 2017) and how the exposure to early visual language interventions can replicate auditory processes for the same successful phonological processing results. While traditionally, research and interventions consistently refer to auditory methods and articulation gains, this review indicates that this may be on the basis of misconception as ASL does indeed have its own phonological elements that can be accessed in addition to emerging multi-modal methods paired with direct instruction. By exploring these facets of deaf literacy instruction and research-based practice, the review seeks to further evaluate how the aforementioned factors may inhibit educators from being fully informed and consequently in need of more targeted and updated training and support.

Introduction to Deaf Literacy

Debate over Deaf Literacy

The topic of deaf literacy has long been plagued by diverting educational approaches. An unwieldy combination of historical events, clinical versus holistic perspectives, language characteristics, and misconceptions have all profoundly affected the direction of deaf literacy. Due to this array of factors, a disconnect in instructional approaches exist between research and practice (Easterbrooks et al., 2015). This disconnect is present at even the smallest element of deaf literacy, phonological awareness. This review of literature will investigate factors that have contributed to the divergence in literature and practice, as well as explore other factors that may impact the implementation of research-based interventions designed to support phonological awareness in deaf/hard-of-hearing literacy instruction.

The usage of English versus American Sign language as a means of educating the deaf originated with a strong advocate for the oralist method (Bell, 1929). Alexander Graham Bell retains a kind of infamy amongst today's Deaf community for his strong opposition to the use of sign language. However, language researchers and further study of sign language and language acquisition brought about an opposing approach to Bell's stance. In a response to the oralist method, Cummins' theory of language interdependence undergirds the importance of harnessing sign language as the language foundation. This begins the bilingual/bicultural (bi-bi) model of deaf education (Cummins, 1991; Humphries et al., 2014). Thus, the idea of incorporating sign language as a first language to then teach the second language, English begins to gain in popularity within the American school system.

However, this small population is met by ongoing controversy governed by varying interpretations of disability policy. Approximately 80,000 deaf individuals

receiving IDEA services (United States Government Accountability Office, 2011; IDEA, 2012). As the bilingual/ bicultural approach to deaf education begins to take flight, IDEA's mandate of "least restrictive environment" is questioned within the scope of deaf education. Restraining this already small population to residential schools for the deaf and deaf/hard-of-hearing classrooms creates some controversy if this practice is in fact restrictive and in violation of IDEA policy. Pitman and Huefner (2001) suggest that it is "...timely to ask whether the courts will come to view bi-bi not as an educational methodology but as an approach that provides children who are deaf with access to their own language for at least part of their instruction (p. 197)." Valente and Boldt (2016) echo this sentiment in their support of the inclusive model in their support statement that: "inclusion policies that are intended to be progressive, providing the least restrictive environment for children identified as having disabilities, are highly problematic for deaf children because they remove the children from the community of their deaf, language learning peers (p. 340)." The tension between mainstream approaches versus bilingual/bicultural approaches, that see deaf children more isolated but amongst their deaf peers, remain present within academic debate while contextual situations continue to be researched. Parents of young deaf learners are faced by both oralist versus ASL approach choices, as well as choosing between mainstreamed classrooms with interpreters or schools for the deaf.

Yet another layer added to the deaf literacy education debate is the debate between whole language versus direct instruction. A controversy that has impacted mainstream approaches as well, this literacy debate is further confounded by the continuing investigations into phonological coding for deaf learners. While research has

continued to make strides in understanding what processes are available to deaf learners using only sign language and deaf learners using assistive devices or residual hearing to process English the phonological coding process still in question for deaf learners results in a conflict between opposing support for whole language versus direct instruction (Power & Leigh, 2000). Whole language versus direct instruction seeks to isolate one method to best instruct deaf learners. However, as Van Staden (2013) stated,

> ...if literacy, and specifically reading, pedagogy is informed by the broader notion of constructivism, it should acknowledge individual differences in children's preparedness for literacy and reading achievement, and must reflect a definite understanding of the processes involved in learning to read and write. In doing so it should move away from an 'either/or' approach in trying to uphold the fallacious notion that there is only one single 'best' method to teach signing deaf children to read and write (p. 316).

This sentiment is contrasted by some proponents of the bilingual/bicultural movement.

Whole Language Versus Phonics Debate

Being a recognized and distinct language apart from English, ASL has made progress in this recognition towards bilingual/bicultural (bi/bi) classroom instruction through residential schools for the deaf and deaf/hard-of-hearing classrooms (LaSasso & Lollis, 2003). The bi/bi classroom uses sign language as a medium to teach all subjects including the surrounding majority language as a second language. Dammeyer and Marschark (2016) note in their study of bi/bi programs that this approach allows deaf students to learn via their true native language, signed language, and incorporate those

language skills to then learn English or the predominant surrounding language as a second language. Many of these programs incorporate Cummin's (1970) linguistic interdependence theory as the bi/bi setting hopes to create strong foundations in ASL to then bridge language skills to the acquisition of English. This approach adapts an ESL approach while viewing deaf learners as ELLs. The bi/bi method's holistic platform also includes an adaption of Goodman's whole language approach (Ewodt, 1981). Somewhat in opposition with phonics teaching, whole language seeks to instruct English in its entirety rather than by parts. This method more closely resembles natural first language acquisition. Proponents of the bi/bi model embrace the instruction of English through a holistic bilingual setting that uses ASL as a foundation. However, Mayer and Wells (1996) contest this assumption by stating that purely holistic instruction fails to recognize the unique features of ASL such as a lack of a formal written system as well as the lack of a strong home language to support the native language. They argue that it is these features that make ASL distinct from other spoken languages and ESL settings.

In their critique of linguistic interdependence within the bi/bi deaf classrooms, Mayer and Wells (1996) demonstrate that ASL's conceptual signs, while equivalent to any spoken language, fail to allow a truly comprehensive interdependence experience because ASL's signs do not have the equivalent morphemes that offer one-to-one correspondence, ASL's signs do not directly code from free morphemes to English print, nor does ASL possess an distinct orthographic system as it adapts English's system in signed form. Mason and Ewoldt (1996) refute this distinction by insisting that English's written form is sufficient with ASL's status as a full and natural language. In a survey of literacy practices used to teach deaf students, Easterbrooks and Stephenson (2006)

acknowledged this diversion of beliefs within the deaf education field. They note that while the body of literature for this specific topic is still growing, there is already a marked opposition in research studies. Easterbrooks and Stephenson (2006) acknowledge that it may be that some students benefit from phonics instruction, and others do not. Regardless, they acknowledge that some of the contrast in the phonics vs. whole language debate may be because "deaf educators do not address phonological components of reading (p. 387)." Unfortunately, the single "best" method is continuously being explored and literacy practices lag as research speeds on. However, the debate over deaf literacy is not the only factor presenting a divergence in research and practice.

Deaf Children with Deaf or Hearing Parents/Language Deprivation

Another factor affecting the direction of deaf literacy is the language reality for the average deaf individual. According to the National Institute of Health (2016), "more than 90 percent of deaf children are born to hearing parents." This creates a dynamic that is rarely optimal for the language environment of a deaf child. In her 2017 study, Lutz found that, "most hearing parents are not expecting their child to be deaf and, therefore, are not immediately prepared to think about their deaf child's access to language (pp. 4-5)." Unprepared parents are quickly faced between choosing which mode of language their child should use.

Learning a brand-new language such as American Sign Language could prove daunting for an entire family. However, Hal (2017) contends that "claims that spoken language-only approaches are more effective are not rooted in an objective research foundation and may interfere with healthy development of deaf children (p. 963)." Should there be hesitation from the family or a lack of access to either spoken or signed

language, the consequences could be catastrophic to a young deaf learner. The risk of language deprivation is significant within the typical structure of deaf children's families (Hal, 2017). Language deprivation is an insidious threat to deaf students born to hearing families. They can be threatened by language deprivation in even the most accommodating classroom situations. Even deaf students in bimodal/bicultural classrooms were unable to access literacy events in a manner parallel to their hearing peers because of the visio-spatial nature of the young students' language, and a lack of access to multi-party talk with their peers. Kristoffersen and Simonsen added that even in an integrated setting, deaf students did not have equal access to literacy events that would potentially delay their language exposure (Kristoffersen & Simonsen, 2014).

ASL's Distinction from English

While educational approach squabbles and first language choices can contribute to language delay, for those who have chosen American Sign Language as a primary language, more challenges are tangled in the process of language transfer from ASL to English. While ASL has been established linguistically as a natural language (Stokoe, 1960), it is a visual language with some unique distinctions from English. One distinction is that ASL has a lack of a print language (Goldin-Meadow & Mayberry, 2001). Therefore, print literacy instruction from ASL to English is faced with the obstacle of no print system in ASL.

