

USING HEIDISONGS MUSIC AS AN INSTRUCTIONAL TOOL IN THE ELEMENTARY
SCHOOL CLASSROOM: A CASE STUDY

by

Leia Denise Jobe

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2021

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ABSTRACT

The purpose of this qualitative multiple case study is to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. HeidiSongs uses multisensory structured language education to teach by engaging multiple senses simultaneously to increase retention. The theories guiding this study include Gardner's theory of multiple intelligences, which involves kinesthetic intelligences among other types of intelligences, and Krashen's theory of second language acquisition. HeidiSongs uses both musical and kinesthetic activities to enhance literacy. The central research question focused on how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. The sub-questions explored the different instructional settings where this literacy instruction could take place: whole group, small group, and individual instruction. Eleven participants were current or former users of HeidiSongs music, and data was collected virtually through documentation, individual interviews, and a single focus group interview. Data was analyzed through cross-case synthesis, searching for patterns, forming naturalistic generalizations, and explanation building. Findings indicated HeidiSongs is most applicable in the whole group setting in the elementary school classroom, with teachers and students using recall of the songs in small group and individual worktime to enhance memory. Teachers enjoyed the combination of multisensory music and movement in HeidiSongs and reported an overall positive effect on student engagement, even in diverse populations. Further research on instructional data distinguishing between audio, visual, or animated versions of the songs could help teachers determine which version of the songs is most ideal for each classroom.

Keywords: HeidiSongs, literacy instruction, multiple intelligences, multisensory structured language education

Dedication

This is dedicated to my Lord and Savior, Jesus Christ, and my incredible family. I love you more than words can say.

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List of Abbreviations

Early Childhood Education (ECE)

Educational Software for Guiding Instruction (ESGI)

Emotional Behavior Disorder (EBD)

English Language Learner (ELL)

Gradual Release of Responsibility (GRR)

Response to Intervention (RTI)

Special Education (SPED)

Transitional Kindergarten (TK)

“Music and rhythm find their way into the secret places of the soul.” Plato (Sen et al., 1967).

CHAPTER ONE: INTRODUCTION

Overview

Music has been an essential part of the human experience throughout history (Zanders, 2018). In the modern-day classroom, some teachers use a multisensory music program called HeidiSongs music to impact literacy. Research shows HeidiSongs music enhances literacy by increasing sight word recognition and phonemic awareness in kindergarten students (Martin, 2017). However, little research exists on how teachers use HeidiSongs in the classroom. I intended to study teachers' descriptions of their experiences using HeidiSongs music as an instructional tool in the elementary school classroom so other teachers could use similar programs to inform literacy and problem-solving practices in their classrooms. The problem involved a lack of understanding of how teachers use HeidiSongs in different classroom situations. Specifically, I asked questions about the different ways teachers use this instructional tool in the whole group setting as well as for small groups and with individual students. This chapter includes an overview of the background and context of the study.

Background

The history of music is as long and complicated as human history (Zanders, 2018). Both socially and theoretically, music has impacted human history (Saab, 2014). Thus, the background of this study is a rich and complex one. In learning theory, music is an essential form of human intelligence (Gardner, 2017). Musicality is an innate part of human biology (Singh & Balasubramanian, 2018). In many cultures worldwide, music is considered integral and vital in many social contexts (Saab, 2014). Music also has a long history of being used for learning purposes and creative expression (Zanders, 2018). This background section includes the historical, social, and theoretical context of music as a whole and as a learning tool. For this

study, the rich social and historical connection humans have to music was fundamental to the success of using HeidiSongs music as an instructional tool. Possible reasons for the success of HeidiSongs music as a learning tool are addressed in the theoretical context section.

Historical Context

The history of music extends back through human existence. This long history is documented in early texts, including the Bible and literature from ancient Greece. The ancient Greeks used music in education, religion, and civil ceremonies (Schoen-Nazzaro, 1978). The ancient Greek philosophers Aristotle and Plato also wrote about the healing effects of music (Zanders, 2018). Plato described the combined use of movement and music as choric arts (Schoen-Nazzaro, 1978). Music is also mentioned in the very first book of the Bible and continues throughout. For example, in Genesis, Laban asked Jacob why he ran off secretly: “Why didn’t you tell me, so I could send you away with joy and singing to the music of timbrels and harps?” (*New International Version*, 1978/2011, Genesis 31:27), which reveals that music was a significant part of early Biblical celebrations.

Although music and human history seem interwoven, some researchers go a step further toward viewing music as an essential part of humanity itself. Some of these researchers suggest that since music is innately present in all human beings, music is a biological function (Singh & Balasubramanian, 2018). Hippocrates, the father of modern medicine, also wrote about music and related it to emotions, behaviors, and moods (Zanders, 2018). The first music therapy training program was created by E. Thayer Gaston (Zanders, 2018) in the 1940s (American Music Therapy Association, 2020). Gaston identified three principles of music therapy, which are establishing or reestablishing interpersonal relationships, bringing about self-esteem through self-actualization, and utilizing the unique potential of rhythm to bring order and energize

(Zanders, 2018). Plato asserted that music, rhythm, and harmony take hold of a person's innermost soul (Schoen-Nazzaro, 1978). Because of this intense connection between music and the human soul, Plato believed that music is a useful educational tool (Schoen-Nazzaro, 1978).

When it comes to education, music has benefits for many different special populations (Markova, 2016; Martin, 2017; Walton, 2014). For both English speakers and English Language Learners (ELLs), song-based learning improves vocabulary retention, phonemic awareness, and pre-reading and literacy skills (Markova, 2016; Walton, 2014). Song and movement-based learning serves as a scaffold for struggling learners, including ELLs (Martin, 2017). All students gain long-term learning from music education because musical memory outlasts other brain functions, even despite Alzheimer's or dementia (Jacobsen et al., 2015). Historically, using music as a learning tool has been an essential component of education for centuries (Schoen-Nazzaro, 1978). Early philosophers such as Plato and Aristotle wrote about the impact of music on education and recommended music for educational purposes (Schoen-Nazzaro, 1978).

Social Context

In addition to its complex historical context, music has a dynamic social context as music brings people together and improves social bonds (Saab, 2014). Most of the components of music, from the writing of music to the playing, performance, and appreciation of music, take place in a social setting (Saab, 2014). Performing and listening to music is a part of almost every cultural group worldwide and has been throughout history (Saab, 2014). Communities, schools, families, religious organizations, performance art companies, and individuals of all ages participate in either the production of music or the appreciation of music as an audience member. Music simultaneously shapes and reflects humans' lived experiences across geographic areas and eras of time (Saab, 2014). Socially, music is hard to escape in modern America, from the stores

playing light pop hits in the background to elevator music and outdoor concerts, radio subscription services, and the use of music to catch the listener's ear in most modern television and radio advertising campaigns.

Music is inescapable in the modern world. Because of the omniscient presence and historical relevance of music, music could be easily added to modern-day elementary schools to enhance the social connection between students, teachers, parents, and community members. Music has a rich impact on both community and culture (Saab, 2014). Teachers, students, schools, and communities benefit from the application of music in a social context. Using music even results in higher cultural interconnectedness levels in diverse, multicultural classrooms (Tomlinson, 2015). According to Saab, music has the power to create identity, transform events, shape spaces, and foster cultural exchange (Saab, 2014).

Music also serves as a tool for communication and interaction with society, including peers, teachers, and classmates. Music is a useful learning tool for deaf children, autistic children, and other special populations (Berezniuk et al., 2018; Nelson et al., 2016; Vaiouli & Andreou, 2016), which helps children communicate with peers. Songs enhance motivation and positively influence language acquisition (Dzanic & Pejic, 2016; Nelson et al., 2016). For students who sing and move to HeidiSongs music, the interactive component allows both brain hemispheres to work simultaneously. When any human subject observes a face passively, only one side of the brain lights up on an MRI (Leslie et al., 2004). However, when observing a face with the intent to mimic, both sides of the participant's brains light up with activity (Leslie et al., 2004).

Social-emotional learning is an essential component of many modern-day classrooms because all students experience a large variety of emotions in all academic settings (Pekrun et al.,

2006). These emotions profoundly affect a student's learning abilities, motivations, thoughts, and behavior (Pekrun et al., 2006). According to Plato, music helps people recognize, form, reproduce, and imitate emotions (Schoen-Nazzaro, 1978). In the following section, I will review two theories that further relate music to emotions, learning, and intelligence.

Theoretical Context

Two related theories applied to this study, in which I sought to understand how teachers use HeidiSongs to enhance music in their elementary school classrooms. These two theories were Howard Gardner's theory of multiple intelligences (Gardner, 2017) and Stephen Krashen's affective filter hypothesis from his second language learning theory (Krashen, 1984). This section is a brief description of each theory's basic tenets and how each theory relates to the use of HeidiSongs music as an instructional tool in the elementary school classroom.

IQ tests measure traditional scholastic intelligence (Gardner, 2017). In his theory of multiple intelligences, Gardner explained that human beings exhibit several types of intelligence (Gardner, 2017). These other multiple intelligences include musical, bodily-kinesthetic, intrapersonal, interpersonal, naturalist, social, and emotional intelligence (Gardner, 2017). Gardner's study helped illuminate how HeidiSongs addresses multiple intelligences in the classroom setting. HeidiSongs addresses musical intelligence and kinesthetic intelligence by using songs with motions (HeidiSongs, 2017). Performing these songs and motions as a group also affects interpersonal and intrapersonal intelligence (HeidiSongs, 2017).

In today's elementary school classrooms, most students demonstrate unique combinations of the various types of intelligence, needs, and learning styles (Tomlinson, 2014). Classrooms are full of students with a myriad of musical, kinesthetic, interpersonal, scholastic, spatial, linguistic, and naturalistic tendencies, capabilities, and learning styles (Tomlinson, 2014; Zadina,

2014). Using music in the classroom as an instructional tool covers scholastic, interpersonal, musical, spatial, and bodily-kinesthetic types of intelligence all in one song. In the context of Gardner's theory, results from this study demonstrated how teachers address multiple intelligences in their classrooms by using HeidiSongs.

A second theory illuminated why music-based learning programs such as HeidiSongs is an effective learning tool. In 1984, Krashen theorized that high anxiety impedes learning (Krashen, 1984). Krashen's theory is known as the affective filter hypothesis from his second language learning theory (Krashen, 1984). The affective filter is a metaphor that refers to the learner's attitude and the emotional variables process through when attempting to learn a second language (Krashen, 1984). When the learner is stressed or has high anxiety, the filter is high and language acquisition decreases (Krashen, 1984). Lowering the filter increases learning capacity (Krashen, 1984). Ways to decrease the affective filter include increasing positive emotions such as hope and enjoyment and decreasing negative emotions such as anger and anxiety (Pekrun & Linnenbrink-Garcia, 2012; Pekrun et al., 2011). Orchestrating music together increases participants' positive perceptions of each other because of the synchronization, common purpose, and closeness mediated by participation in music-making (Harwood et al., 2016). Music also reduces cultural prejudice (Miranda & Gaudreau, 2020).

Songs have an appealing nature which creates an ideal environment for learning (Dzanic & Pejic, 2016). In 2016, researchers investigated the reason for the connection between the appealing nature of songs and their effectiveness as learning tools (Dzanic & Pejic, 2016). They discovered that the appealing nature of songs and music decreases anxiety and the decrease in anxiety increases success in learning by lowering the affective filter (Dzanic & Pejic, 2016).

HeidiSongs have successfully increased sight word recognition in kindergarten students (Martin, 2017).

Situation to Self

Research shows HeidiSongs' music enhances literacy (Martin, 2017). As a teacher, I used HeidiSongs music in my kindergarten classroom. I also found the music to increase engagement. However, I was never trained on how to use HeidiSongs in the classroom for literacy instruction. The arts have been marginalized in schools and are not considered necessary (Yenawine, 2013). Instead of seeing music as a useful instructional tool used to improve literacy, my administrators saw music as only appropriate for brief transitional periods like brain breaks or clean-up timers. With my research, I studied other teachers' descriptions of their experiences using HeidiSongs music as an instructional tool in the elementary school classroom to elaborate on the connection between music and literacy.

As a teacher, I found music to be a useful instructional tool for all the students in my kindergarten classroom. Moreover, I had a diverse class of students that included low-income students, SPED students, and students with 504 behavior plans. Only three of my students spoke English as their primary language. The other 20 students were English Language Learners (ELLs). I had difficulties keeping all the students in my classroom engaged at the same time. I struggled to teach differentiated lessons to meet all their unique needs while also meeting learning targets. I faced language barriers, cultural differences, and social-emotional difficulties.

However, music provides one solution that automatically differentiates for all learners (Butkus, 2019). Once I started using music as an instructional tool to teach phonemic awareness and sight word recognition, I noticed my students were increasingly engaged, excited, cooperative, and seemed to retain more of the lessons' information. My ELLs showed

considerable progress in sight word recognition and spelling. Classroom management improved as well because all my students were engaged and excited about learning. Also, because kindergarten students have a limited attention span, the physical movements of the songs, along with the repetition and the relatively short length of each song, improved their mental capacity. Through my musical exploration and the connection song has on literacy, I used a combination of literacy songs, including Jack Hartmann, The Phonics Dance!, and HeidiSongs.

According to Gardner's theory of multiple intelligences (2017), students have many types of intelligence beyond just scholastic. One of these types of intelligence is musical (Gardner, 2017). Research shows that ELLs benefit from learning via music because music lowers the affective filter (Lin, 2013). According to Krashen's theory of second language acquisition, lowering the affective filter enables them to learn (Krashen, 1984). When using these songs as instructional tools, I noticed that even my timid students (mostly ELLs) seemed to come alive and break out of their shells to participate in the song movements. It took them longer to master the correct pronunciation of the song lyrics, but they were not afraid to try because everyone was singing and dancing along.

Since using music as a literacy tool worked in my classroom, I was curious about why music is not more widely used or taught in conjunction literacy. In all my teacher preparation courses and kindergarten teacher conferences, I never took a class on using music as an instructional tool. Thus, in this study, I investigated the topic qualitatively to explore other teachers' descriptions of their experiences on this topic. I wanted to know how other teachers have experienced the use of music in their classrooms and improve the working knowledge teachers have on the impact music has on literacy

By approaching this study with an ontological philosophical assumption, my main goal

was to embrace the idea of multiple realities (Creswell, 2018). A researcher with an ontological approach conducts a study with the intent to report all these multiple realities (Creswell, 2018). I used my participants' actual words to present and explore their differing perspectives on the topic. While HeidiSongs worked for me, it may not work for other teachers. I intended to seek out and embrace the idea of multiple realities by pursuing teacher descriptions of how they use HeidiSongs in different classroom scenarios. I used HeidiSongs primarily in the whole group setting. However, teachers also teach in small groups and provide individualized instruction. Examining these multiple scenarios allowed for examination of multiple realities. From an axiological perspective, I hoped that an increased understanding of these multiple scenarios will help other teachers create positive change in their classrooms. Epistemologically, I believe knowledge is developed based on our perceptions and experiences, so studying the experiences of multiple teachers will create an invaluable knowledge base for other educators.