In addition to the unique characteristics of being a visual mode of language and having no formal print system, ASL enjoys a differing place of origin that affects its syntax, morphology, and even some of its semantics. ASL's origins can historically be traced to France, further distancing ASL from English (Marvelli, 2010). ASL's grammar

structure which originated from Old French Sign Language still enjoys some similarities to French Sign Language (Schlenker et al., 2016). Other signs appear to have borrowed or adapted signs what indicated the some ASL signs are a product of the French language and LSF rather than English (Kowalsky & Meier, 2013). Despite being a visual language with no auditory components, researchers have been able to identify within ASL's morphemes, phonological and syllabic features and restrictions unique from English yet visually similar to the auditory phonological elements of spoken languages (Berent et al., 2013). The linguistic gaps between ASL and English further solidify ASL as a natural language. However, the distinctions can present further questions into the most successful method of promoting literacy for users of ASL.

Importance of PA to Literacy

Prominent in the discussion and controversy surrounding deaf literacy is the role of phonological awareness. The National Reading Panel (2000) states that promoting phonological awareness at home can lead to improvements in reading. Phonological awareness is related to early reading (Chall, 1967). However, sound recognition is immediately impacted by the nature of deafness. Therefore, phonemic awareness and letter-sound correspondence create an initial barrier to further phonological awareness. Ehri (1998) observed that "phonemic awareness and letter knowledge are important determiners of reading acquisition during the first couple of years (p. 40)." A research-based intervention and resource for teachers provided by Florida State University's research center defined and offered these guidelines for supporting phonological awareness among diverse learners:

> ...typical schools, approximately 10-15 minutes per day should be dedicated to the development of phonological awareness skills in kindergarten. Schools that serve high proportions of students "at risk" for reading problems, because of poverty or lack of experience with the English language, may need to spend more time stimulating the development of phonemic awareness in order to ensure that all students make adequate progress in this area. Strong phonological awareness instruction incorporates explicit instruction, teacher modeling, guided practice, and independent practice of the skill. Phonological awareness skills progress from simple to complex by the difficulty level of the skill. At the highest, or most difficult, level of phonological awareness, which is referred to as phonemic awareness, students demonstrate the ability to hear, identify, and manipulate the individual sounds (phonemes) in words (*Phonological Awareness*).

Reading researcher, Jeanne Chall echoed this advice in her own investigations of phonological awareness by suggesting that direct instruction is better than meaning approaches and that code emphasis programs produce better readers (1967). Reading research continues to emphasize the importance of phonological awareness and its role as one of the building blocks to early literacy acquisition (Kim et al., 2019).

The National Reading Panel (2000) lists phonological awareness as a skill central to literacy development and a notable means of predicting future reading skill. However, phonological awareness' role in literacy acquisition is not limited to English. In Kim's (2009) findings of phonological awareness' role in Korean literacy acquisition she found

that “the results of this study confirmed that it is important for young Korean children to develop letter- name knowledge and phonological awareness for their literacy acquisition in Korean (i.e., word reading, pseudoword reading, and spelling)” (p. 923). Some researchers argue that while phonological awareness does play a role in predicting early reading skills and impacts literacy acquisition, the bulk of reading research on this topic is limited to English phonological awareness. Educational researcher, David Share, cautions that the distant orthographic features of English may provide inaccurate understandings that are not as broadly generalizable to languages with more transparent orthographies (Share, 2008). However, a recent study of phonological awareness development and impact on early literacy in Hebrew did affirm the results of similarities to English speaking studies with only the deletion of the end consonant as a language specific deviation (Wasserstein & Lipka, 2019). Phonological awareness is assumed to be of importance to the acquisition of English, but the transference from ASL remains a point of contention as many key phonological awareness interventions and exercise require an auditory element. For English, the manipulation of sound is key in the process of developing phonological awareness for coding and reading fluency (*Phonological Awareness*). As Share (2008) discussed, English’s distant orthography plays a role in why phonological awareness is a key determiner of English literacy and why the bulk of reading research defaults to an English perspective of phonological awareness. These “anglocentricities” in reading research and practice even account for English literacy education’s persistent use of oral reading (Share, 2008). For deaf learners in the United States, learning some form of English is required for survival, regardless of their choice or imposed choice of a first language. However, education debates, historical education

events, and the phonological features of English continue to muddle access and opportunities for deaf learners.

Historical Practices and Misconceptions

History of Deaf Education

The history of deaf education in the United States originates from Europe. It was European religious endeavors that founded the first deaf education institutions. (Marvelli, 2010). In mid 1816, a man named Thomas Gallaudet travels to Europe in search of learning more about deaf education. There he meets Laurant Clerc, an educator who had learned the French method of communication for the deaf (Marvelli, 2010). Together, Gallaudet and Clerc return to the US, and opened the first state funded special education school using only sign language for its first 50 years (Marvelli, 2010). Upon the founding of this special education school, a college was built on this legacy and oral schools remain unentertained in the US' venture into Deaf education. (Marvelli, 2010). However, during the mid 1860's, the "articulation" method arrives in the US and schools supporting this new approach begin to form (Marvelli, 2010; Bell, 1918). As support grows for the oral method of deaf education in place of sign language, Clerc and Gallaudet provided job training to teachers maintaining the sign language approach, but they are low in funding (Marvelli, 2010). The oral method training is more foreign and its training naturally evolves into preservice teacher training (Marvelli, 2010**)**. To counter this formalization and growth, Gallaudet successfully obtains congressional funding. However, this move prompts the AG Bell society to also seek formal training. (Brill 1971; Dudley, 1893). The early 1900's now sees a boom in oral training and teachers' education (Marvelli, 2010**)**.

However, the presence of divergent methods is still lurking within all education systems. A need for standardization in teacher's education creates a bitter controversy resulting in the requirement of manual communication to be eliminated from the approaches (Marvelli, 2010**)**. Manual communication all but fades until bilingualism and theories like Cummins' (1981) Common Underlying Proficiency model for language transfer become popular. As the resurgence gains momentum, ASL uses do see setback due to inclusion policy interpretations. IDEA's Least Restrictive Environments (LRE) impacts parents, educators, students and deaf schools in the debate regarding the interpretation LRE and how it applies to residential schools for the deaf (Marvelli, 2010**)**. The tensions underpinning the history of the American deaf educational approach is further fractured by policy implementations and continued discussion between sign language versus oral language. As these debates rage on, the continued reality is that phonological awareness is essential for English language fluency, and deaf readers persistently experience phonological awareness delays.

Phonological Awareness Delays in D/HH Students

In Eissa's (2017) review of phonological intervention programs for those with language disorders (deaf included), Eissa noted that they were "... significantly slower than their age matched peers in developing PA skills placing them at an additional disadvantage for developing successful reading skills, the results of the herein studies were suggestive of the positive effects of phonological awareness intervention in classrooms dedicated to children with speech and/or language disorders" (Eissa, 2017). These observations were echoed by Laybaert (2000) in her study which noted that deaf students' errors included, "...in English SPONCH for *sponge*; in French OUFERT for

ouvert). Leybaert's (2000) findings suggest that non-phonetic misspellings arise not because deaf children are unable to appreciate the mapping between written and spoken language, but rather from their difficulty in establishing an accurate phonological representation of specific words (p. 293)." Again, English's distant orthography seemingly the root of this disconnect for deaf learners. Further studies, (Dyer et al., 2000), noted this delay in phonological awareness "... typically performance on such tasks fails to reach the level of hearing peers of the same reading age (RA) let alone those of the same chronological age (CA) (p. 216)." Marschark et al. (2011) concluded that this delay in phonological awareness was to blame for poor print literacy outcomes.

Early Language Exposure's Impact on Phonological Awareness

Skotara et al. (2012) noted in a comparison study that early access to a natural language greatly improved the learners' ability to acquire a second language. Skotara et al. (2012) further noted that those with little exposure to any natural language at an early age suffered from language deprivation which hindered future learning and the ability to scaffold concepts to another language's content. As stated previously, the situation of deaf individuals is not ideal to early language exposure due to the fact that most deaf individuals are born into hearing families unprepared to make immediate and significant language choices for their new child. In an experimental study across multiple orthographies varying in depth, Clark et al. (2016) concluded that deaf reading skills were explained by the early language theory rather than dual-route theory or orthographic depth theory. This conclusion agreed with Dimling's (2010) single-subject designed study that vocabulary interventions in sign language resulted in higher literacy achievements. In somewhat of a contradictory note, McQuarrie and Abbot (2013) found

that overall language proficiency was the best predictor for phonological awareness skills.