I also approached this qualitative study from a paradigm of pragmatism. Pragmatic researchers collect data from multiple sources using multiple methods, emphasize the research's practical implications, and focus on conducting research and collecting data to best answer the research questions and address the research problem (Creswell, 2018). Pragmatism involves solving practical problems that exist in the real world (Kaushik & Walsh, 2019). Whereas a constructivist approach might be common in qualitative inquiry, I was more interested in a pragmatic approach that applies theory to real-world problems. Using music in my classroom solved more problems than I could have predicted, and I was interested to see if other teachers have also experienced a similar result. In addition to helping impact literacy, HeidiSongs helped me with classroom management, student engagement, and motivation. HeidiSongs and similar music-based learning tools may be able to impact much more than literacy for future teachers.

For this reason, I was interested in providing an in-depth depiction of teacher experiences using multisensory music-based programs like HeidiSongs. Ultimately the concept of multisensory music-based learning could be used to address other real-world problems for which there may not currently be a solution. Details about such learning could provide future teachers with possible real-world solutions to specific classroom challenges they will undoubtedly face.

Problem Statement

While research documents the literacy benefits of music (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014), a gap existed in teacher descriptions of using multisensory music programs as instructional tools in the modern classroom. Students in today's classrooms exhibit various personal interests, learning needs, and cultural views, so teachers must engage these students with high yield, research based instructional strategies and support systems that appeal to a wide range of interests, approaches, and learning styles (Tomlinson, 2014). Students exposed to music in various forms (audio only, dual language, book-based, or interactive) learn new vocabulary and increase their literacy skills, sight word acquisition, pre-reading skills, and phonological awareness (Knight & Rabon, 2017; Markova, 2016; Martin, 2017; Walton, 2014). Music has also been linked to attention, sensory-motor integration, motor-skill learning, sound processing, and memory storage and retrieval (Singh & Balasubramanian, 2018). Though current research describes these benefits of music as an instructional tool, there is a need for understanding how teachers use music in real-world classrooms. Therefore, the problem of this multiple case study is a lack of understanding of how teachers use HeidiSongs music as an instructional tool in today's elementary school classrooms.

Purpose Statement

The purpose of this case study was to understand how teachers use HeidiSongs music as an instructional tool in real-world classrooms. HeidiSongs music is defined as a multisensory structured language program utilizing music as a key component (HeidiSongs, 2017). HeidiSongs music uses music and movement to teach phonics, sight words, and letter and word recognition skills to children (HeidiSongs, 2017). The theories guiding this study are Gardner's theory of multiple intelligences and Krashen's theory of second language acquisition. Gardner's theory acknowledges musical intelligence as a type of intelligence that exist in elementary school students (Gardner, 2017). According to Krashen's (1984) affective filter hypothesis from his second language learning theory, high anxiety impedes learning. The appealing nature of songs and music decreases anxiety and may therefore increase learning success by lowering the affective filter (Dzanic & Pejic, 2016). HeidiSongs' program effectively increases sight word recognition in kindergarten students (Martin, 2017). However, there was a lack of research aimed at understanding how teachers use this instructional method in the elementary school classroom.

Significance of the Study

There are significant gaps in the research regarding understanding teachers' descriptions of their experiences using HeidiSongs music as an instructional tool in the elementary school classroom. Many researchers (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014) have investigated the effects of music on literacy, but they studied various music styles. Some of these studies show a positive relationship between literacy and music as an instructional tool (Martin, 2017; Montgomery, 2014). However, there

appeared to be a lack of research aimed specifically at the teachers' descriptions of their use of HeidiSongs music as a literacy instruction tool in the elementary classroom.

Theoretical Significance

Gardner's theory of multiple intelligences (2017) recognized the existence of musical intelligence and kinesthetic intelligence. However, little research connects music and movement-based learning programs in the classroom directly to literacy enhancement. Applying and connecting both concepts to classrooms could inform the application of Gardner's theory to the elementary school classroom with profound future implications and improvements to literacy instruction. This research could also help determine the relationships between musical, kinesthetic, interpersonal, spatial-visual, and linguistic intelligence, which are all recognized types of intelligences in Gardner's theory (2017), and examine how these types of intelligences interplay with the intellectual potential of each student through literacy. Because HeidiSongs explicitly uses a combination of musical, kinesthetic, linguistic, interpersonal, and spatial-visual intelligences, examining teacher descriptions of this product's use will help connect these different types of intelligences directly to individual components of literacy like phonemic awareness, vocabulary, and reading comprehension. In 1984, Krashen theorized that high anxiety impedes learning (Krashen, 1984). Krashen's theory is known as the affective filter hypothesis from his second language learning theory (Krashen, 1984). The affective filter is a metaphor that refers to the learner's attitude and the emotional variables process through when attempting to learn a second language (Krashen, 1984). When the learner is stressed or has high anxiety, the filter is high and language acquisition decreases (Krashen, 1984). Lowering the filter increases learning capacity (Krashen, 1984). The appealing nature of songs and music decreases anxiety and may therefore increase learning success by lowering the affective filter (Dzanic & Pejic,

2016). Theoretically, engaging music based programs like HeidiSongs could increase learning capacity by lowering the affective filter.

Empirical Significance

No other research has painted a clear qualitative picture of teachers' descriptions of their experiences using HeidiSongs music as an instructional tool in the elementary school classroom. Martin's 2017 study examined the positive correlation between the use of HeidiSongs and improvement in kindergarten sight word recognition. However, this study lacked teacher descriptions of their use of HeidiSongs (Martin, 2017). Other studies recognized the positive effect of music on different specific student populations, including ELLs (Hancock & Wright, 2018; Martin, 2017; Montgomery, 2014), students with hearing loss (Nelson et al., 2016), and students with autism (Vaiouli & Andreou, 2016). No studies have specifically targeted this multisensory music program as an instructional tool when applied to the whole classroom setting, small groups, and individual settings. For whole class teaching and individual learning, teaching using a multisensory approach is valuable (Boardman, 2020). For this reason, this study has empirical significance. A more in-depth examination of how real-world classrooms use this system will provide crucial details needed to understand HeidiSongs' complexities, benefits, and difficulties.

Practical Significance

Research has shown that using music to teach vocabulary and literacy skills is more effective if the music engages students through participation and interaction (Wang, 2014). HeidiSongs is participatory and interactive (HeidiSongs, 2017). Another study suggested that audio-only is more effective than a combination of audio music with an attached visual (Dzanic & Pejic, 2016). HeidiSongs combines audio music with visuals (HeidiSongs, 2017). Many

studies have explored using music in the classroom and its benefits for specific subjects, populations, and groups within the classroom (Hogenes et al., 2014; Lin, 2013; Markova, 2016; Vaiouli & Andreou, 2016). HeidiSongs has shown success in increasing both sight word recognition and student engagement (Martin, 2017). Engagement optimizes student learning (Guthrie, 1997). This study could be used on a broader scale to impart change by clarifying descriptions of how HeidiSongs works in the whole classroom, which could help other teachers, students, and schools by providing a clearly defined method for implementing this instructional tool. Many educators could benefit from this study by learning more about how teachers describe their use of multisensory, music-based programs like HeidiSongs. Knowing more about how teachers use HeidiSongs helps other educators learn how to use music-based multisensory education tools effectively in the classroom. Educators who incorporate such methods may increase student engagement and academic vocabulary (Dzanic & Pejic, 2016). By exploring teacher descriptions of their use of HeidiSongs in detail, teachers develop a clearer picture of how they might succeed or struggle when implementing musical instructional programs.

Research Questions

Research questions for this study explicitly focus on how classroom teachers use HeidiSongs as an instructional tool. The first question focuses on an overall view of the topic. Following this central research question, three research sub-questions addressed specific scenarios involving how elementary school teachers teach literacy in various instructional settings: the whole group, small groups, and individual students.

Central Research Question (CRQ)

How do teachers use HeidiSongs music as an instructional tool in the elementary school classroom?

Music enhances literacy (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014). Music also enhances and develops phonemic awareness in students (Markova, 2016; Walton, 2014). Moreover, music improves attention, sensory-motor integration, motor-skill learning, sound processing, and memory storage and retrieval (Singh & Balasubramanian, 2018). Answers to this question addressed the problem by providing a rich description, clarity, and detailed experiences concerning how teachers have used this learning tool in the classroom setting. This question addressed the research gap by generalizing the overall experience to a potential new teacher who has never used music in the classroom. Next, three sub-questions focus specifically on the three scenarios elementary school teachers teach literacy: in the whole group setting, in small groups, and to individual students during one-on-one instruction or individual work time.

Research Subquestions (SQs)

Subquestion 1 How do teachers use HeidiSongs music for whole group instruction?

HeidiSongs music enhances engagement, motivation, and sight word recognition when used in the whole group setting of a kindergarten class (Martin, 2017). Whole group music instruction also enhances literacy for children from low socioeconomic backgrounds (Slater et al., 2014). Students could have different forms of intelligence (Gardner, 2017) or learn better in low-anxiety situations (Krashen, 1984), which could be addressed by the musical, kinesthetic, and engaging nature of HeidiSongs. However, little research provides descriptions of how elementary school teachers deliver this whole group literacy instruction using HeidiSongs. This question helped identify how teachers use HeidiSongs as an instructional tool for the entire classroom at once, regardless of grade level or socioeconomic status.

Subquestion 2 How do teachers use HeidiSongs music for small group instruction?

Using music as an instructional tool can increase vocabulary, word reading, and sight word acquisition (Gottfried, 2014; Martin, 2017; Walton, 2014). Music also contributes to reading comprehension (Hancock & Wright, 2018; Haning, 2016). During small group guided reading instruction, teachers could use many literacy instruction methods to enhance these skills in reading, word recognition, vocabulary, fluency, or reading comprehension. Word recognition is a critical skill that, when lacking, leads to problems with comprehension (Clay, 1991; Cunningham & Stanovich, 1998; Gough & Hillinger, 1980). This question targeted small group literacy instruction to investigate how teachers use HeidiSongs for smaller groups outside of the whole group setting. Small group instruction might include homogenous grouping strategies to include students with similar styles in musical or kinesthetic intelligence (Gardner, 2017) or language learning status (Krashen, 1984).

Subquestion 3 How do teachers use HeidiSongs music for individual instruction?

Individual instruction and work time are the final components of the gradual release of responsibility framework (Fisher & Frey, 2008; Pearson & Gallagher, 1983). During this phase of the lesson, students are working individually or with individualized teacher support (Fisher & Frey, 2008). This question showed how teachers describe the use of HeidiSongs as an instructional tool during this stage of instruction and individual work time.

Definitions

1. *Affective filter factors*- Affective filter factors are emotional factors that affect learning (Krashen, 1984).
2. *Gradual release of responsibility* – An instructional model in which learning shifts slowly from the whole group instruction by the teacher to small group work to

independent application of the content by individual students (Fisher & Frey, 2008; Pearson & Gallagher, 1983).

3. *HeidiSongs* – A musical program that teaches literacy to young children by incorporating music, movement, visuals, and repetition (HeidiSongs, 2017).
4. *Literacy instruction* – The components of literacy instruction include viewing and representing, writing and reading, and speaking and listening (Morrow et al., 2018).
5. *Multiple intelligences* – Other human intelligence type (such as musical or kinesthetic) that cannot be measured on the standard IQ test (Gardner, 2017).
6. *Multisensory structured language education* – Uses different senses to enhance learning (Shams & Seitz, 2008)

Summary

The purpose of this case study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. HeidiSongs uses the concept of multisensory structured language education to teach by engaging multiple senses simultaneously to increase retention (HeidiSongs, 2017). One theory guiding this study was Gardner's theory of multiple intelligences (Gardner, 2017) as it acknowledges musical intelligence as a type of intelligence that exists in elementary school students and includes kinesthetic intelligence. The other theory guiding this study was Krashen's theory affective filter hypothesis from his second language learning theory, which suggests that a lowered filter enhances learning capacity (Krashen, 1984). Ways to decrease the affective filter include increasing positive emotions such as hope and enjoyment and decreasing negative emotions such as anger and anxiety (Pekrun & Linnenbrink-Garcia, 2012; Pekrun et al., 2011). The problem of this multiple case study was a lack of understanding of how teachers use HeidiSongs music as an instructional tool in today's

elementary school classroom. Specifically, participant experiences helped describe how this instructional tool could impact instruction in the whole group, small group, and individualized instruction settings.

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter includes an overview of the existing literature in seven sections. The first section provides a discussion of the theories selected as a framework and how these theories relate to the central phenomenon of HeidiSongs as a literacy tool. In the next section, HeidiSongs will be defined, and existing research on HeidiSongs will be explored. The following sections include literature about the brain, music and the brain, literacy, music and literacy, and applications of music instruction in many other scenarios, including classrooms.

Theoretical Framework

The theoretical framework behind this study includes two learning theories. The first theory is Howard Gardner's theory of multiple intelligences. This theory directly names musical intelligence as one of many types of intelligences innate in humans (Gardner, 2011). Among these types of intelligences are musical and kinesthetic (Gardner, 2011). The second theory was Stephen Krashen's theory of second language acquisition, which connected low anxiety situations—such as those provided by music—to increased learning capabilities in students (Krashen, 1984). Both theories support the positive effects of using multisensory music-based programs like HeidiSongs as an instructional tool and explained why they might be useful for many students with different types of intelligence or language abilities.

Theory of Multiple Intelligences

As a young psychologist, Gardner was inspired by an absence of the arts from his psychology textbooks to find the connection between arts and academic psychology (Gardner, 2011). Before Gardner crafted his theory of multiple intelligences, any reference to intelligence focused primarily on logical and linguistic intelligence (Gardner, 2011). In his theory of multiple

intelligences, Gardner (2017) explained how humans possess several other types of intelligences in addition to traditional scholastic intelligence (measured in IQ tests). These other multiple intelligences included musical, spatial, naturalist, bodily-kinesthetic, intrapersonal, interpersonal, social, and emotional intelligence (Gardner, 2017). Bodily-kinesthetic intelligence involves physical movement (Gardner, 2017). Musical intelligence involves the capacity to recognize musical components such as rhythm and tone (Gardner, 2017). In his theory, Gardner also suggested teachers should both individualize (according to each student's distinct preferential intelligences) and pluralize (present the most critical concepts in several different ways) the delivery of instruction for their students (Gardner, 2011). HeidiSongs incorporates mostly musical techniques to individualize and pluralize instruction, but also employs bodily-kinesthetics through the song motions and could also affect interpersonal and intrapersonal intelligence (HeidiSongs, 2017). This study helped illuminate how HeidiSongs addresses multiple intelligences in the classroom setting. Further, since Gardner suggested teachers pluralize and individualize instruction, this study addressed multiple types of instructional settings from the whole group to individualized instruction.