For deaf learners, phonological awareness development's tie to early language is not limited to only auditory early language. Allen et al. (2014), affirmed that, "...the impact of early language (visual or auditory) on the developing brain that has shown that the regions of the brain involved with the phonological processing of a sound-based language are identical to those involved in the phonological processing of a visually based language (p. 347)." Since phonological awareness skills are key to learning English, early language exposure is essential in creating a foundation for language transfer. Early sign language exposure supports the Developmental Interdependence hypothesis claims that exposure to L2 (English) is dependent on proficiency in L1(ASL) (Cummins, 1979). Early language must be present to develop necessary phonological awareness processing. On this foundation, Cummins' Common Underlying Proficiency model for language transfer claims that these phonological processes can then be transferred and applied to English (Cummins, 1981; Green & Tran, 1984). However, application of this theory in light of research-based evidence that affirms early language exposure's role in phonological processing is not always guaranteed.

Misconceptions of Auditory Role in Phonological Awareness

While growing research continues to affirm the correlation between early access to a natural language and reading skills, there remains contradictions as to the utilization of residual hearing and its effect on literacy. Bowers and Schwarz (2013) note that findings in their single participant study indicate that subjects with residual hearing enjoyed higher basic concept of comprehension in general. However,

Kristoffersen and Simonsen (2014) argue that including the presence of cochlear implants, "there is no scientific evidence that one particular mode of communication is more effective for language perception and production and social participation for this group of deaf children (p. 81)." Most of the studies acknowledged that participants came from a range of deafness. Dimling (2010) specified that the range of participants being studied was a range from moderate to severe. Rather than categorizing the range of deafness as a variable, most deaf literacy studies opted to include the independent variable of hearing students as a control group. The issue of variability within deaf learners' phonological awareness is tied to prelingual hearing loss or the presence of residual hearing.

With "normal hearing" becoming a more popular control group category for deaf literacy studies, auditory functionality in phonological awareness studies is being reexamined. Traditionally, phonological awareness was taught from spoken language phonological skills (McQuarrie & Abbot, 2013). Once considered a feature of only spoken language, neuroimaging now suggests that auditory language is not required for phonological development (Allen et al., 2014). Further neurolinguistic research has identified the depths of the phonological processes present in visual language communication. Petitto et al. (2001) found that visual language users "...utilize identical brain tissue as hearing speakers when processing identical linguistic functions (e.g. phonetic-syllabic units in sign are processed in the identical secondary auditory tissue as hearing people even though this tissue has never processed sound in the deaf signers (p. 460)." However, this realization of phonological awareness' independence of auditory language and articulation results is not universally accepted by deaf literacy researchers.

Some researchers continue to study phonological awareness interventions among deaf learners without using natural sign languages or visual processes of phonological awareness as a foundation. In her investigation into phonemic awareness and word reading, Roberts (2005) links articulation and phonemic awareness while highlighting perception of speech.

McQuarrie and Abbot (2013) countered this practice with their study which concluded that: a significant relationship existed between ASL phonological awareness, written word recognition, and reading comprehension (p. 96). Echoing Cummins' Common Underlying Proficiency model (1981), McQuarrie and Abbot (2013) stressed that ASL phonological awareness may be an important ingredient in the lexical development of deaf children. Ehri (1998) insisted that,

> Processing spoken language is not governed by "end" organs such as eyes and ears, but rather is governed by central phonological structures in the brain. Processing speech is not a matter of processing sounds, but instead is a matter of processing combinations of rapidly executed, co-articulated, motoric gestures that are controlled by central processes in the brain. Such processing far exceeds the limits of the ear. The critical phonemic segments that speakers and listeners must process do not lie in the signal itself; rather they lie in the brain and are detected and processed successfully by speakers and listeners because they both possess the same mental equipment (p. 40).

However, these discoveries of equitable processes to deaf learners struggling with English literacy are often overlooked. The insidious historical contexts of oralism versus

ASL remain as a lingering bias. Holistic efforts to encourage literacy achievement are often abandoned for more prescriptive views that label a deaf learner as something broken in need of fixing to achieve something close to normal. Due to the number of factors that persist in affecting deaf literacy and the nature of language exposure to the deaf individual, articulation continues to loom as a mark of literacy progress rather than overall literacy development.

Articulation Versus Overall Literacy Gains/Deficiency of Evidence

Articulation has long been hailed as means to measure aspects of literacy and phonological awareness skills. Further, in English literacy instruction, oral reading is often noted as a marker of successful learning (Lyon, 1998). Even literacy institutions such as the National Reading Panel use oral language as an indicator of basic early literacy skills (Luckner, 2013). This foundational element is tied into assessment and instructional methods for deaf learners. Despite recognition of visual language processing and coding, auditory methods and articulation output remain imbedded in current educational practices (Ehri, 1998).

A standard set of assessments for K-8 literacy is the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) tests (Good et al., 2003). However, the use of DIBELS is questioned by those in deaf education because of its hearing component (Luckner, 2013). Some language researchers continue to argue that newborns can be identified early enough and make use of residual language successfully (Luckner, 2013). However, subsequent research continues to affirm that oral language is not the key and therefore instruction and assessment that continue to measure this language product are inaccurate. In their 2011 study, Mayberry et al. found that spoken language phonological skills only

accounted for 11% variance in reading ability among deaf learners (p. 82). Miller's (1997) findings further indicated that levels of phonemic awareness not significantly impacted by education in speech versus sign. However, articulation errors remain as a section on the DIBELS subtest (Luckner, 2013). These tests continue to be administered to test phonological awareness skills for deaf learners. Crume (2013) noted that while these practices persist, only limited research has been conducted on the potential use of American Sign Language PA (ASL PA) in deaf education (p. 465). Hall (2017) questioned this continued practice, default, and direction of deaf education stating that when sign language inclusive language exposure offers more compared to less spoken language only exposure, the choice should be more criticized by clinicians. Instead, trends in education continue to emphasize articulation gains rather than considering overall literacy achievement for the deaf learner or harnessing ASL's presence of phonological elements to then promote language transfer.

Visual Language and Interventions

Presence of Phonological Elements within ASL

Though a visual language, the mode of American Sign Language has no bearing on its categorization of a natural language. It is a language absent of a written system and auditory articulation. However, it possesses within itself all qualifiers of a natural language and therefore contains every element of foundational language, including phonological elements. While this may initially seem contradictory, language researchers have been able to identify visual features and linguistic limitations that parallel the phonological elements present in spoken languages. Much of ASL research was documented by the linguist, William Stokoe. Stokoe tracked and documented ASL to

identify these linguistic features. In his studies, Stokoe noted that there existed many historical ties between ASL to French (1960). A French priest named L'Eppe is credited with fashioning many signs in an endeavor to educate deaf children (Stokoe, 1960). From these more iconic and artificial creations, Stokoe notes that arbitrary signs form as the language evolves. As the language becomes more arbitrary, L'Eppe's predecessor, Sicard notes diacritics in linguistic documentation (Stokoe, 1960). Old French Sign Language is embraced and by Gallaudet and Clerc and it becomes the foundation for the development of American Sign Language. As the language continues to depart further from its surrounding spoken languages, even taking on a Subject Verb Object syntax, ASL is often misunderstood as being a manual version of spoken English. In objection to this notion, Dyer et al. (2000) noted that "signed languages bear no systematic relationship to orthographic systems, which reflect the structure of speech within the speaking hearing community (p. 215)."

In his investigation and documentation of American Sign Language, Stokoe noted a phonological element imbedded in signs (1960). He coined the phonological study of signs as Cherology. While Stokoe's coined terminology failed to gain popularity, ASL's phonological structure continues to be identified. Baus et al. expanded on ASL's phonological elements by noting that location, movement, and handshape are noted to be the smallest phonological units within sign language (2014). In addition to the individual phonological units of sign language, further element of phonology is noted by Berent et al. (2013) in their study which identified phonological constraints identified in ASL as well as syllabic principles within the properties of signs.