Theory of Second Language Acquisition

A second theory illuminates why songs serve as significant learning tools. In his affective filter hypothesis from his second language learning theory, Krashen (1984) hypothesized that high anxiety impedes learning. Though little is known about the association between classroom activities and anxiety, anxiety does cause slower and less efficient learning (Butcher et al., 2021). High anxiety creates a high filter that makes it difficult for input to get through (Krashen, 2003). The affective filter is a metaphor that refers to the learner's attitude and emotional variables they exhibit when attempting to learn a second language (Krashen, 1984).

When the learner experiences stress or has high anxiety, the filter is high, and language acquisition declines (Krashen, 1984). Lowering the filter increases learning capacity (Krashen, 1984). Ways to decrease the affective filter include increasing positive emotions such as hope and enjoyment and decreasing negative emotions such as anger and anxiety (Pekrun & Linnenbrink-Garcia, 2012; Pekrun et al., 2011). Furthermore, positive peer interactions in the early childhood classroom increase second language acquisition by decreasing the learner's perceived social stress (Moghal & Aziz, 2018).

More recent research found that anxiety impedes learning and triggers the part of the brain associated with real physical pain (Zadina, 2014). Thus, as educators, the pedagogical goal should be to foster a classroom environment designed to encourage a low filter for students while also providing comprehensible input (Krashen, 2003). The appealing nature of songs and music decreases anxiety and increases achievement by lowering the affective filter (Dzanic & Pejic, 2016). Additionally, according to Guthrie's theory of motivational engagement, optimal learning occurs when students are both motivated and engaged (Guthrie, 1997). Guthrie found that engaged students spend more time reading and are higher achievers (Guthrie, 2004). Advanced learners seem to benefit more from motivation and engagement than struggling learners (Lutz Klauda & Guthrie, 2015). As a result of the existing research, participants in this study were encouraged to reflect upon the concept of motivational engagement in the context of HeidiSongs to determine if they saw increased engagement or decreased anxiety in their classrooms.

Related Literature

The next four sections synthesize recent literature about the learning processes involved in the incorporation of music in instruction, including research about the brain, how music affects the brain, literacy, and how music affects literacy. I address the brain first because the

brain is the center of all learning, allows humans to process both music and literacy, and is foundational to understanding this research study (Sousa, 2017). From there, the literature review provides an overview of the profound impact of music on the brain. I address literacy in a separate section because of literacy's integral importance to this study's purpose: to understand teacher descriptions of their experiences using HeidiSongs music as an instructional tool in the elementary school classroom. At last, I will thoroughly review existing literature on the possible effects music has on literacy. The final section contains studies about the application of music as a learning tool in many other settings, populations, and scenarios. After reviewing the literature, a gap in the literature emerged and provided a focused area of need for this study. First, though, is a section on HeidiSongs.

HeidiSongs

HeidiSongs is a for-profit company created by Heidi Butkus, a current kindergarten teacher in California, to engage her students and enhance their learning experiences (HeidiSongs, 2017). The HeidiSongs program, which is available for purchase, is a music-based multisensory learning program that teaches literacy to young children by incorporating music, movement, visuals, and repetition (HeidiSongs, 2017). Using music and movement as literacy teaching tools increases engagement and promotes emergent literacy skills (Chandler & Tricot, 2015; Cooper, 2010; Davies, 2000). Multisensory teaching involves engaging multiple brain sensory pathways at once (HeidiSongs, 2017). Multisensory learning is more effective than uni-sensory learning because it activates more brain pathways (Shams & Seitz, 2008). Children have billions of active brain neurons, which creates a natural need for movement (Palmer, 2001). HeidiSongs uses multisensory learning by teaching children new words that they hear, see, say, and act out simultaneously using music as a mnemonic device (HeidiSongs, 2017). HeidiSongs increased

sight word recognition and student engagement in 100% of the kindergarten students studied by Martin in 2017. However, it is essential to note that all students in this study ($N = 18$) were Caucasian and spoke English as their primary language (Martin, 2017). In the next section, I will move from HeidiSongs into related literature on the brain and how it learns.

The Brain

The human brain is the center of all learning: it captures experiences, creates output, revises itself based on input and experiences, and creates memories (Sousa, 2017). Students and teachers process the words, songs, and movements of HeidiSongs through their brains, which have specific ways of processing information. A human brain processes more environmental information daily than a computer processes in a year (Sousa, 2017). Educational neuroscience is a synthesis of research on the brain, behavior, and mind (Zadina, 2014). It addresses metacognition, neuroscience, and psychology from an educational perspective (Zadina, 2014). This section, written from an educational neuroscience perspective, begins with a review of the brain's parts and then progresses into research on plasticity, neurons, and the brain's capacity for learning. The brain comprises neurons, has four major sections, is innately built for language, and changes as learning occurs.

Neurons and the Brain

Neurons are the primary cells that make up the brain (Sousa, 2017) and hold stored information in the form of chemicals (Zadina, 2014). Mirror neurons are a specific type of neuron that fires when a person performs an action or movement and when they observe someone else performing an action or movement (Sousa, 2017). In other words, mirror neurons fire during the perception of movement and the production of movement (Sousa, 2017). Mirror neurons play a role in mimicry, empathy, and imitation (Leslie et al., 2004; Sousa, 2017).

Significantly, mirror neurons are compromised in people who have autism (Rizzolatti & Fabbri-Destro, 2009). The movement of mirror neurons also increases cognitive function and motor skills (Sousa, 2017).

While the brain is composed of cells, the brain is also divided into four major sections called lobes (Zadina, 2014). The frontal lobe regulates attention, emotion, metacognition, higher-order thinking, movement, and reasoning (Zadina, 2014). The temporal lobe processes emotion, memory, language, comprehension, and hearing (Zadina, 2014). The left temporal lobe is essential for linguistic processing and standard speech patterns (Gardner, 2011). As a result, musicians typically have larger left temporal lobes than non-musicians (Chan et al., 1998). The parietal lobe processes spatial information, integrates sensory information, and coordinates reading, perception, and arithmetic (Zadina, 2014). The occipital lobe processes vision (Zadina, 2014).

Rewiring the Brain

The brain changes as it processes input. Plasticity refers to a change in the brain because of an experience (Zadina, 2014). Experiments have shown that visual sign language is processed in the auditory cortex (which processes hearing and language) of a person born deaf, even though it is a visual language (Zadina, 2014). This change is the result of plasticity. Plasticity has vast implications for learning and teaching (Zadina, 2014). The more parts of the brain activated by a given activity, the greater the overall plasticity and synaptic learning (Berezniuk et al., 2018). Most brain interactions in human sensory processing are multisensory, so all learning should involve multisensory processes (Shams & Seitz, 2008). Information received in both auditory and visual signals creates more significant learning than visual signals alone (Shams & Seitz,

2008). Lastly, another critical component of learning is repetition, which causes the repeated firing of neurons (Zadina, 2014).

Universal Grammar

Another type of learning that occurs in the brain is language acquisition. Learning to speak a language is called linguistic intelligence, one of Gardner's types of human intelligence (Gardner, 2013). Noam Chomsky postulated in his theory of language acquisition that all humans are born with the innate ability for language (Chomsky, 1986). He coined the term universal grammar: the genetic component of humans' innate language faculty (Chomsky, 1986). Chomsky argued that the Language Acquisition Device (LAD) is an inherent part of every infant's mental capacity (1986). The LAD allows the child to later acquire and produce language. Language also develops via non-academic means because it is a basic human instinct (Chomsky, 1986). The non-academic category includes music, songs, and conversations.

Music and the Brain

The brain has a special relationship with music. In 2018, researchers investigating the brain's inner workings suggested that music is innately present in all human beings and is therefore biological (Singh & Balasubramanian, 2018). They noted the primary function of music is to convey emotion, but that music is also linked to attention, sensory-motor integration, motor-skill learning, sound processing, and memory storage and retrieval (Singh & Balasubramanian, 2018). All cultures create music, and even infants respond to music (Sousa, 2017). Music and speech are the two most characteristically human and complex modes of auditory-motor learning in the context of cognitive neuroscience (Zatorre, 2013). The brain is so heavily connected that musical training could be manifested in extra-auditory brain regions, like the parietal and frontal areas (Zatorre, 2013). Connectivity between these regions may determine

performance level on specified tasks, and humans have both a neural predisposition for learning and broad ranges of individual variability (Zatorre, 2013). The interactions between the motor and auditory systems of human brains are considered predictors of speech learning, music learning, and behavioral skill (Zatorre, 2013). Music also increases the early development of communication skills in children with cochlear implants by activating more parts of the brain (Berezniuk et al., 2018). Music helps develop communication skills in young children and enables lasting memories for the elderly person with memory problems.

Musical Memory After Alzheimer's Disease

Music therapy in patients with advanced dementia is possible because musical memory, musical emotion, musical sensibility, and musical perception survive long after other forms of memory (Sacks, 2008, p. 373). In a 2015 study, researchers investigated how musical memory may still exist and be surprisingly robust even in patients with advanced Alzheimer's disease ($N = 32$) (Jacobsen et al., 2015). Processes for episode, semantic, and other memory aspects of music are different, suggesting that different and distinct neural networks contribute to each. Although temporal lobes have an essential function in explicit musical memory, they are often affected by Alzheimer's disease very early in the course of the illness (Jacobsen et al., 2015). However, implicit musical memory—emotional memory—is spared in Alzheimer's disease (Sacks, 2008, p. 214). Results of magnetic resonance imaging showed that long-term musical memory relies on the caudal anterior cingulate gyrus and the ventral pre-SMA areas of the brain (Jacobsen et al., 2015). These areas are associated with many cognitive functions and are crucial in learning and decision-making. They are responsible for expectation, prediction, evaluation, task switching, sequence planning, and resolving conflicts. Besides aiding long-term memory retention in patients with dementia, music also has short-term cognitive benefits.

The Mozart Effect

In general, the term Mozart effect concerns the effects of listening to classical music on spatial-temporal reasoning and performance (Gasenzer et al., 2017). However, when researchers investigate the Mozart effect, their studies show different results. In 2015, the results of one study showed the cognitive effects of listening to specific classical music. According to researchers, their results showed increased background brain activity in adults (N = 30), including healthy elderly adults, after listening to Mozart's K448 (Verrusio et al., 2015). The particular type of brain activity activated by music is linked to cognition, memory, problem-solving, and the intelligence quotient (Verrusio et al., 2015). The researchers specifically targeted the alpha, delta, and theta rhythms, which are related to spatial-temporal functions (Verrusio et al., 2015). Their findings corroborated Jausovec et al. study's (2006) findings, which showed individuals (N = 56) performed better on spatial-temporal tasks after listening to Mozart music (Verrusio et al., 2015).

Interestingly, these positive benefits did not appear when participants listened to other classical music, such as a song by Beethoven (Verrusio et al., 2015). However, other studies showed that non-Mozart music enhanced spatial-temporal task performance (Gasenzer et al., 2017). It appears that different types of music have different effects on different people. People are unique and have unique combinations of needs and personal musical preferences.

Musicophilia

Neurologist Oliver Sacks wrote a book of case studies about the unique impact music had on many of his patients (Sacks, 2008). In *Musicophilia*, Sacks (2008) also addresses many musical phenomena, including the brain's power to imagine music. Imagining music activates the brain's auditory and motor cortexes almost as much as listening to or playing music (Sacks,

2008). Human brains also fill in silent gaps in familiar songs to such an extent that the auditory cortex remains activated even during silent gaps or the song's absence (Sacks, 2008). Musical hallucinations, caused by certain illnesses or sensory deprivation, show up on brain scans even in the absence of real music (Sacks, 2008). Humans are susceptible to musical imagery because they have refined and sensitive systems in place to perceive and remember music (Sacks, 2008). Repetition and spontaneous activity are built into these systems (Sacks, 2008). Music impacts the brain both intellectually and emotionally (Sousa, 2017). There are two categories of musical perception: the perception of rhythm and the perception of melody (Sacks, 2008). Music designed to be catchy or hook the listener is called an earworm or brainworm (Sacks, 2008). For patients with Parkinson's or Tourette's, this compulsive internal repetition of an earworm can be problematic, but it is a universal problem exacerbated by certain drugs (Sacks, 2008). Even without the repetition of an earworm, certain people have a unique ability to both remember and reproduce specific musical notes.

Perfect Pitch. Perfect pitch, or absolute pitch, is the ability to name any musical notes without using any reference material and is very rare (Van Hedger et al., 2019). Individuals with perfect pitch can tell the pitch of imagined notes in their heads (Sacks, 2008). Early blindness is very much associated with absolute pitch, with studies showing that up to 50 percent of blind children have an absolute pitch (Sacks, 2008). An interesting link also occurs between linguistic background and absolute pitch, which shows a link between music and language. Native speakers of tonal languages like Mandarin and Vietnamese have a greater tendency toward absolute pitch (Creel et al., 2018; Sacks, 2008). These languages have a more musical quality than English.

Musical Savants. Since it commands public attention, musicality is possibly the most dramatic and common form of savant talent (Sacks, 2008). A savant has certain brain functions that are impaired and others that are heightened (Sacks, 2008). Blind musicians have played a role in many cultures, and blind children are usually very verbal (Sacks, 2008). Additionally, 60% of blind musicians have perfect pitch (Sacks, 2008). Permanent blindness can also cause the synesthesia, which causes senses to overlap so that music could be perceived as having colors (Sacks, 2008). Synesthesia is a nonpathological phenomenon but is very rare (Tilot et al., 2018). Many different exciting interactions occur between music and the brain.

The Brain on Music

The human brain has a special relationship with music. This relationship begins before birth and can be altered in the case of physical or emotional affliction (Levitin, 2007). A person's relationship with music directly impacts their brain size and function (Levitin, 2007). Music has both short- and long-term effects on the brain (Levitin, 2007). Human brains recognize music well before birth (Levitin, 2007). A fetus's auditory system is fully functional after only twenty weeks, and children prefer and recognize the music they heard while in the womb (Lamont, 2003). Identification memory is the human ability to identify faces, tastes, smells, photos, and music based on memory (Levitin, 2007). Attaching labels to this memory involves a specific cortical network in the brain that is based in the inferior prefrontal cortex (Levitin, 2007). In addition to recognizing and labeling music, humans also show preferences for certain types of music. Infants prefer upbeat and fast music over slow music (Levitin, 2007). Most people start to show their musical preferences by age two, which is the same timeframe in which specialized speech processing develops (Levitin, 2007). Music also alters brain waves to make the brain more receptive to new learning (Davies, 2000). As adults, humans tend to distinctly remember

songs from their teenage years, even if they have dementia or Alzheimer's (Levitin, 2007). These teenage songs are most memorable because the teenage years are highly emotionally charged times of self-discovery (Levitin, 2007). The human brain tags memories that include an emotional component as important (Levitin, 2007). For this reason, humans tend to have more excellent recall of memories with emotional components (Levitin, 2007).

The emotive component of music connects rhythm and music more firmly to emotions and memory (Langer, 1953). When music creates meaning and engagement, neural connections are strengthened (Davies, 2000). This, in turn, contributes to stronger information recall as both children and adults (Davies, 2000). In the brain, music improves language ability, inspires emotional signals from the auditory complex, and communicates with the motor control system, particularly during dancing or walking (Levitin, 2007). The front portion of the brain's corpus callosum is smaller in non-musicians but much larger in musicians (Levitin, 2007). Musicians also have larger cerebellum and more gray matter, which is responsible for information processing (Levitin, 2007). However, there appears to be an optimal window for this growth. Around age fourteen, the brain's musical wiring is approaching completion, making it more challenging to acquire musical language after this point (Levitin, 2007).

Literacy

In this section, the literature review progresses from the relationship between music and the brain into a section on literacy. Literacy involves reading, speaking, listening, and writing (Griffith, 2008; Morrow et al., 2018). It is a primary focus of the classroom during the primary and secondary years (Morrow et al., 2018). The components and best practices for literacy instruction in today's classroom are addressed below.

Components of Literacy

The components of literacy instruction include speaking and listening, reading and writing, and viewing and representing (Morrow et al., 2018). Emergent literacy theory focuses on listening, speaking, writing, and reading for early literacy (Griffith, 2008; Morrow et al., 2018). Vocabulary and fluency in word reading contribute to listening comprehension and overall reading ability (Wolf et al., 2019). However, best practices for early literacy do not include a single, universally effective approach to teaching language arts (Morrow et al., 2018).

Best Practices in Teaching Literacy

Teachers address literacy learning needs related to habits of thinking and content knowledge (McConachie et al., 2010). Current best practices recommend engaging students in the habits of thinking, speaking, writing, and reading during literacy blocks to help them develop literacy skills and develop content knowledge (McConachie et al., 2010). The following sections address multiple methods for teaching literacy, including addressing the multiple pathways to the student brain (Zadina, 2014).

Multiple Pathways to the Student's Brain. According to Zadina (2014), there are multiple pathways to learning in the student's brain. These pathways include sensory-motor, emotion, reward, attention and memory, language and math, frontal lobe executive function, and social. The sensory-motor pathway includes speech, vision, auditory, sensory, and motor information (Zadina, 2014). In this pathway, visuals are the most critical. The brain prefers images to words so much that scientists deemed this the pictorial superiority effect (Zadina, 2014). For literacy teachers, this means that including visuals is necessary for effective learning and teaching (Zadina, 2014). Additionally, including gestures and video visuals during instruction helps form neural connections to the content and for language comprehension (Saito

& Akiyama, 2018; Zadina, 2014). This type of instruction is often referred to as multisensory structured language education.

Multisensory Structured Language Education. Multisensory structured language education programs utilize multiple pathways to learning to maximize retention. Essentially, it is a structured type of teaching that relies on multisensory options to enhance learning (HeidiSongs, 2017). An example of a multisensory structured language education program is HeidiSongs music (HeidiSongs, 2017). Multisensory learning is more effective for learning than uni-sensory stimuli because it simulates the multisensory environment humans live in as well as the various intelligences students possess (Shams & Seitz, 2008). Acoustic or sonic memories are frequently tied to tactile, visual, or sensory memories, which creates a more powerful and long-lasting memory (Crutchley et al., 2018; Goodman, 2017). Other researchers describe sounds as an immersive experience connecting the hearer to the world (Goodman, 2017; Ingold, 2011). Multisensory teaching improves reading skills, including comprehension, decoding of words and text, and phonological awareness (Joshi et al., 2002). Multisensory approaches also increase sight word recognition in kindergarten students (Martin, 2017; Phillips & Feng, 2012). Performative approaches—where the students demonstrate their understanding of the content—deepen understanding by increasing social, personal, and textual meaning for students (Adomat, 2010). HeidiSongs uses a performative approach by asking students to sing and move with gestures and words while performing each song (HeidiSongs).

Hearing and Reading. Sounds are part of all contemporary cultures, and each school has its own sonic culture (Crutchley et al., 2018). Modern technology provides unprecedented access to acoustic sources of learning (Crutchley et al., 2018). There is a growing body of research on sound's effects on education (Burke & Grosvenor, 2011). Hearing and reading, both elements of

literacy, are directly related. Reading comprehension is severely impacted by phonological deficits in the ability to sound out new words (Zadina, 2014). There is also a direct link between the consistency of sound encoding and how well a person can read (Hornickel & Kraus, 2013).

Technology and Literacy. Technologically enhanced stories are becoming more common, so researchers are beginning to study their effects on literacy (Xie et al., 2019). One 2015 meta-analysis was conducted on the effects of technology-enhanced stories for young children's literacy development when compared to listening to stories in more traditional settings like storybook reading (Takacs et al., 2015). They found a small but significant benefit in expressive vocabulary and story comprehension (Takacs et al., 2015).

Gradual Release of Responsibility Framework. The gradual release of responsibility framework is an instructional model that gradually shifts the responsibility for learning from the teacher to the student (Pearson & Gallagher, 1983). Teachers following this instructional model first model instruction, then guide smaller groups, then allow students to work individually to master the skill (Frey & Fisher, 2008). Educators often refer to this model as the I Do, We Do, You Do model. Teachers model whole group instruction in the I Do portion (Frey & Fisher, 2008). Whole groups and small groups learn collaboratively during the We Do segment, and then individual students attempt to master the skill during independent work called You Do (Frey & Fisher, 2008). This type of gradual release instruction improves language learning (Lin & Cheng, 2010).

Music and Literacy

This section moves from a focus on literacy into an examination of the relationship between music and its impact on literacy. Music is considered a universal language (Gasenzer et al., 2017; Lin, 2013; Paynter & Aston, 1970). Music and language are seen as symbiotic

elements because language helps a person understand music, and music helps a person understand language (Gasenzer et al., 2017). Moreover, music training improves verbal memory (Chan et al., 1998). When music is embedded systematically throughout the day in early childhood classrooms, the students' literacy and language experiences are enhanced (Nelson et al., 2016). Music helps enhance the rhythms and sound patterns in the target language (Nelson et al., 2016). Musical instruction is particularly effective at increasing new vocabulary (Hancock & Wright, 2018; Vaiouli & Andreou, 2016). Academic instruction is most effective when children are excited about and engaged in the learning experience (Guthrie, 1997). Singing enhances rhyming skills, word-finding, and speech perception abilities (Berezniuk et al., 2018). Using music increases language development, enhance engagement, and encourage auditory perception skills (Martin, 2017; Nelson et al., 2016). Music provides significant benefits to each child's emotional, linguistic, academic, and social development. However, the literacy benefits provided by music are not just for young children as music also benefits literacy abilities in adults.

All literate adults have a special section of their brain specializing in letter string and word recognition (Dehaene-Lambertz, 2018). In a 2016 study, researchers set out to test the hypothesis that professional musicians could increase their knowledge of new words with picture-word associations (Dittinger et al., 2016). The researchers examined the effect of music training on speech cognition and perception in adults. They discovered that the adult musicians exhibited better long-term memory of these new words up to five months after the first session (Dittinger et al., 2016). Thus, music training facilitates foreign language learning. The researchers uncovered a clear link between music and the semantic aspects of language processing, word learning, and auditory perception and attention (Dittinger et al., 2016).

Using music in the classroom has a positive effect on learning (Anvari et al., 2002; Ehri et al., 2001; Fisher, 2001; Gromko, 2005; Register, 2004). Specifically, music can impact literacy in children (Goodman, 2017). Emergent literacy, multimodal literacy, syncretic literacy, and rhythmic literacy is addressed in this section. Emergent literacy refers to emerging readers. Multimodal literacy involves multiple modes of communication. Then, the specific effects of music training on components of literacy will be examined.

Emergent Literacy

Emergent literacy refers to the time in a child's life from birth through age five when the child is acquiring skills necessary to reading and literacy (Clay, 1982). Emergent literacy skills include phonological awareness, print awareness, alphabetic knowledge, symbolic representation, and communication and language development skills (Clay, 1982). Music therapy creates a significant increase in emergent literacy skills (Register, 2004). Live music also increases the ratio of on-task behavior to off-task behavior (Register, 2004). Music also enhances phonemic awareness (Gromko, 2005). Phonemic awareness involves separating a spoken word into sections, which could be enhanced by a music student's ability to associate sounds with specific symbols (Gromko, 2005). Phonemic awareness abilities are a predictor of later reading success (Ehri et al., 2001). Phonological awareness gains and reading skill development are also positively correlated with music instruction (Anvari et al., 2002; Hallam, 2010).

Multimodal Literacy

Early childhood learners often express literacy through various modes of communication. These include visual modes, audio (or music) modes, gestural modes, linguistic modes, spatial modes, and mimetic (digital) modes (Tomlinson, 2015). Multimodal literacy practices include singing and symbols, which increase cultural interconnectedness in diverse classrooms and allow

children from diverse backgrounds, communities, and languages to communicate (Tomlinson, 2015). Further, redesigning or improvising on music-based communication is considered a syncretic literacy in which children draw on many modes of expression to represent their ideas (Tomlinson, 2015). In particular, repeating song lyrics during dance parties positively impacted the development of the new language using non-academic means (Markova, 2016). This physical movement, combined with the repetition of lyrics, helps young students develop both language and gross motor skills (Markova, 2016).

Rhythm and Rhyming Skills

Early sensitivity to rhythm is a predictor of literacy development in children (Kuppen & Bourke, 2017). In a 2015 study, children used imitation and improvisation to engage in musical dialogue that involved singing, chanting, moving, playing instruments, and active listening (Burton, 2015). During this study, the students were read rhythm stories and then read stories they wrote themselves (Burton, 2015). Through this study, the researcher discovered that children self-corrected mistakes and revised their own stories when reading them aloud, which shows they formed meaning through the sounds and audiation of the music they wrote (Burton, 2015). By strengthening the auditory system, music training leads to better reading and better phonology (Skoe & Kraus, 2012; Zadina, 2014). In 2015, researchers investigated the effects of music training on children's literacy-related language skills (Gordon et al., 2015). Results supported the hypothesis that music training leads to gains in phonological awareness skills. The most considerable positive effect was on rhyming skills, which increased with more hours of music training (Gordon et al., 2015). However, fluency was not impacted by music training (Gordon et al., 2015). In 2017, researchers investigated which ages are optimal for music

learning (Bugos, 2017). The data revealed a window for music learning including age four as a critical age for music learning (Bugos, 2017).

Pre-reading and Reading Skills

Since the first research on the effect of music on reading ability in 1975, at least 18 studies have concluded that musical training positively affects pre-reading or reading skills (Tierney & Kraus, 2014). Walton (2014) studied the effects of using songs and music to teach pre-reading skills to kindergarten children. During a two-year study, 101 children from four different schools in British Columbia were tested at intervals for word reading, phoneme identity, rhyming ability, and letter-sound knowledge (Walton, 2014). The group of children who had been taught using songs and music ($n = 49$) showed much more improvement in word reading, medial phoneme identity, and letter sounds (Walton, 2014). Evidence supported the idea that song lyrics enhance children's ability in word reading and pre-reading skills (Walton, 2014). Another study compared the effects of visual arts and music on these pre-reading skills and found that while both improved phonological awareness, the students who received music instruction showed more improvement in visual-auditory learning tasks (Moreno et al., 2011).

Phonological Segmentation. Word segmentation is a crucial skill necessary for acquiring language (Butler & Frota, 2018). Researchers investigated the link between phonological segmentation skills and rhythm and music skills in 2013 (Moritz et al., 2013). They argued that sensitivity to rhythm is a precursory skill to language acquisition (Moritz et al., 2013). After studying 30 kindergarten students in Boston area schools, the researchers found a significant correlation between rhythm ability and later reading ability (Moritz et al., 2013). Rhythm activities are not language-based, so they could be applied to children with any language

background and may help improve phonological skills in children at many stages (Moritz et al., 2013).

Sight Word Acquisition. Martin (2017) used the songs and movements of HeidiSongs music to teach new sight words to a kindergarten class in New Jersey. Sight words are high-frequency words that cannot be sounded out and must be memorized (Dolch, 1948). Only 220 sight words comprise 50-75% of all text (Dolch, 1948), so identifying sight words is a vital skill for fluency and comprehension (McCormick & Zutell, 2011; National Reading Panel, 2000). The findings show increased engagement and identification in sight word memorization (Martin, 2017). This qualitative, naturalistic study aimed to investigate whether movement and song impacts the acquisition of sight words. Five sight words per week were introduced over the course of four weeks to an all-Caucasian kindergarten class of 18 students who spoke English as their primary language. Students learned both a song and a movement for each word that they saw. The results show that HeidiSongs increased both student engagement and sight word identification. The study also suggests that song and movement-based learning could be a scaffold for struggling learners, but further research is required to investigate. Song and movement-based learning serves as a scaffold for struggling learners, including ELLs (Martin, 2017). Overall, literacy and music have a complex and beneficial relationship.

Applications of Music

The literature reviewed in this section pertains to the applications of music in a variety of situations. Music has been applied to various academic, social, and cultural settings as a beneficial tool from music therapy to neurosurgery. From overall child functioning to speech development, music helps people overcome physical and psychological difficulties (Levitin, 2007). Music has also been applied in the classroom and for specific populations as an

instructional tool. Because music is an enjoyable activity, it helps improve student engagement (Chan et al., 1998).

Music Therapy

The ancient Greeks, including Aristotle and Plato, frequently wrote about the healing effects of music (Zanders, 2018). Hippocrates, the father of modern medicine, also wrote about music and related it to emotions, behaviors, and moods (Zanders, 2018). Music has been a documented part of many culture's ceremonial procedures since the Medieval era (Gaugne et al., 2018). E. Thayer Gaston created the first music therapy training program (Zanders, 2018). Gaston identified three principles of music therapy, which are establishing or reestablishing interpersonal relationships, increasing self-esteem through self-actualization, and utilizing the unique potential of rhythm to both bring order and to energize (Zanders, 2018). Music therapy and music listening help people overcome many physical and psychological problems (Levitin, 2007).

Entrainment. Music therapy also utilizes the concept of entrainment, which directly links music and rhythm to brain rehabilitation (Altenmüller et al., 2015). Entrainment is a phenomenon that happens when one system's motion moves to coincide with the movement of another system (Altenmüller et al., 2015). Rhythmic entrainment is successful in brain rehabilitation therapy for speech and language rehabilitation, stroke, cognitive rehabilitation, cerebral palsy, traumatic brain injury, and Parkinson's disease (Altenmüller et al., 2015). Entrainment also enhances phonological skills (Tierney, 2014).

Neurosurgery. Music is an important medium to support surgical management, patients in intensive care, and other medical treatment types (Gasenzer et al., 2017; Roufail et al., 2018). One qualitative study tested the effectiveness of music during awake craniotomy, a type of brain

surgery (Gasenzer et al., 2017). Results showed that the music only had positive effects during neurosurgery if the music was a type of music that the patient usually liked to listen to (Gasenzer et al., 2017).