Emerging Multi-modal Methods that Use Visual Interventions and DI

Though still not universally accepted, research had begun to investigate visual interventions that incorporate multi-modal methods using direct instruction for deaf student. Studies research multi-modal methods for deaf learners included a larger range of interventions that spanned from computer-based interventions, adapted phonemic interventions, and the use of visual phonics. These studies also occurred in a range of educational settings, and across various signed languages. Despite the somewhat lack of uniformity in this emerging research endeavor, many studies noted favorable literacy outcomes for deaf and hard of hearing students (Bennett, 2014). Piretti et al. (2015) noted in that phonemic awareness and literacy are enhanced by multi modal approaches. Haris et al. found in their 2017 study that "the finding that letter-sound knowledge was associated with phonological awareness in the present study suggests that training in grapheme–phoneme correspondences might also be helpful as has been shown in a recent computer-based training study carried out in Sweden (p. 708)." Tucci and Easterbrooks (2015) reported similar findings noting that, "...the children without functional hearing in this study were able to learn letter-sound correspondence, contributing to the discussion of whether children with limited access to sound can learn this skill (p. 287)." Other sign fingerspelling as a vocabulary intervention assisted deaf students in visually decoding vocabulary items (Dimling, 2010).

The majority of phonological awareness intervention studies incorporated the use of Visual Phonics. Visual Phonics is an instruction tool that uses hand shapes and gestures to indicate each sound within the alphabet. The program's website describes the tool as a "...visual, kinesthetic version of IPA (What Is See the Sound)." These codes-based signs are independent of American Sign Language. Tucci and Easterbrooks (2015)

defined Visual Phonics as: "handshapes often mimic aspects of the movements made during oral production of the sound and may link visually or kinesthetically to letter shape (p. 280)." This type of intervention is linked across phonological awareness studies as a successful approach to improve early reading skills for deaf literacy. Lederberg et al. (2014) further explained in their study that "code-based interventions that combined instruction on phonological awareness with instruction on alphabetic knowledge (including letter knowledge and early decoding strategies) had the largest effect size (p. 440)." Visual phonics coupled with Direct Instruction indicated the most successful outcomes. Wang et al. (2013) also indicated successful use of this combination, stating that, "...the present study was that Visual Phonics in combination with a Direct Instruction phonics based curriculum infused by technology in a language-enriched classroom was able to improve early reading skills for preschool students who were d/Deaf or hard of hearing. In addition, the skills were sustained in early elementary school (p. 118)." The mode of phonological skill instruction makes decoding for deaf students possible. Narr (2008) elaborated that "the language of instruction can remain manual (via ASL), and the previously inaccessible or partially accessible features of spoken English are rendered accessible (p. 415)."

The visual pathway coding has been proven to be equitable to the "The results of this study show that reading instruction using visual phonics may be a viable tool in teaching phonological awareness and decoding skills with some DHH students. Narr (2008) elaborates that Visual Phonics provides visual, tactile, and kinesthetic support for phoneme perception, without the need for hearing or articulation (p. 414)." Multi-sensory interventions offer significant improvement in reading (Van Staden, 2013). These

improvements are not merely limited to deaf populations. Moses et al. (2015) observed that "although the literacy development of minority populations (e.g., deaf) has typically been viewed from a deficit perspective, evidence suggests that hearing children may also benefit from research-based strategies that have been found to be effective for deaf children (p. 485)." Research-based strategies, while available and identified, are not always equally implemented in the classroom setting. Further research suggests that educators may require additional training or education to support implementation of research-based, multi-sensory interventions to promote phonological awareness skills and abilities in deaf students.

Educators of the Deaf Knowledge

Unfortunately, gaps between research and practice appear to be present and affecting instruction as further research indicates that educators are unfamiliar with key components of phonological awareness instruction (Messier & Jackson, 2014).
In addition, it was suggested that strong sign skills were a vital component to both the educators and the pupils: "...general proficiency in sign language is critical for development of reading comprehension in DHH signing children... (Homer et al., 2017, p. 406)." However, Messier and Jackson (2014) found that this was not the case in their study which assessed educators of the deaf and their knowledge of phonological and phonemic awareness. Messier and Jackson (2014) concluded that "approximately 50% of the educators were unable to answer more than half of the items accurately on the TKS, and none of the educators answered more than 10 of the 12 items accurately. On the multiple-choice items Phoneme awareness is important when teaching children who are

d/Deaf or hard of hearing to learn to read and Phonics instruction is..., over 70% of the educators answered inaccurately (p. 528)."

Gaps between theory and practice exist in observed practice in the deaf classroom. Easterbrooks et al. (2006) and Donne and Zigmond (2008) noted that surveyed teachers had insufficient training in incorporating phonological awareness practices and even indicated that some teachers believed that bolstering these skills were not appropriate for deaf students. Teachers are not always prepared for content areas and the effects are disadvantageous to the success of deaf children. Kluwin and Moories (1989) noted emphasized this aspect of learning obstacles in their study that found "...the quality of instruction a hearing-impaired child receives is the prime determinant of achievement (p. 327)." Some studies found that educators qualifications defaulted either sign skills or education. Teachers in Kelly et al.'s 2003 study were either not qualified to work with the deaf or not properly qualified with the needed education and certifications.

In addition, researchers suggest the need for better training in teacher preparation programs in the area of reading instruction, types of phonic/phonemic awareness instruction, and importance of varying instructional groupings (Donne & Zigmond, 2008, p. 234). Teachers unfamiliar with working with deaf and give them direct less attention. Thus, "failing to support visual attention, targeted information processing, and acquisition of the self-regulation strategies necessary to benefit from instruction (Marschark & Knoors, 2012, p. 153)." While there is emerging research aimed at the practice of visual interventions for deaf literacy, there still remains a sparse research base for educational practices for the deaf (Easterbrooks & Stephenson, 2006). More work needs to be done in making phonological awareness linguistic principles applicable to

sign language sign language phonological awareness (Crume, 2013). Easterbrooks and Stephenson (2006) note that the body of research is disproportionate in serving the specific academic needs of deaf learners:

> Compared to the thousands of data-based articles available on the age-old communication battle (i.e., on the relative virtues of spoken language, signed forms of English, and ASL), the research on teaching and learning of academic subjects such as reading, writing, mathematics, science, and social studies is negligible. Of the hundreds of articles reviewed for the present project by multiple reviewers, only a few dozen met standards of rigor associated with empirical research (p. 395).

The lack of literature may be what has disadvantaged deaf educators making them ill prepared to incorporate visual instructional methods to support deaf and hard of hearing learners.

Conclusion

The history of deaf literacy is still deeply affected by polarizing viewpoints that have opposing aims. Even noted efforts to support bilingualism have been hindered by varying interpretations of how residential schools for the deaf and deaf and hard of hearing classrooms might fit into or contradict least restrictive environment mandates (Humphries et al., 2014; IDEA, 2012; Pitman & Huefner, 2001). With oralism versus sign language debates still maintaining the bulk of the current research conversation, decoding strategies appropriate to deaf learners have not received a necessary amount of research attention (Bell, 1918; Easterbrooks & Stephenson, 2006). Though multiple studies have verified that visual language is decoded in the same way auditory language,

and linguists have established phonological elements in sign language, efforts to transition this knowledge into practical instructional methods that use language interdependence principles to promote phonological awareness skills in ASL and English have been few and varied in approach (Humphries et al., 2014; Cummins, 1991; Crume, 2013). The results of this gap in literature appears to have affected the preparedness of educators for the deaf leaving gaps in practice within the classroom (Marschark & Knoors, 2012; Easterbrooks & Stephenson 2006). Further research should be conducted to determine what aspects of visual interventions educators of the deaf are familiar with, and if teacher education or professional development plays a role in their knowledge of and implementation of research-based instructional methods for improving phonological awareness skills using visual modes for processing.

Chapter 3: Methodology

In light of the recent discoveries of the role of phonological awareness in English literacy for deaf learners, phonological processing accessibility in visual and auditory pathways, and an acknowledged lack of research into decoding strategies for the deaf, this study sought to further investigate one educational approach that may support deaf literacy by providing decoding tools that allow for access into the phonological elements of grapheme-phoneme correspondence (Easterbrooks & Stephenson, 2006). Due to the tumultuous changes and division within the history of deaf education, deaf educators may be lacking appropriate exposure and support into the use of instructional tools like Visual Phonics. This study sought to learn from educators who currently incorporate Visual Phonics, with the hopes that other educators and school administrators can identify the benefits of these types of tools and provide opportunities for educators to become better versed in the usage of these approaches.