Child Functioning

A 2014 review of studies involving the effects of music education on the social-emotional, cognitive, and motor functioning of children found that music education and broad exposure to music positively influences overall child functioning (Hogenes et al., 2014; Paquette & Rieg, 2008). Specifically, these researchers studied music education's effect on the following categories: cognitive functioning, academic performance, enhancement of cognitive task performance, music as a facilitator of cognitive processes, social-emotional functioning, and motor functioning (Hogenes et al., 2014). Overall, they concluded that music exposure and music education positively affect overall child functioning and that the most convincing positive effect is on the child's cognitive functioning (Hogenes et al., 2014). Additionally, music exposure and education have significant effects on social-emotional functioning, which includes self-reflection, interactions with others, and interpersonal problem solving (Bastian, 2002; Hogenes et al., 2014; Ulfarsdottir & Erwin, 1999). Overall, music-based programs increase positive socio-emotional skills in children (Ritblatt et al., 2013). Socio-emotional skills are critical because learning is a collaborative process that involves cooperation between students, peers, teachers, and family members (Durlak et al., 2011).

Speech Development

Musical training leads to potential learning and performance improvement in both speech and sensory-motor abilities. In 2017, three research areas—neuroscience findings, clinical music applications, and non-music-based speech and language research—were synthesized to recognize

a growing trend in studying expressive speech, language, and communication in early childhood (Knight & Rabon, 2017). Music training also improves verbal memory (Chan et al., 1998; Parbery-Clark et al., 2009, 2011; Strait et al., 2010; Tierney et al., 2008) and the perception of speech among other noise (Parbery-Clark et al., 2009; Strait et al., 2012; Zendel & Alain, 2012).

Language Development

There is a clear link between the development of language capacities and musical skills (Politimou et al., 2013). Students who participate in music classes experience language advantages (Kraus et al., 2014). Music and language are seen as symbiotic elements because language helps a person understand music and music helps a person understand language (Gasenzer et al., 2017). Capacities for language development in young students include phonological awareness and grammar (Politimou et al., 2013). Rhythm perception capabilities predict phonological awareness levels, and melody perception capabilities predict later grammar abilities (Politimou et al., 2013). Musical training increases reading abilities (Moreno et al., 2009) and improves speech segmentation capabilities (Francois et al., 2013). Music has a positive impact on oral language capabilities and reading scores when used as an instructional approach in the elementary school classroom (Fisher, 2001).

Music and Movement

Multisensory educational programs like HeidiSongs rely on music and movement to enhance learning (HeidiSongs, 2017). The movement component is crucial to learning because of the positive correlation between moving and learning (Chandler & Tricot, 2015; Summerford, 2009). Whole-body movements increase physiological changes that support memory, while smaller gestures trigger semantic codes in the brain and activate the motor and visual processors (Chandler & Tricot, 2015). Gestures help students learn new languages (Mavilidi et al., 2015),

remember the names of animals (Toumpaniari et al., 2015), and increase both cognition and memory (Tomporowski et al., 2008). Music and movement also enhance student engagement (Fisher, 2001; Register, 2004; Ritblatt et al., 2003).

Instructional Approaches

Markova (2016) discovered that free-play, or non-academic, activities are essential to the second language, social, and scholastic development. This mixed-methods study aimed to investigate the English-language development in preschool children under two different types of activities (free-play and teacher-structured). The researcher observed eight bilingual preschool children at a preschool center for six weeks and discovered the importance of free-play activities in L2, social, and scholastic development. The researcher recommends that preschool teachers utilize new and non-academic activities, including repeating song lyrics during dance parties and having a social mealtime (Markova, 2016). Repetition of lyrics and physical movement helps young students develop both language and gross motor skills (Markova, 2016). Repeating song lyrics during dance parties had a positive impact on developing the new language. This physical movement combined with the repetition of lyrics helped young students develop both language and gross motor skills (Markova, 2016). Overall, incorporating music into the classroom as a learning tool helps students hone listening skills that positively contribute to attention levels and academic competence (Goodman, 2017).

Relationships

Music also has a social and relational component (Montgomery, 2014; Goodman, 2017). The term musicking describes a social event or situation that incorporates music, whether that music is being listened to, practiced, performed, or composed (Goodman, 2017). Montgomery examined the connection of song-based picture books on home literacy engagement among

kindergarten children (2014). Song-based books strengthened relationships, created joyful and playful engagement, increased feelings of collaboration and self-efficacy for the parents, and revealed the power of melody as a learning scaffold for kindergarten-aged children (Montgomery, 2014). The study also uncovered a growth in feelings of collaboration and self-efficacy in the parents (Montgomery, 2014). Musical experiences with family in the early years positively correlate with increased language development (Politimou et al., 2019).

Music-Based Instruction in Specific Populations

Music is a cross-cultural tool and can be used to enhance engagement (Lin, 2013). This means music enhances engagement with almost all cultures and is particularly beneficial for specific subgroups. According to Krashen's theory of second language learning, music is associated with affective learning and could reduce anxiety and relieve stress for the language learner (Krashen, 1984). Teachers who use emotional scaffolding to support positive emotions in students learning a second language will see better results (Back, 2020).

Low Income. In 2014 researchers investigated the effect of group music instruction on literacy skills in low-income children (Slater et al., 2014). In this quantitative study, they found that music training is associated with enhanced learning and language skills (Slater et al., 2014). The children who received music training maintained an age-normed level of reading performance after one year, while the untrained children's scores declined. The music training group improved in rapid naming, while the untrained controls showed no improvement. Improvement in rapid naming correlates with reading improvement (Slater et al., 2014). However, further research is needed to define the relationship between reading skills and specific aspects of musical experience and how these interact with other factors that influence reading development (language exposure, bilingual experience, and home literacy environment).

Early Childhood. Developing emergent literacy skills in early childhood is critical to ensure later success in reading and writing (Rhode, 2015). These early literacy skills are developed from birth until around five years of age (Clay, 1982). Hancock and Wright (2018) investigated the effect that arts integration has on early childhood development in economically disadvantaged learning environments. The researchers predicted a positive correlation. In the mixed methods study, they focused on 38 classroom teachers and ten teaching artists. All students were in pre-kindergarten or 1st grade, and all came from high-poverty and at-risk environments. A high percentage of them, 67%, were ELLs. Results showed the implementation of an arts integration program has the potential to significantly impact English Language Learners and Exceptional Children in high-poverty, low-income settings (Hancock & Wright, 2018). The students demonstrated improved school readiness in emergent literacy, vocabulary development, retention, comprehension, recall, early mathematics skills, and fine and gross motor skills (Hancock & Wright, 2018). They also showed improved engagement and confidence, particularly in the ELLs (Hancock & Wright, 2018). An added benefit was an increase in students' academic and social capacity, as reported by teachers (Hancock & Wright, 2018).

Autism. Children with autism may have limitations in sustaining or initiating communication and have challenges in engagement as well, which may lead to impaired speech or language development. Thus, engagement in musical activities in the family setting benefits both their speech and their language development (Vaiouli & Andreou, 2016). Researchers studied eight children with autism between the ages of three and seven for 18 weeks of music therapy intervention to explore the effects of active music-making in an engaged family setting on language development in young children with autism (Vaiouli & Andreou, 2016). By

increasing engagement in making music, the children show an increased potential in developing language (Vaiouli & Andreou, 2016). Further, emotion is related to rhythm regularity, which means music could become an intervention tool for all populations with difficulty processing moods or emotions, such as children with autism (Singh & Balasubramanian, 2018).

ELLs. English Language Learners may be supported in education through various instructional approaches and outside care. Incorporating social exposure to the target language has promising effects on language acquisition and student adjustment (Montgomery, 2014). Music serves as a powerful learning tool for both ELLs and their parents (Lin, 2013). The cross-cultural appeal of music combined with its impact on various brain areas combines to create a powerful learning experience with a lowered affective filter (Dzanic & Pejic, 2016). Besides other types of musical instruction, both song-based picture books and purely audio-based songs could increase vocabulary and literacy in ELLs (Montgomery, 2014). Supporting ELLs during early childhood is essential. School readiness for ELLs may be boosted by attending non-parental pre-kindergarten care, which may be related to increased English vocabulary exposure (Gottfried, 2014).

Additionally, even monolingual kindergarten teachers could scaffold ELL students' learning experiences by attempting to connect to the students' primary language (De Oliveira, 2016; Sousa, 2012). Using the primary language in the second language classroom reinforces social development, classroom management, language scaffolding, and relationships. This social connection fosters Vygotsky's Zone of Proximal Development, or ZPD, and creates necessary scaffolds for ELLs (Vygotsky, 1962).

Conversation-Based Oral Learning. Neu (2013) studied the oral language abilities of Spanish-speaking preschool students in response to requests, comments, and questions from their

English-speaking teacher. Conversation skills, repetition, and descriptive words could scaffold and promote oral language development in either a primary or secondary language (Neu, 2013). Vygotsky's (1962) social development theory suggested that thought and language require social interaction and is crucial to this study's emphasis on meaningful conversation within small group instruction. If students feel safe in the classroom community, they are more likely to benefit from their education. These benefits apply to both primary and secondary language learners. Forming, establishing, and caring for that classroom community creates the social learning network Vygotsky referenced.

Audio Sources for Language Acquisition. Dzanic and Pejic (2016) hypothesized that visuals paired with songs would be the most useful method for new vocabulary retention in young ELLs. However, he discovered through his research that audio songs without visual support offered a better foundation for learning English (Dzanic & Pejic, 2016). This disproved the researcher's hypothesis that visuals combined with songs would be the most useful for vocabulary retention. Again, this study cites Krashen's affective filter hypothesis and asserts that the appealing nature of songs (whether accompanied by visuals or not) decreases anxiety and thus increases success in language learning by lowering the affective filter (Krashen, 1984). Additionally, songs enhance motivation and influence language acquisition. However, more resources are needed for ELL teachers to incorporate music in their classrooms to impact literacy skills, language, and motivation. The purpose of one qualitative study was to investigate the experience and result of using music to teach English to ELL students (Lin, 2013). The researcher found that ELL teachers need access to more music resources, more music teaching methodology training, and more administrator support and freedom to include such instruction in

their curriculums (Lin, 2013). Further, the integration of music in ELL classes might reduce the amount of time needed to teach the second language (Lin, 2013).

Perspectives. Lin investigated the results of using music to teach English to ELL students (2013). The integration of music in ELL classes may reduce the amount of time needed to teach the second language, but educators need more resources (Lin, 2013). Further, using music to teach vocabulary and literacy skills is only effective if it is both participatory and interactive for the students (Wang, 2014). Wang (2014) determined that using a sing-song voice for instruction did not improve results when using music to teach preschool students new vocabulary. The non-music group scored almost twice as high as the sing-song group in new vocabulary retention (Wang, 2014). Thus, when using music to teach ELLs, teachers must not rely on merely offering music-based instruction. Instead, they must incorporate participatory methods in which the students are actively singing.

Summary

Music is considered a universal language (Gasenzer et al., 2017). Throughout history, music has been an essential component of the human experience (Gaugne et al., 2018). Music has been associated with enhanced learning skills and enhanced language skills (Kraus & Chandrasekaran, 2010; Patel, 2014). The theoretical framework of this study is based on Gardner's recognition of musical and kinesthetic intelligence and Krashen's theory that lowered affective filters enhance learning (Gardner, 2017; Krashen, 1984). In young learners, music increases sight word acquisition, pre-reading skills, and phonological awareness (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014). Music also retains longevity in the brain (Sacks, 2008). The brain's interconnections between

music and long-term memory outlast the effects of Alzheimer's and even dementia (Jacobsen et al., 2015; Levitin, 2007; Sacks, 2008).

However, despite these benefits, most students in the United States are receiving no music education (Rabkin, 2012; Slater et al., 2014). Music is often the first program schools cut when funding problems become an issue (Levitin, 2007). For ELLs, incorporating music into the mainstream classroom lowers the affective filter and allows ELLs to learn at faster rates affectively (Krashen, 1984). Discovering new teaching methods and implementing results from this research could positively impact the nearly five million ELLs currently in the United States and millions more around the globe (U.S. Department of Education, 2018). Both ELL and mainstream classroom teachers need to learn more music-based teaching strategies to incorporate these methods into their classrooms (Lin, 2013).

There are significant gaps in current research on this topic. Many studies have investigated the effects of music-based instruction on literacy. One recent study involved the use of multisensory activities in the kindergarten classroom to enhance phonics instruction (Plesa, 2020). However, these activities involved only hand and body motions such as air spelling, phoneme tapping, and the use of manipulatives and did not include the use of music as part of the multisensory activity (Plesa, 2020). Few studies have been conducted to explore how teachers use music-based multisensory learning programs in the modern classroom. Thus, this study was necessary to provide early childhood educators, curriculum designers, and school administrators with relevant information about using multisensory music-based instructional tools in the classroom. HeidiSongs is just one example of a multisensory music-based learning program. This study aimed to discover how teachers use HeidiSongs as an instructional tool. With little to no studies focused on teacher use of HeidiSongs, this study was a much-needed

addition to the empirical research currently available. Researchers have done little research on specific music-based learning programs in the classroom. This study provided insight into how multiple teachers use this specific program in a classroom setting by examining teachers' perspectives on using HeidiSongs as an instructional tool in the whole group, small group, and individual instruction scenarios.

Music therapy is increasingly relevant for speech and language development. It is also developmentally appropriate for early childhood students (Levitin, 2007), but there was a dearth of qualitative research on its effects in a real-world setting (Knight & Rabon, 2017). Further, the link between literacy and language learning in these sorts of music-based learning outcomes needs to be fully explored. Current theories suggest that the brain's music faculty may be supported by the universal grammar language component, which means that they engage the same cognitive resources (Tsoulas, 2014). More research is also needed to discover how visual elements combined with audio and kinesthetic components may benefit literacy through improving phonemic awareness, vocabulary, and reading comprehension.

CHAPTER THREE: METHODS

Overview

The purpose of this qualitative case study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. A case study is a qualitative research study in which the researcher seeks to describe, explore, or explain a contemporary circumstance (Yin, 2018). It is appropriate for this study in which I aimed to understand modern teacher descriptions of their experiences using HeidiSongs music. In this chapter, I will review the major components of my research study's design, the types of data collection I used, and the steps of analysis I used. I also discuss my research questions, the virtual setting of my study, the participants, detailed procedures, and my role as the researcher in the study. Finally, I examine ethical considerations and credibility.

Design

This research is a qualitative study using a multiple case study approach. I chose a multiple case study approach because I wanted to investigate multiple cases of teachers who use HeidiSongs and develop a rich description of how they use these songs in the classroom setting so other teachers can learn from these descriptions. A case study's research questions focus on the how and the why (Yin, 2018). The propositions serve to concentrate the researcher's attention on what will be examined during the study (Yin, 2018). My guiding proposition was to understand teachers' descriptions of how they use HeidiSongs. With this study, I sought to examine how teachers describe their experiences using HeidiSongs so I could more fully understand how they use these songs as an instructional tool in the elementary school classroom. The case study focuses on contemporary events but does not involve controlling behavior or events (Yin, 2018). Through this study, I sought to explore and understand the phenomenon of

teacher experiences using HeidiSongs music as an instructional tool in the elementary school classroom without controlling behavior or events. A good qualitative case study will provide an in-depth understanding of the case(s) being studied (Creswell, 2013). My goal with this study was to provide an in-depth understanding of how teachers use HeidiSongs in real-world classrooms.

A multiple case study was appropriate for this research topic because my purpose aligned with the major components of a case study. The purpose of this research study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. I sought to understand how teachers use this tool, which is an appropriate question for a case study. In a case study, the case can be single or multiple but must be defined and bounded (Yin, 2018). By defining the cases as teachers within the bounds of classrooms that use HeidiSongs, this study fulfills the case component of the case study research design. This was a holistic multiple case study, which was appropriate because using multiple cases helps the researcher to replicate findings, strengthen findings, and examine experimental findings that conflict with other findings (Yin, 2018). Examining multiple teacher perspectives in this case study allowed me to replicate, compare, examine, and strengthen findings.

Additionally, the case study becomes a more appropriate choice for a research design when the case study questions require a rich, full description of the studied phenomenon (Yin, 2018). Because I sought a full and rich description of how teachers use the HeidiSongs program in their classrooms, the case study was an appropriate and relevant choice. This multiple case study should have an advantage over a single case study, as it is more compelling and robust (Herriott & Firestone, 1983). I wanted multiple compelling teacher perspectives, so I chose a multiple case study instead of a single case study. All teachers have unique styles of teaching,

and I wanted to capture a multitude of those in my study.

The teacher descriptions gathered in this study focused on the use of HeidiSongs music as an instructional tool in the elementary school classroom. Like qualitative research, these learning experiences are subjective, not objective (Dodgson, 2017). Qualitative researchers express their results in words, not numbers (Creswell, 2018). In this case, a study that expressed results in numbers would have been redundant because in 2017 Martin showed that HeidiSongs music has a positive impact on a kindergarten class's literacy skills and sight word reading (Martin, 2017). Rather, I wanted to form a deeper understanding of how those teachers used HeidiSongs music in the classroom. The purpose of a qualitative study is to develop a deep understanding of a complicated issue. A purposive sample was essential in this case to target a specific phenomenon and more deeply study it (Creswell, 2018). Therefore, for this study, I purposively selected elementary school teachers who have used HeidiSongs music in the classroom. The focus was on one single issue or phenomenon: understanding teacher experiences using HeidiSongs music as an instructional tool in the elementary school classroom. This qualitative study also helped identify other variables to test later via quantitative studies.

Qualitative research focuses on meaning-making and better-understanding things about which little is known or gaining new perspectives on things where there is already much knowledge (Creswell, 2018). In this study, I sought to understand how teachers use HeidiSongs music in the elementary classroom. I wanted to make meaning out of this usage by trying to understand how HeidiSongs are used in various instructional scenarios. I was interested in learning how HeidiSongs is used in different instruction scenarios inside the classroom with different-sized groups. In this qualitative study, I collected data from document analysis, individual interviews, and a focus group interview (Creswell, 2018).

Research Questions

Central Research Question (CRQ)

How do teachers use HeidiSongs music as an instructional tool in the elementary school classroom?

Subquestions

SQ1 How do teachers use HeidiSongs music for whole group instruction?

SQ2 How do teachers use HeidiSongs music for small group instruction?

SQ3 How do teachers use HeidiSongs music for individual instruction?

Setting

The setting of this study was on a virtual platform. I based this setting decision on two pertinent factors: geographical diversity and complications caused by the current COVID-19 pandemic. With many schools operating virtually, conducting in-person observations or interviews would have been problematic for the foreseeable future. Also, participants were scattered geographically. Therefore, it made financial and scheduling sense to conduct my study virtually. After receiving IRB approval, I contacted Heidi Butkus via email to begin searching for participants on her social media pages. This study began on the HeidiSongs social media pages on both Facebook and Instagram. These sites were specifically selected because of the connection between people who have used HeidiSongs music in their classrooms and people who follow HeidiSongs on social media. The targeted participants lived in six states including California, Texas, West Virginia, Missouri, Michigan, and Minnesota. Each participant taught in a different public school. Grades represented were prekindergarten, kindergarten, and second grade. I collected all data digitally via email, social media, Google forms, and the web conferencing platform known as Zoom. I made no observations in person.

Participants

I used purposive sampling for this case study. In purposive sampling, the researcher chooses individual participants and research sites for study based on the participant's and site's ability to purposefully inform a complete understanding of both the central phenomenon and the research problem being studied (Creswell, 2018). For this study, I selected teachers as participants because of their unique perspectives on the use of HeidiSongs in the classroom.

Teachers are under the authority of administrators (principals, vice-principals, instructional coaches), so specific requirements and expectations are placed on their job performance. Teachers are also in a unique position of being familiar with the individual students in their classrooms. Teachers are in a unique position to offer their descriptions on the use of HeidiSongs as an instructional tool in the classroom because they provide their unique perspective and a reflection on how those around them appear to react to music, including students, parents, and administrators.

In my study, I used homogenous sampling. Using homogenous sampling simplifies, reduces, focuses, and facilitates group interviewing (Creswell, 2018). I invited all teachers who followed HeidiSongs on Facebook or Instagram to participate in the study. I made no restrictions on how long the participant has used HeidiSongs, what grade(s) they teach, where they live or work, or how many years they have been teaching. The only prerequisite was that they have used HeidiSongs in a classroom setting for literacy purposes. Participants were not required to be currently teaching. Instead, this study's setting was entirely web-based as I examined in detail the current or past experiences of teachers who have used HeidiSongs in their classrooms as an instructional tool.

All potential participants were invited to write a hypothetical letter to a new teacher detailing their use of HeidiSongs in the classroom. Heidi Butkus made the initial announcement on her social media platforms to ask for participants, but participants submitted these letters directly to me. My target maximum was 15 participants, a sample size that would help me reach data saturation (Boddy, 2016). Upon receiving the letters, I chose 11 participants based on the quality of their writing. Qualitative research studies rely on rich, in-depth descriptions (Yin, 2018), so I selected participants who expressed a rich, deep range of detail in their letters.

Table 3.1 shows a list of participants ordered alphabetically and using pseudonyms for their first names. The table also includes the participant's age, their number of years teaching, the most recent location where they taught, their current teaching grade level, and a list of other grades they have taught throughout their teaching careers. Detailed descriptions of each participant in alphabetical order follow Table 3.1.

Table 3. 1

Participant Demographics

Name	Age	Years teaching	City/State	Current Grade	Grades Taught
Amber	52	16	Moreno Valley, CA	TK	TK, 1, 2, 3, 4, 5
Diane	53	25	Merced, CA	K	K, 1
Emily	49	22	Walnut, CA	K	K
Gina	62	14	Cressey, CA	TK	TK, 1, 2, 3
Jessica	62	19	San Diego, CA	K	TK, K, 1
Kimberly	35	9	Parkersburg, WV	K	K
Melissa	63	31	Alton, MO	Retired	K, 2, 3, 6, Music (K-12)
Phoebe	33	11	Mart, TX	SPED (PreK-6)	K, 1

Sally	50	22	Lansing, MI	K	K, 1, 2, 3, 4, 6, 7, 8
Stephanie	57	35	Lakeville, MN	K	K
Tiffany	51	24	Rancho Cucamonga, CA	2	TK, K, 1, 2

Note. TK is Transitional Kindergarten, which is the California equivalent of prekindergarten.

Most TK students begin attending TK at age 4 and then move into kindergarten around age 5.

PreK is prekindergarten. K is kindergarten. SPED is special education.

Procedures

After successfully defending the proposal, I requested IRB approval. The completed application was submitted first to my committee chair and then to the IRB of Liberty University (See Appendix A). Upon receiving IRB exemption, further review of interview questions was conducted via pilot testing to ensure clarity of questions and wording. The pilot study enabled me to ensure that the questions cover all relevant issues in a clear and coherent order (Research Design Service, 2013). A peer review of Chapter 3 by other Liberty students also helped clarify any sections that needed adjustment. I had already informally canvassed the gatekeeper, Heidi Butkus, by emailing her to receive permission to use her music and social media platforms in my research.

After the pilot testing and peer review, Heidi Butkus, founder of HeidiSongs, made several posts on her social media platforms explaining that I was conducting a study on teacher experiences using HeidiSongs as an instructional tool in the elementary school classroom. A sample of this post's content is provided in Appendix B. Participants had to be either current or former teachers who have used HeidiSongs as an instructional tool in their classrooms. Interested participants clicked the link included in the post to submit directly to me through Google forms "an email address, basic demographic information, and a letter to a hypothetical new teacher.

Each time I received an email address from an interested potential participant, I emailed a questionnaire with screening details to them (See Appendix C). This document explained to anyone interested in participating that before any interview they must complete and submit a consent form to participate. This document was submitted directly to me through email. The consent form (See Appendix D) also reminded participants that their participation required completing the hypothetical letter, a recorded interview, and possible participation in a recorded focus group meeting.

HeidiSongs currently has 10,900 followers on Instagram and 20,538 followers on Facebook. Over 31,000 potential participants may have seen the call for participants. When the first call for participants resulted in only seven potential participants who completed the consent form and the letter, Heidi made a second recruitment post on the HeidiSongs social media pages. Once 18 participants had successfully submitted signed consent forms and complete letters, I began the process of scrutinizing the letters to determine which participants could provide the richest description. Since this was a qualitative case study that relied on rich, thick, deep descriptions of contemporary events, I aimed to select participants based on the detail included in the letters. Letters highlighting specific successes or failures, providing details pertinent to my research questions, or introducing interesting perspectives were tagged for selection. In the end, I chose 15 participants from this assortment of letters.

From here, I notified participants via the email address they initially provided to let them know they had been selected to participate. I then provided possible interview times and dates to participants to choose a potential time for the individual interview that worked with their schedule. Unfortunately, only 11 of the selected participants were able to complete interviews. I conducted these interviews via the web-based platform Zoom. I recorded audio and video for

later transcription according to participant preference and technology availability. The interviews were kept to a 40-minute time limit due to Zoom limitations on free meetings. All the interviews were completed in 14-37 minutes, so this did not impact data collection. The interview followed a semi-structured interview format (see Appendix E). However, it also allowed for deviation when necessary, including the freedom to ask for further clarification of interesting parts in the participant's letter.

During the interview collection period, I sent emails and calendar invitations to participants inviting them to one of two focus group sessions. I scheduled two possible sessions to allow participants to choose which one they could attend, but one session was more convenient for the four teachers who participated in the focus group. The focus group was conducted on the web platform Zoom and recorded for transcription purposes. I moderated the discussion and kept the group's discussion limited to 40 minutes due to Zoom time limitations on meetings. After the focus group, I began analyzing all the data. During the coding and analyzing process, I tried to find frequently used phrases in the data and then further investigate those phrases by comparing them to focus group data. I completed the entire data collection period, from the initial consent form to the final focus group, within two weeks. Transcribing the data took two more weeks.

Despite unanticipated events, such as the temporary closure of schools due to the COVID-19 pandemic, teachers were still able to provide details about their experience using HeidiSongs via Zoom. Contemporary events for this case study were bounded to include all past experiences using HeidiSongs in the classroom at any point during the teacher's lifetime. A simple rescheduling overcame other unanticipated events such as teacher or researcher illness, natural disaster, or technical difficulty. Since I used technology to collect all my data from

documents, interviews, and focus groups, I had more geographic and temporal flexibility in collecting the data. Zoom is an online platform, so participants only needed web access to participate.

The Researcher's Role

As the human instrument in this study, I need to articulate my role as an elementary school teacher who has used HeidiSongs music in multiple diverse classrooms. I had experience in numerous school settings (private, charter, public), grade levels (preschool, prekindergarten, kindergarten, 2nd grade, 3rd grade, 4th grade, high school), and content (general education, math, English, art, reading intervention). I had previously used HeidiSongs music extensively in my prekindergarten and kindergarten classrooms because I believed it was beneficial in increasing student engagement and enhancing literacy. I also thought that it helped me with behavior management and seemed to unify my very diverse students in a way nothing else could. Thus, while conducting this research and reporting the data, I was aware of my feelings about the benefits of using HeidiSongs music as an academic tool. Understanding my cognitive bias helped prevent it from impacting my research because I was increasingly open to any answers that differed from my own experience. Cognitive bias is defined as making a mistake in reasoning by holding onto personal beliefs and preferences despite contradictory information (Stapleton, 2019). I sought to paint a full picture of teacher experiences using HeidiSongs, both positive, neutral, and negative. When conducting interviews, I needed to ask open-ended questions and not reveal my personal feelings about HeidiSongs in any way. I remained objective as much as possible. I knew that my perceptions about using HeidiSongs music were positive, but the purpose of this study was to investigate other teachers' real-life experiences. When analyzing the data, I was straightforward about the results and their implications. I needed to disregard my

feelings to portray the descriptions of others accurately. To address my bias, I focused my research questions on teacher experiences using HeidiSongs music as an instructional tool rather than as a comprehensive classroom management tool for increasing student engagement. An example of this type of questioning would have been to ask teacher participants about how they use HeidiSongs music in small groups or with individual students and then fully exploring their answers throughout the course of the study.

In examining my relationships with the research sites, I also took care to avoid cognitive bias. As a kindergarten teacher, I attended a kindergarten teacher conference session taught by one of Heidi's friends. Following the session, I approached the speaker to see if Heidi might be interested in allowing me to research the use of her music for my dissertation. The speaker connected me with Heidi through phone and email. Though I've never personally met Heidi, we had two phone conversations about education and had texted and emailed each other a few times about my possible research and her music. She offered to let me use her music for my study and to use her social media to recruit participants. However, this connection did not impact my role as a researcher in any way except that it might have made it a little easier to achieve participation and consent because the people who follow HeidiSongs music on social media were likely to be users of the music. Though it was likely easier to find participants with Heidi's social media post, the results were not altered because I included all teacher experiences with HeidiSongs, both positive and negative. Some of the experiences were positive like my own, but I took care to include negative experiences as well to remove all possible biases. All teachers run their classrooms differently, so I intended to capture and emphasize those differences in my research.

Data Collection

Case studies benefit when the researcher crafts propositions from a theory that will aid in designing the study, collecting data, and then analyzing the data (Yin, 2018). My study was based on the theories that students have multiple intelligences (Gardner, 2017) and could learn more in a low-anxiety setting (Krashen, 1984). A case study researcher also needs to rely on many evidence sources so that the data can be triangulated (Yin, 2018). At least six different types of data collection are appropriate for a qualitative case study (Yin, 2018). These six sources are interviews, documents, physical artifacts, archival records, participant observation, and direct observations (Yin, 2018). I used documents, individual interviews, and a focus group interview in my study.

Documents include data in the form of emails, agendas, reports, articles, and evaluations (Yin, 2018). Archival records include service and organization records, maps, charts, survey data, and public use files (Yin, 2018). Interviews, considered to be among the most essential sources of evidence for case study research, can be prolonged, shorter, or conducted via a survey (Yin, 2018). Direct observations and participant observations occur in the field at the research site, although in the second type the researcher becomes a participant (Yin, 2018). Physical artifacts include tools, instruments, art, devices, or other cultural and physical artifacts (Yin, 2018). Regardless of which types of data collection a researcher uses, the researcher needs to collect and analyze many sources of evidence, create a database for case study evidence, and take precautions to use, collect, and protect all electronic data (Yin, 2018). Further, the chain of evidence must be maintained to ensure quality, reliability, and participants' protection (Yin, 2018).