In incorporating a critical pedagogy paradigm, this study aim was to identify successful practices by experienced educators and learn more about their usage of Visual Phonics tools, their perception of its efficacy for deaf students' literacy achievements, when they believe this tool should be introduced to educators, and if they are being supported by their school administration through in-service training or if they anticipate future trainings. The population chosen for this study were teachers of the deaf who have received training and are certified to use Visual Phonics in their classrooms. The method of collecting data to answer the study's research questions was an anonymous survey disseminated via email to certified trainers and trainees who had received training in Visual Phonics. This method was chosen to locate the small population of educators of

the deaf using Visual Phonics and elicit their experience and interaction with Visual Phonics; both in the classroom and throughout their own training and education. The research questions this study endeavored to answer are as follows:

1. How frequently do teachers of the Deaf incorporate research-based practices of visual interventions during phonological awareness instruction?
2. 2 Do educators of the deaf perceive Visual Phonics to have tangible benefits on deaf students' overall literacy?
3. When do educators of the deaf believe they should be exposed to Visual Phonics?

Research Design

The research design of this study was a quantitative, non-experimental design. An online questionnaire was sent to recipients of Visual Phonics training to determine the frequency in their use the Visual Phonics, in what setting they use Visual Phonics, and if these educators where introduced to Visual Phonics via teacher education or professional development opportunities. The study investigated perceptions of the efficacy of this approach, initial introduction to this instructional tool, as well as attitudes surrounding when this Visual Phonics should be introduced to educators. The majority of the survey included close ended questions designed to investigate how educators of the deaf use Visual Phonics, the frequency of usage, the support they receive from their institutions, and if they anticipate future training.

Paradigm

A critical pedagogy paradigm was integrated into this study to draw focus to possible gaps in teacher education or professional development that may be contributing to continued delays by deaf students despite research based visual interventions that have

documented success. As a marginalized group belonging at times to both disability and ESL groups, deaf learners may benefit from the critical analysis this paradigm offers in connection to their educators' preparation and integration of research-based literacy practices (Unrau & Alvermann, 2013). The critical pedagogy paradigm allowed for an analysis of teaching practices and an opportunity to invest in pre-service teacher education preparation for those becoming educators of the deaf.

Methodology

The International Communication Learning Institute (ICLI) is the nonprofit organization that hosts the instruction of multi-sensory approaches that include See the Sound-Visual Phonics. For this study, web-based surveys were constructed in an online platform and disseminated via email to the certified trainers for Visual Phonics. The trainers chosen for this population were trainers identified by ICLI as individuals that work within deaf education. The certified trainers were then requested to disseminate the surveys to their own trainee contacts and colleagues who met the qualification of Visual Phonics users working in deaf education. The study used quantitative survey research to answer the questions:

1. How frequently do teachers of the Deaf incorporate research-based practices of visual interventions during phonological awareness instruction?
2. Do educators of the deaf perceive Visual Phonics to have tangible benefits on deaf students' overall literacy?
3. When do educators of the deaf believe they should be exposed to Visual Phonics?

Collected questionnaire data were statistically analyzed for mode, frequency and statistical significance between deaf and hearing groups to ascertain answers to the questions above.

Research Site

The site of research for this study was hosted online using an online survey website that was emailed to participants. All interactions were remote using online survey tools and emailed links. The survey tool was hosted by the Survey Monkey platform. Participants received a clickable link to the survey in their emails. Emails were sent from the researcher's academic email account, to the potential participants provided by ICLI. The certified trainer recipients of the survey were encouraged to distribute these surveys further to any contacts they have who meet the qualifications of educators of the deaf who use Visual Phonics. The Visual Phonics trainers distributed these surveys via email or posting the links on social media groups for Deaf and Hard-of-Hearing educators. The survey link was framed by messages that indicated that participants must be Visual Phonics users and educators of the deaf.

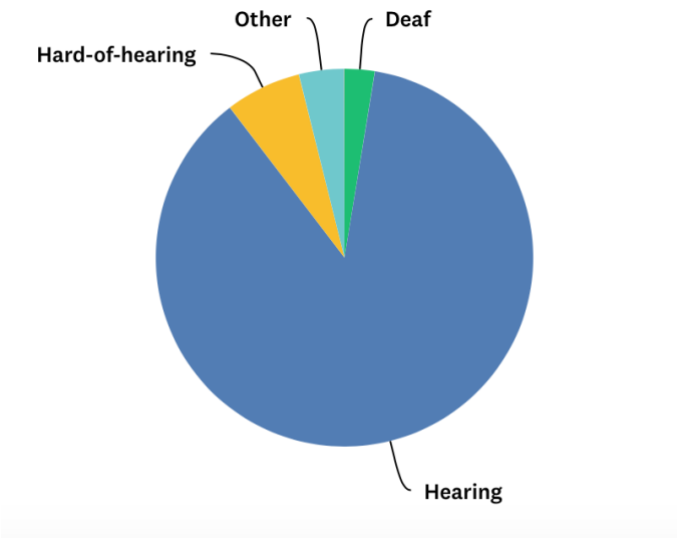
Participants

Participants were survey respondents who have received Visual Phonics training by a certified trainer. Participants were deaf or hearing teachers and of any educational background. All participants were educators of the deaf who have already been using Visual Phonics in their classroom or educational setting. Participants were also certified trainers for Visual Phonics. These individuals fell under the qualifications for this population as they have been trained by other certified trainers and use Visual Phonics in

their own educational setting. The chart indicates the self-identification of respondents to this survey:

Figure 2

Demographic Information



The majority of respondents, 87.01%, identified as hearing. Those who identified as Deaf comprised of 2.6% of the total sample, while 6.49% identified as Hard-of-hearing. The remainder, 3.9% identified as "Other."

Instrumentation

The web-based questionnaire was the tool administered to address the research questions: How frequently do teachers of the Deaf incorporate research-based practices of visual interventions during phonological awareness instruction? Do educators of the deaf perceive Visual Phonics to have tangible benefits on deaf students' overall literacy? When do educators of the deaf believe they should be exposed to Visual Phonics? The survey had a total of four questions. Two questions are multiple choice. Two questions will be measured using a 5-point Likert scale. Each of the Likert scale questions have several items to be rated along agreement and frequency. Please see

Appendix A for a copy of the questionnaire. This survey and scale were selected for this study as it allowed an examination of teacher education and professional development, and the usage of visual phonological awareness interventions in the deaf/hard-of-hearing classroom.

Procedures

After being granted exemption status from St. John University's IRB process, links to the web-based questionnaire, Survey Monkey, were sent to Visual Phonics certified trainers, who work within the field of deaf education, with the request that they be disseminated to trainee contacts. These trainers were identified and listed on the See the Sound: Visual Phonics website under an interactive map that provides trainer contact information (See the Sound). Additionally, See the Sound had further identified trainers and trainees who specifically work within deaf education and have provided the researcher with contacts to this group. Using an initial cluster sampling method to concentrate participants from the Visual Phonics trainers' contacts, snowball sampling was then used to disseminate emails with web questionnaire links sent by trainers who were asked to further distribute surveys to trainees. Participants had four weeks to complete the survey. Reminder emails from the researcher as well as the trainers followed the initial distribution of the survey email. Participants had the option to decline to answer each of the questions. Participant demographic questions did not contain any identifiable information. Further, the survey tool had been set to not record any personal information such as an IP address or email address.

Protection of Human Subjects

Upon submission to St. John's IRB board, the IRB granted the proposal for this study an exempt status. The survey had taken every consideration in refraining from collecting identifying information such as name, title, or location. The survey tool had been set to not collect email addresses or IP addresses. All responses to the survey were voluntary and anonymous. Further, each question in the survey had the option to "decline to state" as an answer. The method for distribution chosen for this study was intended to protect participants from any unnecessary interaction with the researcher or disclosure of identity. To enable this, the snowball sampling method allowed many of the participants to receive the survey via email or social media post from Visual Phonics trainers or colleagues rather than directly from the researcher. This minimized the researcher's ability to retain any personal or contact information from the trainees.

Data Analysis

At the closing time, the survey was collected from the web-based questionnaire site. All data was anonymous and stored on a password protected, encrypted flashdrive. The data was assessed and analyzed through Survey Monkey's data organizers and calculation tools. Data analysis was dependent on each item of the questionnaire. The demographic data and the opinion multiple choice question were analyzed for subtotals as well as additional written data for the "other, please specify" choice. The series of items within the Likert questions were aggregated into negative and positive larger categories and the percentages will be analyzed and interpreted. Using paired t-tests, statistical significance between participant self-identification as deaf or hearing and their responses regarding efficacy of the Visual Phonics tool will measured to further understand how respondents identify may affect their perceptions of Visual Phonics.