Data collection strategies for the study, in the order in which they were conducted, included documents (letters to a new teacher), individual interviews, and one focus group interview. First, I collected letters to a new teacher from each participant for analysis. In these letters, participants described to a hypothetical new teacher how they use HeidiSongs music as an instructional tool in their classrooms. I then conducted interviews with each participant to learn more about how they use HeidiSongs music in their classrooms. Finally, I conducted one focus group with participants in an online forum. I conducted the focus group last to obtain a sense of overall, summative consensus. Through the focus group, I hoped to spark conversations about any differing perspectives that were detailed in the documents and interviews. By triangulating this data, I achieved a more reliable result. Triangulation of data was important to ensure validity.

Documents: Letter to a New Teacher

Documentation is a specific, stable, relevant, and unobtrusive source of evidence in a qualitative case study (Yin, 2018). Documentary information includes things like letters, emails, reports, evaluations, news articles, notes, and minutes of meetings (Yin, 2018). In this study, I collected documentation in the form of letters. Letter writing was first explored as a primary data collection strategy for qualitative research in 2002 (Harris, 2016). In my study, each participant wrote a letter from themselves to a hypothetical new teacher in their building (See Appendix F). This letter, written from a helpful mentor's perspective, described how the participant has used HeidiSongs music in the elementary classroom. This letter, addressed to a hypothetical new teacher, contained details that show the new teacher both how and why the veteran teacher used HeidiSongs as an instructional tool in the classroom.

Individual Interviews

Interviews are an important source of evidence for case studies because many case studies are about human actions, relationships, activities, or perceptions (Yin, 2018). An interview is a conversation-based social interaction between the researcher and a participant (Creswell, 2018). It was appropriate for this study because interviews are targeted and insightful (Yin, 2018). My purpose was to understand teachers' descriptions of their experiences using HeidiSongs music as an instructional tool in the classroom. Through conversation-based interviews, I could deeply target these experiences. I could also gain additional insights into human activities through the interview (Yin, 2018). As the researcher, I conducted all participant interviews via a video conferencing tool. Interviews were both audio and video recorded. I used a semi-structured interview format that followed the scripted questions below but allowed for further prompting or probing with follow-up questions that emerged during the interview. All my initial research questions were answered by this data collection strategy of exploring teacher experiences through the interview process.

Standardized Open-Ended Interview Questions

1. On a typical day, how much music of any sort do you use in your classroom? Please tell me what kind of music you use and when you use it. (HeidiSongs, classical, brain breaks, etc.).
2. In a typical school year, how often do you use HeidiSongs in your classroom?
3. How much do you participate in HeidiSongs? I would like to know if you are simply playing the videos, if you are singing along, if you are performing the songs yourself with your own instrument, if you remind students of the songs during other times of the day (such as small group guided reading, transitions, or during spelling tests), etc. (CRQ)
4. How does it feel to use HeidiSongs? (CRQ)

5. How do your students react to HeidiSongs? (CRQ)
6. How does using HeidiSongs impact literacy instruction in your classroom? (CRQ)
7. Tell me about the diversity of your students. (SQ1)
8. In what ways does HeidiSongs music require differentiation in your classroom? (SQ1)
9. How do you use HeidiSongs in the whole group setting in your classroom? (SQ1)
10. How do you use HeidiSongs with small groups in your classroom? (SQ2)
11. Describe how individual students use HeidiSongs when they work independently in your classroom. (SQ3)
12. Describe how HeidiSongs impacts classroom management.
13. Describe how HeidiSongs impacts student engagement.
14. Why would you consider HeidiSongs to be an effective academic activity?

Questions one and two were knowledge questions. I intended these questions to be relatively straightforward and non-threatening, which helped build rapport between the researcher and the participant (Patton, 2015). Responses to these questions also revealed a baseline of how much participants use HeidiSongs in the classroom during a typical day and a typical year. If responses differed drastically, I could look for patterns that connect the amount of usage of HeidiSongs to teacher descriptions of how they use HeidiSongs in different settings, from the whole group to small group to individual student work time.

Questions three through six were specifically about HeidiSongs. Responses to these questions addressed my central research question: how teachers describe their use of HeidiSongs as an instructional tool. While question seven directly addressed this central research question,

questions three through five addressed background, baseline components of the central research questions that involve participation, feelings, and student reactions. This was useful to the study because it provided a deeper level of detail to the teachers' answers about how they use HeidiSongs as an instructional tool. By including questions three through five, I ensured that teacher answers about how they use HeidiSongs included emotional, behavioral, and participatory responses that helped guide my data analysis. It was interesting to see how teachers use HeidiSongs the way they do and to analyze usage patterns that emerged from this line of questioning. These questions also linked back to literature on how the brain learns (Berezniuk et al., 2018; Sousa, 2017; Zadina, 2014) and to the theories supporting this study. These theories include Gardner's (2017) theory of multiple intelligences (kinesthetic and musical) and Krashen's (1984) theory that an high affective filter (i.e., high anxiety) impedes learning.

Question seven targeted the recognition of diversity or special populations of students in each teacher's classroom. HeidiSongs was effective at increasing sight word recognition in 100% of the kindergarten students in Martin's 2017 study. However, the class population was 100% Caucasian, and all spoke English as their primary language (Martin, 2017). This question provided a window into the general diversity of the class each teacher is working with when they use HeidiSongs.

Questions 10 and 11 directly addressed the second and third sub-questions. Responses to these questions revealed details on how teachers describe their use of HeidiSongs in the classroom as an instructional tool in the small group setting and with individual students. By moving from the whole group setting into the small group setting and individual instruction, I targeted details of how teachers use HeidiSongs throughout the gradual release of responsibility in guided literacy instruction. Asking open-ended questions allowed teachers to provide rich

detail on their experiences using HeidiSongs with each group in their classrooms. By examining these responses, I gained a better overall picture of how teachers are using HeidiSongs in each type of classroom setting and how this related to existing literature that links music to enhanced literacy (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014).

Questions 12-14 were exploratory questions that could be useful in inspiring future research studies. Answers to these questions could also have provided plausible rival explanations for HeidiSongs' enhancement of literacy. Increased student engagement and improved classroom management might be responsible for correlated positive classroom outcomes. By directly asking these questions, I allowed my participants to address these plausible rival explanations. The final question sought consensus. Participants who saw HeidiSongs as a valid academic activity usually believed it enhanced literacy. If a participant answered no to this question, I would have made an in-depth review of their reasoning to examine possible flaws in my study, my reasoning, my conclusions, or my assumptions.

Focus Group Interview

A focus group is the group counterpart of an interview (Yin, 2018). During the focus group interview, the researcher moderates the discussion focused on a specific aspect of the case study (Yin, 2018). Through this process, the researcher is deliberately trying to bring each participant's views to the surface (Krueger & Casey, 2015; Ryan et al., 2014). It was appropriate for this study because, as the researcher, I wanted to deliberately bring the participants' views to the surface about one specific aspect of my case study, which is how they use HeidiSongs as an instructional tool in their elementary school classrooms. This was the final data collection method, so I

already had preliminary interviews with each participant. I hoped the focus group interviews would serve two purposes in my study. This dual-purpose included both deepening unique personal responses while also bringing any consensus to the surface. One focus group interview (See Appendix G) was conducted in an online forum. I asked participants to sign up to attend the focus group. If less than three participants had been available for the first scheduled focus group, I would have rescheduled until I obtained a minimum of three participants. However, four participants were available. Throughout the course of the focus group, participants were able to and build on each other's comments.

Focus Group Questions

1. What is one surprising thing you have experienced while using HeidiSongs in your classroom?
2. Describe how you use HeidiSongs as an instructional tool.
3. How do you use HeidiSongs for whole group instruction?
4. How do you use HeidiSongs for small group instruction?
5. How do individual students use HeidiSongs during individual student work time or 1-on-1 instruction?
6. How many of you consider yourselves to be a musical person?
7. Tell me about what led you to use HeidiSongs in the first place.
8. Tell me about some specific students that seemed particularly responsive to HeidiSongs.

The first question served as an icebreaker to get the conversation going. Since the participants were all strangers to each other, starting the process with this question encouraged

them to share their unique, honest, or surprising perspective with the group. They felt comfortable offering unusual answers because they knew the researcher valued surprisingly original responses.

The next question addressed the overarching purpose behind my study, which linked music to enhanced literacy (Burton, 2015; Gordon et al., 2015; Haning, 2016; Hancock & Wright, 2018; Markova, 2016; Martin, 2017; Montgomery, 2014; Moritz et al., 2013; Slater et al., 2014; Tomlinson, 2015; Walton, 2014). When answering this question, participants talked directly about my original research question. The participants found that many of them had common thoughts about this, which helped me form patterns, analyze codes, and build consensus. However, just as in question one, unusual or surprising answers, particularly negative ones, were appropriately recognized and even encouraged to pursue reliability and unbiased conclusions.

Questions three through five specifically addressed the original research sub-questions. Each participant had already answered these questions independently in the interviews. However, when asked these questions again, participants often remembered something they left out previously and were able to supplement their response with new pertinent information. Also, asking these questions in a focus group allowed for more in-depth discussion and reflection about relevant issues, results, perspectives, and aspects of literacy instruction that some teachers may not be familiar with but emerged in a group setting as the participants became more comfortable expressing their perspectives. Responses also aligned to Gardner's (2017) theory about multiple intelligences. Participants agreed that HeidiSongs appeals to both musical and kinesthetic intelligences. They also noted that the engaging nature of the songs seemed to decrease anxiety (Krashen, 1984).

Finally, responses to the last three questions shed light on implications and recommendations for future research. If the perception of the self as a non-musical person was a barrier to getting started with HeidiSongs, future teacher training could overcome this barrier. Knowing more about how and why teachers choose to use HeidiSongs could point other researchers to potential problems that this program can address. Ultimately, by identifying potential types of students that seemed to benefit the most from teacher use of HeidiSongs in the classroom, I hoped to identify specific populations of students that stand to benefit from this music-based learning program on a compelling level.

Data Analysis

Case study analysis does not include extreme restrictions or rules (Yin, 2018). However, as a researcher, I had to think ahead when planning the study to prepare for how to analyze it later (Yin, 2018). I also needed to develop an excellent analytic strategy as a general guideline (Yin, 2018). When designing my research questions, I was thinking ahead toward data analysis. My data analysis strategy was to structure my research questions into categories so I could later aggregate data under each category. My central research question was designed to give an overview of the topic. Each of the three subquestions was intended to spotlight a specific mode of literacy instruction: whole group, small group, and individual instruction. Each of my interview questions was targeted to a particular research question so that when it was time for analysis my data was aligned under general categories.

As the researcher, I could choose to pursue many different combinations of procedures to analyze my case study research. The procedures and techniques are most helpful when the researcher already has an analytic strategy in place and knows what they are looking for, including evidence that can provide answers to their original research questions (Yin, 2018).

Since I used a top-down analytic strategy from the beginning by designing interview questions that helped answer my original research questions, these procedures were helpful. Data analysis procedures include testing, examining, tabulating, categorizing, or forming any combination of both numeric and narrative evidence (Yin, 2018). Numeric evidence, including how many years of experience each teacher has, was formatted into a table (See Table 3.1). Then I examined and categorized that evidence so I could analyze it. I began with the data collected from the initial questionnaire, which included teacher experience and geographic location. After putting these into a table, I checked for accuracy during individual interviews. I also gathered narrative evidence through my interviews and document collection. This narrative evidence reflected the information I collected through the initial questionnaire. By comparing the letters, interview answers, and the document written by each participant, I was able to begin using open coding (Creswell, 2018) to chunk similar keywords into themes. I used the focus group to further confirm and clarify these themes.

As the researcher, I used these procedures and techniques for all evidence collected to address significant aspects of the case study (Yin, 2018). Using the collected data, I needed to develop a full, rich, and in-depth explanation in response to the research questions at the heart of the study (Yin, 2018). I also needed to show familiarity with current literacy research and thinking about the chosen topic (Yin, 2018). Many researchers have investigated the effects of music on learning and literacy (Markova, 2014; Martin 2017). Research shows that HeidiSongs music enhances literacy in kindergarten students (Martin, 2017). I expected to find that teachers have found HeidiSongs to be generally helpful, but I did not know how teachers were using these songs in different instructional scenarios or with different grades. I avoided bias by asking open ended questions. I did not know if these teachers use HeidiSongs more as fun brain breaks or as

serious instructional tools. However, as I collected and analyzed data, using sound analysis procedures allowed me to recognize possible plausible interpretations of evidence that rivaled the proposition (Yin, 2018). The four general strategies for analyzing data include relying on the theoretical proposition's support as a foundation, working on the collected data from the bottom up, developing a compelling description of the case, and examining all possible and plausible rival explanations (Yin, 2018).

Linking data to propositions requires analytic techniques such as matching patterns, building explanations, analyzing a series of times, using logic models, and synthesizing across cases (Yin, 2018). To begin analyzing data, the researcher should analyze the collected data to look for patterns (Yin, 2018). I started by looking for patterns in teacher responses about how they use HeidiSongs in the whole group, small group, and individual settings. I coded the data by collection method, response type, and instructional setting. Then I began to form cross-case synthesis by linking similar patterns across participant responses. By treating each teacher as a case, I could investigate the use of HeidiSongs in a variety of instructional settings over time. This way I could investigate how they use HeidiSongs throughout an entire academic school year.

I used various strategies and techniques to pull insights and concepts from those patterns (Yin, 2018). For qualitative research, data analysis involves preparing data, organizing data for analysis, coding data, condensing the codes, reducing data into themes, and then representing the data in tables, figures, or a detailed discussion (Creswell, 2018). I used the detailed discussion to relay teacher descriptions and represent the data patterns I discovered in related tables or charts.

Then I focused on my internal and external validity. From there, the five analytic techniques help the researcher deal with the problems of external and internal validity (Yin,

2018). The five analytic techniques for case studies include logic models, pattern matching, cross-case synthesis, building explanations, and analyzing time series (Yin, 2018). Analytic conclusions that independently arise from multiple cases are much more powerful than conclusions that come from a single case (Eilbert & Lafronza, 2005; Hanna, 2005; Yin, 2018). Therefore, I built explanations from multiple cases in my study. After using a combination of these techniques and strategies, the researcher should make sure they have adhered to the four principles that ensure high-quality analysis (Yin, 2018). These four principles require the researcher to attend to all collected evidence, investigate the plausible rival interpretations, take care to discuss how evidence reflects on the case study's central issue, and demonstrate the researcher is well versed in current thinking and literature related to the topic (Yin, 2018).