Presentation of Findings

Findings are presented in the form of charts and graphs created in the data analysis process within Survey Monkey's own graphing tools. Charts displaying median data for each question are displayed, as well a cross-tabulations that have broken down responses of deaf responses versus hearing responses. A chi-test is then used to ascertain if there is any statistically significant difference between the responses of each self-identified group. Demographic data is displayed via pie chart using subtotals. The population mean will be indicated as (n=) along with each description of percentage totals and any categories that have been aggregated.

Ethical Considerations/ Potential Research Bias

The researcher is aware that survey questions can be phrased in a manner that may present underlying bias. Therefore, questions were constructed with neutral phrasing and a decline-to-state option for each question. All data was anonymized upon receipt and excluded from the study and data analysis process to ensure confidentiality. While the sampling is from a group already trained in this program, anonymity measures were taken to ensure that honest responses possibly indicating a lack of use of this program were not able to identify any individual. Further, the researcher provided an early version of the survey to a pilot test group to identify and help improve the wording and question setup.

Internal Validity and Reliability

Some issues with internal validity was the selection of subjects. However, using snowball sampling method allowed for more randomization to occur and thus minimize this threat. Additionally, ICLI's cooperation in identifying and assisting in disseminating

the survey to appropriate participants who qualified for the survey improved validity. This cooperation and assistance allowed for the survey to be disseminated to those who met the qualifications of being educators of the deaf who use Visual Phonics. This measure ensured that the population was controlled to meet the qualifications and provide more accurate responses since participants would have uniform qualifications. However, the snowball sampling method also allowed or randomization in the selection process since the Visual Phonics trainers were responsible for further disseminating the survey rather than the researcher.

External Validity and Limitations

While the participants sampled ranged from the entirety of the US, generalizability may still be limited due to varying policy and historical events experienced by each State. States and districts should be aware that this sample may not be representative of their own faculty depending on where they were educated, trained, and at what school they are now teaching. Additionally, some participants may be deaf themselves. This may affect their survey results should they have additional insight into the historical contexts surrounding audio versus visual interventions and assessment. The only demographic data selected for this study includes information regarding the identity of Deaf, hearing, Hard-of-hearing, or other. This demographic data is displayed using a pie chart to better understand the related responses from each type of participant.

Summary

The methodology employed in this study served to complement the critical pedagogy paradigm in collecting data from educators of the deaf already using instructional tools to improve grapheme- phoneme correspondence with their students.

The survey collected data with the aim to determine the ways and the frequency educators of the deaf use Visual Phonics in their classrooms. The anonymity and closed ended questions provided educators a means to anonymously share their perceptions of the tool's efficacy, if they require further training, and when they believe other educators of the deaf should be introduced to Visual Phonics.

Chapter 4: Analysis of Findings

The purpose of this study is to add to the small but growing body of research investigating instructional strategies to support phonological awareness instruction for students who are deaf or hard-of-hearing. Using the lens of critical pedagogy, this study seeks to understand how teachers are using innovative phonological awareness building strategies to support deaf students despite historically oppressive structures that do not account for phonological processing through visual means. By identifying how teachers use this approach, when they use this approach, their perceptions of Visual Phonics efficacy, and when they believe teachers should be introduced to this approach, this study can create a foundation for more formal integration of Visual Phonics into teachers' pre-service and in-service education. By anonymously surveying educators of the deaf who are already trained to use Visual Phonics, we can learn more about how to use this instructional strategy and when educators might best benefit from being introduced this approach.

The data collected from the survey was analyzed in relation to each research question guiding this study. Multiple choice questions including demographic questions are presented as percentages. Likert questions are five-point scale style questions that measure frequency and agreement. Each Likert question has included an N/A option. For some of the frequency questions, the categories Never and Rarely as well as A Moderate Amount and A Great Deal are aggregated and presented as one category to indicate positive leaning and negative leaning results. For the agreement questions, Strongly Disagree and Disagree, as well as Agree and Strongly Agree are totaled into one category to indicate positive leaning and negative leaning results. The total population of this

sample was 77 participants (N=77). The total for each category or aggregated category is included with the percentage totals below as: (n=#) to indicate the number of respondents in each category or aggregated category. Each response to the Likert scale questions was assessed for statistical significance of correlation between deaf and hearing respondents and their responses to frequency and agreement statements. However, due to the small sample size, no statistical significance was indicated between groups.

Research Question 1

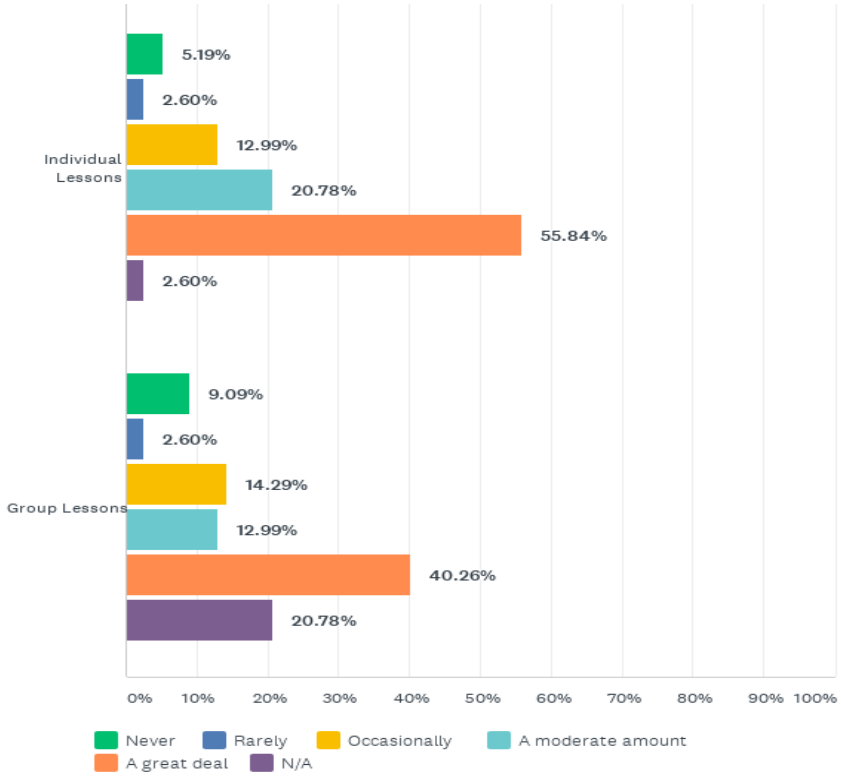
The first research question guiding this study was: *How frequently do teachers of the Deaf incorporate research-based practices of visual interventions during phonological awareness instruction?* Frequency styled, five-point Likert questions with an additional N/A answer option were constructed to obtain data regarding Visual Phonics implementation in group phonics lessons and individual phonics lessons. The research question guiding this study regarding frequency of implementation was segmented into two separate survey questions. One question asked the frequency of Visual Phonics implementation in group lessons, and the next question asked the frequency of Visual Phonics implementation in individual lessons. This allowed for a greater understanding of not only usage frequency, but also settings that promoted frequency.

When positively aggregated for frequency of usage (A Moderate Amount or A Great Deal categories), 53.25% (n=41) of respondents answered that they implement Visual Phonics when group phonics lessons. 20.78% (n=16) of respondents answered N/A to this question regarding their frequency of usage in implementing Visual Phonics in a group setting. While there was not a statistically significant difference between

groups of respondents who chose individual settings for Visual Phonics implementation versus group settings for Visual Phonics implementation, a greater percentage of participants indicated that Visual Phonics was frequently used when teaching students in a one-on-one setting. When positively aggregated (A Moderate Amount or A Great Deal categories), 76.62% (n=59) of respondents indicated the frequency of their Visual Phonics usage when working individually with students on their phonics lessons. Two respondents answered N/A to this question. When negatively aggregated, six respondents answered Never or Rarely to indicate the frequency of usage during individual phonics lessons with deaf students. The chart below indicates the responses from the frequency of implementation questions. The image on the left represents the response for Visual Phonics implementation frequency in group lesson settings, and the image on the right indicates the responses for Visual Phonics implementation frequency in individual lesson settings. Each category below represents responses that have not been positively or negatively aggregated.

Figure 3

Group/Individual Frequency



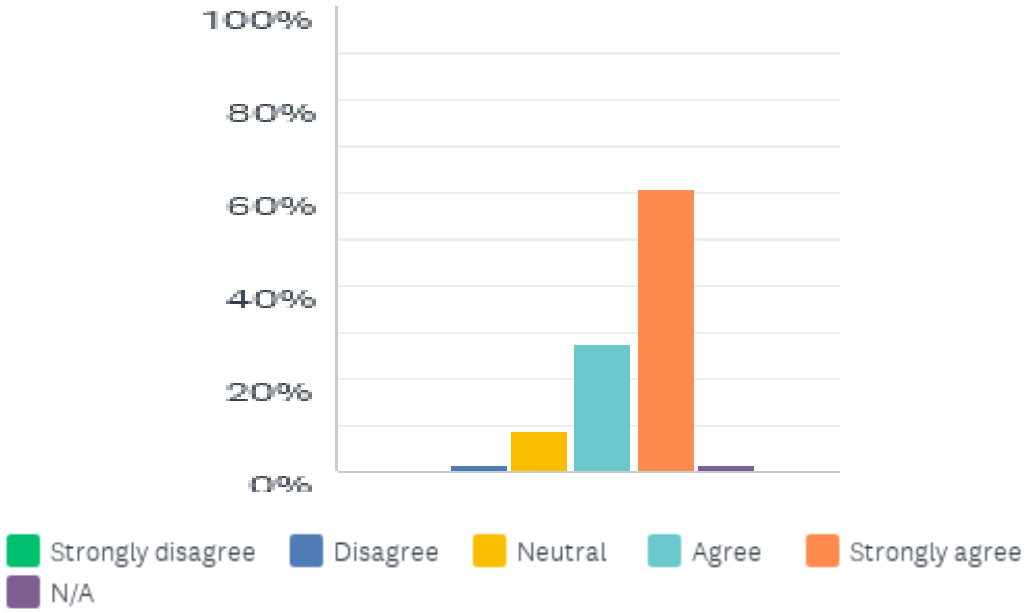
The collected data from survey responses indicates that while Visual Phonics is employed in both group phonics lessons and when working individually with students on phonics lessons, Visual Phonics is more frequently employed in individual settings. Additionally, a greater number of participants opted for N/A or Never in response to the frequency of their implementation of Visual Phonics in group lessons compared to those who reported the frequency of their implementation of Visual Phonics in individual lessons. However, the same number of participants reported their usage as Rarely in both settings. When both positively aggregated and unaggregated, Visual Phonics is more frequently employed in individual and one-on-one phonics lessons.

Research Question 2

The second research question this study sought to answer was: *Do educators of the deaf perceive Visual Phonics to have tangible benefits on deaf students' overall literacy?* An aggregate response indicated a strong majority of participants agreed that Visual Phonics contributed to the overall literacy of deaf students. This majority accounted for 61.04% (n=47) of respondents that indicated that they Strongly Agreed with the statement: *Visual Phonics contributes to deaf students' overall literacy*. None of the participants selected Strongly Disagree, and one participant selected Disagree. When positively aggregated, (Agree and Strongly Agree categories), 88.31% (n=68) agreed that Visual Phonics contributes to deaf students' overall literacy. Based on these percentages, most of the sample's teachers of the deaf trained to use Visual Phonics in the classroom indicated that they do perceive Visual Phonics to have tangible benefits on deaf students' overall literacy. The chart below indicates how respondents agreed or disagreed with the statement: Visual Phonics contributes to deaf students' overall literacy. The chart below includes the original responses without any aggregation.

Figure 4

Perceived Literacy Contribution



The highest number of answers in this distribution was the Strongly Agree category. The next highest grouping of responses was the Agree category. When considering the corresponding research question guiding this study, most of the study participants indicated that the perceived Visual Phonics to have tangible benefits on deaf students' overall literacy. Participants' perception of the efficacy of Visual Phonics is indicated in their selection of the Strongly Agree category of responses to the aforementioned question.

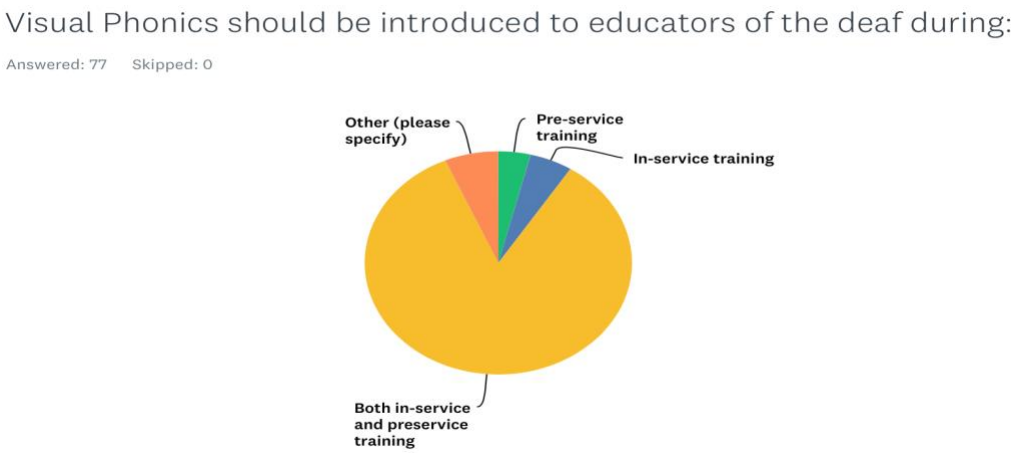
Research Question 3

The final question guiding this study was: *When do educators of the deaf believe they should be exposed to Visual Phonics?* In collecting data from a population of

teachers of the deaf who have already been trained to use Visual Phonics, it was important to this study to learn when they, as educators of the deaf, believed it was a good time in their career education for Visual Phonics introduction. The majority of respondents believed that the introduction of Visual Phonics for educators of the deaf should occur during both pre-service and in-service education. This accounted for 84.42 % (n=65) of respondents who indicated that they believed Visual Phonics should be introduced to educators of the deaf in both their pre-service and in-service education. While not statistically significant in comparison to other answers, the majority of educators of the deaf already trained to use Visual Phonics indicated in the chart below that Visual Phonics training should be introduced to teachers at both their teacher training programs and their in-service or professional development trainings:

Figure 5

Introduction of Visual Phonics



Of the 5 respondents that chose the Other option, their answers included:

- "Visual Phonics should be introduced to all Elementary Educators of the deaf"

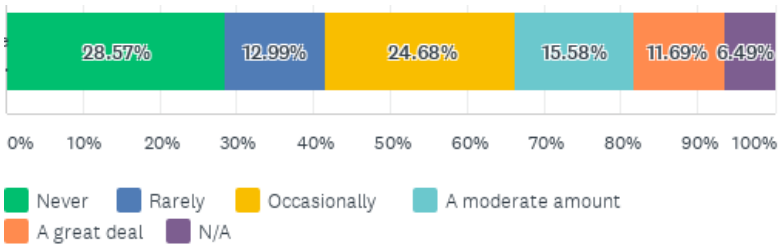
- “all of the above and Teacher Training programs”
- “In college!”

While this sample’s most predominant answer to the question of when educators of the deaf should be introduced to Visual Phonics was both in-service and preservice training, this answer contradicted with the reality of these educators’ own introduction to Visual Phonics. When asked if their teacher training program equipped them to use Visual Phonics as an intervention tool for phonics instruction, educators of the deaf disagreed. When negatively aggregated (Strongly Disagree and Disagree), 64.93% (n=50) of respondents disagreed with the statement: My teacher training program equipped me to use Visual Phonics as an intervention tool for phonics instruction. However, when asked about if their professional development programs had equipped them to use Visual Phonics as an intervention tool for phonics instruction, teachers of the deaf responded with a more positively distributed agreement. When aggregated positively (Agree and Strongly Agree categories combined) 75.45% (n=58) agreed to the statement: My professional development programs equipped me to use Visual Phonics as an intervention tool for phonics instruction. Respondents indicated favorably that professional development programs had contributed to their ability to use Visual Phonics in their practice. However, respondents indicated that their school administration was not always the supplier of training. When negatively aggregated (Never and Rarely) 41.56% (n=32) disagreed that they received training and resource support in Visual Phonics from their school administration. Regarding administrative support, 24.68% (n=19) of respondents stated that they occasionally received training and resource support in Visual Phonics.

The chart below indicates the distribution of agreement to the statement: *I receive training and resource support in Visual Phonics from my school administration*.

Figure 6

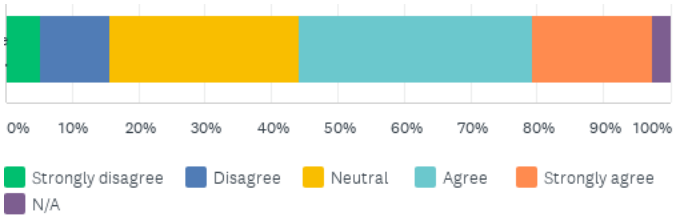
Administration Support



Survey participants were also asked if they anticipated needing more training for Visual Phonics in the future. When positively aggregated (Agree and Strongly Agree categories combined), 53.24% (n=41) respondents indicated that they agreed that they anticipated additional training for Visual Phonics in the future. Respondents totaling 28.57 % (n=22) gave a neutral response to this question; indicating neither agreement nor disagreement for the anticipation of future Visual Phonics training. When negatively aggregated (Strongly Disagree and Disagree categories combined), 15.58% (n=12) disagreed with the anticipation of future training for Visual Phonics. The was no statistical significance in standard deviations between the variability of each Likert response group who responded to this question. The below chart indicates the distribution of percent responses to the question asking if participants anticipated future training for Visual Phonics:

Figure 7

Future Training



Hypothesis

The guiding hypothesis maintained that: teachers trained to use Visual Phonics frequently integrate this intervention when instructing phonological awareness skills due to their perceived benefit of the program to the overall literacy performance of their deaf students. Further, educators of the deaf advocate for more training opportunities within pre-service and in-service settings. While the sample size and distribution of responses did not allow for a statistically significant group, the percentages of respondents indicating their frequency of Visual Phonics usage in both group and individual phonics instruction represented the majority of respondents. When positively aggregated, (Agree and Strongly Agree categories), 88.31% (n=68) agreed with that Visual Phonics contributes to deaf students' overall literacy. While 53.24% (n=41) respondents indicated that they agreed that they anticipated additional training for Visual Phonics in the future, 84.42 % (n=65) agreed that Visual Phonics training should occur in both pre-service and In-service settings. Given the distribution of answer percentages as well as majority responses, each segment of the hypothesis can be accepted.

Chapter 5: Discussion

The following discussion highlights sections of the study results and presents an interpretation of the collected quantitative data. The results discussion will follow the order of the results section's explanation of findings for each of the research questions. This section will also highlight how the results may compare with prior research concerning Visual Phonics usage. Additionally, this section will discuss how these results might have implications for both future research and practice.

Interpretation of Results

While none of the responses, either individual categories nor aggregated responses, were statistically significant, the percentage totals can still provide useful information regarding educators of the deaf and their frequency of usage in employing Visual Phonics in both group and individual settings. Based on aggregate responses, educators of the deaf positively indicated that the frequently incorporated Visual Phonics into both group and individual phonics lessons. However, the percentage totals for usage frequency of Visual Phonics within individual phonics lessons was higher than that of group phonics lessons. This data indicates that while most educators of the deaf frequently employ Visual Phonics in their own phonics lessons, their usage increased when working with students individually.

An overwhelming majority of respondents agreed that Visual Phonics contributes to deaf students' overall literacy. The sampling for this study limited respondents to educators of the deaf who use and have been trained in Visual Phonics. Understanding this sample's qualifications allows for some illumination into the positive responses indicating agreement over the statement of Visual Phonics contribution to deaf students'

overall literacy. Nevertheless, the data is still helpful in understanding the attitudes regarding and perceived efficacy of Visual Phonics by users well connected with this approach.

While the great majority of respondents indicated that it was their belief that Visual Phonics should be introduced to educators of the deaf during both pre-service training and in-service training, the majority percentage of respondents disagreed that their own teacher training program had equipped them to use Visual Phonics as an intervention tool for phonics instruction. Additionally, educators of the deaf disagreed that their school administration provided them with training and resource support for Visual Phonics. Conversely, teachers of the deaf favorably indicated that their professional development programs had equipped them to use Visual Phonics as an intervention tool for phonics instruction. A slimmer majority of respondents indicated that they anticipated the need for additional training for Visual Phonics in the future.

These results provide insight into training experience for teachers of the deaf who have already been introduced to Visual Phonics. Based on the responses, it appears that while educators of the deaf find it beneficial to be introduced to Visual Phonics during their teacher training programs and professional development programs, the majority of the respondents did not have access to Visual Phonics training in their teacher training programs. Instead, most had encountered Visual Phonics training through professional development programs. Further, while professional development programs were providing satisfactory training of Visual Phonics, respondents did not perceive their school administration to be providing sufficient training or resource support. As there were still some respondents that believed they would require additional training in Visual

Phonics, respondents did not indicate confidence that their school administration would be able to provide such training.

Relationship Between Results and Prior Research

The body of research surrounding Visual Phonics is a growing, yet still small group of research. Smaller still is the quantitative survey data investigating educators of the deaf and their interactions with Visual Phonics. Narr and Cawthorn (2011) conducted one study investigating how Visual Phonics was used. While a similar sampling method was employed this study did report a wider demographic that included practitioners such as speech pathologists, regular education teachers, reading specialists, and interpreters. However, this study did indicate a similarly high percentage of respondents that indicated that their Visual Phonics training source was professional development (n=170, 85%) (Narr & Cawthorn, 2011). While the Narr and Cawthorn (2011) study did not ask its participants about overall literacy, it did indicate that "95% of respondents agreed strongly or somewhat agreed that Visual Phonics improves phonemic awareness... (p.74)."

Implications for Future Research

Prior research indicates that the Visual Phonics approach incorporated with a phonics program can enhance deaf learners' reading skills (Wang, Spychala, Harris, & Oetting, 2013). This study indicates that practitioners currently working in the deaf education field perceive Visual Phonics to have a positive impact on deaf students' overall literacy. Further, this study indicates that educators of the deaf believe that Visual Phonics should be a part of teacher training programs. However, both this study and others reveal that teacher training programs are not the source for Visual Phonics

training. Using the lens of Critical Pedagogy, the implications of this study and prior research illuminate a gap in teacher education that may be contributing to the lack of Visual Phonics implementation for the larger deaf educator population. Future research should investigate why teacher training programs have failed to incorporate this research-based approach when equipping educators of the deaf. Additionally, future research should consider the success of professional development programs in conjunction with the lack of support from school administration and develop further studies into why this disconnect exists.

Further research should also investigate the efficacy of Visual Phonics as it contributes to overall literacy. While this study and others indicate that educators of the deaf perceive Visual Phonics to have a positive contribution to overall literacy for deaf learners, further research should investigate if this is in fact true. An experimentally designed study that collects both qualitative and quantitative longitudinal data between a control and treatment group may further illuminate how efficient Visual Phonics is in contributing to each aspect of a deaf learner's literacy skills.

Implication for Future Practice

This study provides several implications for future practice with regards to teacher training programs, school administration support, and group versus individual settings for Visual Phonics implementation. The results of this study imply that teacher training programs are lacking in fully equipping educators of the deaf to use the Visual Phonics approach in phonics lessons. Therefore, teacher training programs should consider incorporating an introduction to Visual Phonics into their curricula.

Additionally, while professional development training remains the primary source of an introduction into Visual Phonics, school administration with deaf or hard-of-hearing students should provide additional support to their teachers in navigating Visual Phonics implementation in their classrooms. Finally, the study illuminates the settings in which educators of the deaf employed Visual Phonics. While both group and individual settings reported using Visual Phonics frequently, the higher percentage belonged to individual instruction of phonics. Therefore, future practices in one-on-on phonics instruction should consider incorporating the Visual Phonics approach when conducting phonics lessons.

APPENDIX A

Figure B: Survey Questionnaire

Question 1: I identify as:

(1)Deaf (2)Hearing (3)Hard-of-hearing (4)Other (5)Decline to state

Question 2: How frequently do the following statements apply to your teaching practice?

-I implement the Visual Phonics when teaching group phonics lessons.

-I utilize the Visual Phonics when working individually with students on their phonics lessons.

-I receive training and resource support in Visual Phonics from my school administration.

Never (1) Rarely (2) Occasionally (3) A moderate amount (4) A great deal (5) Decline to state (6)

Question 3: To what extent do you agree or disagree with the following statements?

-Visual Phonics contributes to deaf students' overall literacy

-My teacher training program equipped me to use Visual Phonics as an intervention tool for phonics instruction.

-My professional development programs equipped me to use Visual Phonics as an intervention tool for phonics instruction.

- I anticipate needing addition training in Visual Phonics in the future.

Strongly Disagree (1) Disagree (2) Neutral (3) Agree (4) Strongly Agree (5) Decline to state (6)

Question 4: Visual Phonics should be introduced to educators of the deaf during:

A: Pre-service training

B: In-service training

C: Both in-service and preservice training.

D. Other (please specify)

F. Decline to state

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