Naturalistic generalizations are developed by analyzing data (Creswell, 2018). With this kind of generalization, people can apply what they learn to another population of cases or similar contexts (Creswell, 2018). Through this study, I attempted to develop naturalistic generalizations that could be transferred to other classrooms worldwide, including those of new teachers. By studying teacher descriptions of their use of HeidiSongs' music in various elementary school classrooms, the results could be easily understood, transferred, and conceptualized. Naturalistic generalization was used to analyze data from all the forms of data I collected through documents, interviews, and focus groups. Findings were synthesized by linking similar themes and keywords in responses.

I also used the data analysis technique of explanation building. According to Yin, explaining a phenomenon means explaining the why, the how, or the cause-and-effect sequence (Yin, 2018). By analyzing teacher descriptions in my study, I attempted to build a clear picture of how teachers use HeidiSongs' music in their classrooms as an instructional tool. For the final

component of case study research, the researcher needs to identify all possible plausible rival explanations for the findings and then address them (Yin, 2018). I analyzed the teacher descriptions of their use of HeidiSongs in the classroom to gain a full understanding of how they use this program and whether their usage could identify any possible plausible rival explanations. For instance, if a teacher used HeidiSongs as part of a more extensive literacy enhancement program, the rest of the program could explain any literacy boost for which HeidiSongs might be getting credit. Or, if a teacher only used HeidiSongs with the whole group, the kind of instructional tools she used in small groups or with individual students could have been more useful than HeidiSongs.

Trustworthiness

The aspects of trustworthiness include credibility, dependability, transferability, and confirmability. Definitions and importance of these aspects are explored below. I used the following methods to achieve trustworthiness in this study: generating rich and thick descriptions, prolonged engagement, and corroborating evidence through the triangulation of multiple data sources. I also returned data to participants to check for accuracy and credibility through member checking.

Credibility

Credibility is defined as how believable and appropriate a research account is and often includes an agreement between the participants and the researcher on its appropriateness (Mills et al., 2010). It was essential to this study that teacher perspective be accurately described. Through the researcher's lens, credibility could be achieved by corroborating evidence through the triangulation of multiple data sources. In this strategy, the researcher uses different and multiple methods, sources, theories, and investigators to corroborate evidence (Creswell, 2018). I

used multiple sources of evidence from 11 participating teachers from all around the country. I collected data from them in multiple sources, including interviews, letters, and a focus group. By using these three different points of data collection, I triangulated the data to ensure credibility.

Dependability and Confirmability

Dependability refers to the reliability and consistency of research findings (Moon et al., 2016). Dependability also depends on the degree to which procedures used during research are documented (Moon et al., 2016). This consistency and documentation allow outsiders to follow, critique, repeat, and audit the entire research process (Moon et al., 2016). Researchers achieve confirmability when they show the results are so clearly linked to the conclusion that the process can be replicated (Moon et al., 2016). Both confirmability and dependability were important here because this study sought teacher perspectives. Teacher descriptions were individual but needed to be relevant to the topic and come from sources perceived as dependable. Prolonged engagement through deep interview questions helped establish confirmability and dependability in this study. By building rapport with participants, learning about the context and culture of each teacher's experience, and checking for possible misinformation or distortions, I became familiar enough with the participants to ensure validity in their responses. By pursuing this strategy, teacher descriptions could be confirmed and dependable. The researcher also has a role to play in dependability in that detailed coverage, notes, and observations must be appropriately recorded and reflected upon to reduce bias, increase transparency, and therefore increase dependability. Four tests establish the quality of case study research, and these tests are construct validity, internal validity, external validity, and reliability (Yin, 2018).

Transferability

Transferability means that a study's results could be applied in other studies, situations, and contexts (Coghlan & Brydon-Miller, 2014). It was crucial to this study because the findings might be useful if transferred to other diverse classrooms worldwide. By generating a rich, thick description and describing participant responses in detail, readers can make their own informed decisions about transferability (Creswell, 2018). A rich, thick description enables readers to use shared characteristics to transfer information to other, similar settings and occurs through the reader's lens.

Ethical Considerations

I performed no research before IRB approval. After obtaining IRB exemption, participants completed a permission form to provide informed consent (See Appendix D). Participation was voluntary and could be withdrawn at any time. Participants were not compensated for their time. All email addresses, recordings, and document submissions by participants have been digitally protected to maintain confidentiality and protect participants from harm. I am electronically storing study data for three years, at which point I will delete all data. This data also requires password protection. Additionally, I committed to disclosing comprehensive findings and including multiple perspectives that reflected a complex picture and do not reflect researcher bias toward HeidiSongs' music. Regarding social media recruitment, I was a member of the HeidiSongs page prior to beginning this research. I was able to see participant responses to the invitation to participate.

Summary

Through this qualitative case study, I aimed to explore teachers' descriptions of their experiences using HeidiSongs' music as an instructional tool in the elementary school classroom. Teacher participants were recruited via HeidiSongs' social media accounts and selected to

participate in the study based on the submission of an introduction letter to hypothetical new teachers. Interviews and a focus group were conducted to pursue teacher perspectives on the use of HeidiSongs' music in their classrooms with the whole group, small groups, and individual students. Data was collected from documents, interviews, and focus groups. To analyze the data, I labeled and organized it into related themes to form a cross-case synthesis and build explanations and naturalistic generalizations. To confirm trustworthiness and validity, I triangulated the data by comparing each teacher's responses to each of the three methods of data collection.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this qualitative case study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. The study utilizes the theoretical lenses of multiple intelligences and lowered affective filters through a multiple case study design. The central research question and sub-questions focus on how teachers use HeidiSongs in different classroom scenarios, including whole group instruction, small groups, and individual instruction or independent work time. After collecting the data, I analyzed each case individually and then organized the data into separate themes. The three major themes that I identified include the impact of music and movement on memory, music as a bridge, and the most common ways teachers are using HeidiSongs as an instructional tool in the elementary school classroom. These themes help to build explanations and naturalistic generalizations about how teachers use HeidiSongs in the classroom. In this chapter, I describe and summarize the participants and results, including theme development and research question responses.

Participants

The participants for this study included 11 current and former teachers from across the United States. All participants were female veteran teachers with at least 9 years of classroom teaching experience. Ten were currently teaching and one was retired. Participant ages ranged from 33 to 63, with teaching experience ranging from 9 to 35 years. Six of the 11 participants lived and taught in California. Other participants lived in West Virginia, Michigan, Minnesota, Missouri, and Texas. Most of the participants had taught multiple grades in multiple locations throughout their teaching careers. At the time of this study, six of the participants were kindergarten teachers. Other participants taught 2nd grade, transitional kindergarten, or multi-

grade special education. All participants were very courteous, professional, and passionate about teaching.

Participants were recruited via social media. All participants are followers of HeidiSongs on social media. After seeing a recruitment post on HeidiSongs' Facebook, or Instagram accounts, 18 participants signed up for the study by submitting a questionnaire. This questionnaire (See Appendix C) collected basic participant demographics as well as a document sample in which participants wrote a letter to a hypothetical new teacher about their use of HeidiSongs. Though 18 current and former teachers signed up for the study, only 11 were available to complete interviews, so these 11 were chosen as participants. Four of these participants later participated in a focus group interview. Individual interviews and the focus group interview took place over Zoom.

Amber

Amber has been a transitional kindergarten (TK) teacher in Southern California for seven years. She has been teaching in Moreno Valley and Yermo California for a total of 16 years. Before teaching TK, Amber also taught 1st, 2nd, 3rd, 4th, and 5th grades. She initially learned about HeidiSongs from a fellow teacher. Amber has been using HeidiSongs in her classroom since she began teaching TK seven years ago. In addition to HeidiSongs, she also uses Jack Hartmann music in the classroom. Amber stated she has learned that children respond and learn well with the music.

Diane

Diane has been teaching kindergarten and 1st grade in California for 25 years. She first learned about HeidiSongs from a teacher friend 12 years ago and has been using them consistently ever since. Diane's students "learn the songs very quickly," and she has "had great

success with kindergarten and 1st grade.” The SPED class at her school also uses HeidiSongs. Although Diane also uses Zoo Phonics and some songs by Dr. Jean, most of the music she uses in her classroom is the audio HeidiSongs CDs for sight words and math concepts. This year (2019-2020) in particular, because of the virtual teaching environment, she “really leaned on the music more because [she] wanted a routine.” As a kindergarten teacher, she uses different HeidiSongs sight words than she used for 1st grade. Diane’s 1st graders learned bigger, more complicated words, but the kindergarten sight words are simpler.

Emily

Emily has been teaching kindergarten for 22 years. She lives and works near Los Angeles and first began using HeidiSongs after learning about them on a blog 7-8 years ago. She plays music in her classroom for approximately 30% of every day in different capacities, from classical music in the background during math to more instructional music segments using HeidiSongs or Jack Hartmann. According to Emily, “one of the best ways for children to learn is by using music to teach a wide variety of skills and concepts.” Throughout the year, the types of music she uses change, but the percentage does not. Early in the year, she uses HeidiSongs to introduce her students to new concepts like colors, numbers, shapes, and letters. She said the “students enjoy the short simple repetitive songs that teach them these beginning-of-school songs, and they love the motions that go with them.” Emily said the songs also help her young students “get some of those wiggles out too.” As the year progresses, Emily moves on to the sight word songs. Often some of her students will learn how to spell certain words and sing the song “before they know what those letters are.” For instance, they can sing the ‘yellow’ song and tell you how to spell the word yellow before they know what a ‘w’ is.

Gina

Gina has been teaching for 14 years. This is her fourth year teaching transitional kindergarten, but she has also taught 1st, 2nd, and 3rd grade in California. HeidiSongs is Gina's favorite teaching resource and she has used it since her very first year as a teacher. She began by using the sight word songs, and then saw that the songs helped the students remember sight words and how to spell them. She has since expanded her use of HeidiSongs to include math concepts, shapes, and letter writing instruction. According to Gina, "the kids will sing the song anytime throughout the day and at home." She also sings the sight word song of the day to help facilitate transitions in the classroom. Gina does not show HeidiSongs videos in her classroom. Rather, she is learning the songs and performing them herself for her students. Also, Gina uses American Sign Language (ASL) hand shapes and movements with the HeidiSongs instead of the original motions. She does this because she has had former students whose family members used ASL as a primary language at home, so she wanted to make the song motions more meaningful for them. Gina believes that movement "reinforces learning the words." The movement also "helps support meaning."

Jessica

Jessica has been an early primary teacher in San Diego for 19 years. She believes in the importance of her job "teaching the emergent readers and making sure they have the foundational skills to succeed." She loves HeidiSongs because "music and movement are so great for all students, but especially for English Language Learners and the kinesthetic child." She uses HeidiSongs live daily and has continued this through distance learning. Her students "even ask for Ms. Heidi if we get busy and have not put any songs on... the song for 'go' is a favorite." Jessica believes that songs and music help with memory, so "it's a fabulous way to

learn high-frequency words.” HeidiSongs are part of the weekly curriculum in the Benchmark language arts program used by Jessica’s school district.

Kimberly

Kimberly has been teaching kindergarten in West Virginia for 9 years. She began using HeidiSongs about five years ago when Heidi gave a presentation on a professional learning day in Kimberly’s school district. Though she is self-described as having “never been a musically inclined teacher, [Kimberly] saw through [Heidi’s] presentation how effective the program was... and was willing to give it a shot.” The sight words required for kindergarten in her county had recently jumped from 38 to 88. Though reluctant at first, Kimberly soon discovered that HeidiSongs’ “actions and songs combined drill the words in with the kids... the fact is, they work!” She admits to frequently “going home singing them more than [she cares] to admit!” Kimberly has also noticed in her classroom that sometimes “a student will be reading and come across a sight word they don’t recognize and [she’ll] hear them start spelling it, then singing it until they figure out the word... it’s magic!” Kimberly credits the engaging songs and movements of HeidiSongs for students to be able to remember the words: “it has added an element for us to teach them in a way that students can grasp.”

Melissa

Melissa is a retired teacher in Missouri with 31 years of experience. She taught kindergarten for 25 years but also has experience teaching 2nd, 3rd, and 6th grade. Melissa also taught music for grades K-12. She learned about HeidiSongs from an ECE workshop in 1999 and has been using them ever since. Melissa also used other music-based learning programs in her classroom, including songs by Jack Hartmann and Dr. Jean. Teaching young students is about helping them acquire necessary skills while having fun “as they become developmentally ready

to learn” and “use varying degrees of gross and fine motor movements,” according to Melissa. She said young students are “very animated, talkative, and expressive,” so the “most important instructional tool you can use is music and movement.”

Phoebe

Phoebe has been a kindergarten and a first-grade teacher in Texas for 11 years. She has been using HeidiSongs since 2012 when she found out about them from a colleague. After meeting Heidi Butkus in person at a Texas conference for kindergarten teachers, she purchased all the songs on DVD. She continued to purchase HeidiSongs when they moved to the Vimeo platform, and again when they became available as a streaming service on Uscreen. Although Phoebe uses lots of music from other singers including Mister B, Jack Hartmann, Harry Kindergarten, Katie with Secret Stories, and Carter Langston Phonics Man, she doesn't use anything the way she uses HeidiSongs. According to Phoebe, nothing else has everything she needs in one place and “covers all [her] bases.”

Sally

Sally has been a teacher for 22 years and has worked in several Michigan cities. She has experience teaching a variety of grade levels from kindergarten to 1st, 2nd, 3rd, 4th, 6th, 7th, and 8th grades. She has been using HeidiSongs since discovering them on the internet in 2008. Sally is currently a kindergarten teacher and uses music by Jack Hartmann in her classroom. According to Sally, who subscribes to the streaming version of HeidiSongs, HeidiSongs “really helps my students learn so much content by using kinesthetic learning and familiar tunes.” Sally also loves the visual aspect of the videos. The songs help her students write their numbers and sight words. According to Sally, her “kids love the songs so much that they sing them at home too.”

Stephanie

Stephanie has 35 years of experience teaching kindergarten in Minnesota. She has been using HeidiSongs since she heard about them at a kindergarten conference in Alabama in 2010. According to Stephanie, they “have made all the difference in the world how my students have learned.” Stephanie believes that “the brain truly does learn through music.” According to Stephanie, a single HeidiSongs is “10 times better than any worksheet.” She said that “worksheets don’t grow dendrites, but music does.”

Tiffany

Tiffany has been teaching for 24 years. She has experience teaching TK, kindergarten, 1st, and 2nd grade. She currently teaches 2nd grade and has been using HeidiSongs in her classrooms for almost 15 years, since she learned about them at a kindergarten conference where Heidi was presenting. Tiffany also uses Zoo-phonics. However, she said HeidiSongs help students “remember how to spell their sight words and the color words by using catchy and well-known tunes in a fun and musical way” for letters, sounds, colors, numbers, and sight words.

Results

The results of this qualitative multi-case study are from data collected from each case. Data includes document collection through a hypothetical letter to a new teacher, individual interviews, and a focus group interview. The purpose of this multiple case study is to understand how teachers use HeidiSongs music as an instructional tool in their classrooms. The following sections describe the themes that developed by analyzing data through the building of explanations and naturalistic generalizations. Findings were synthesized by linking similar themes and keywords in responses. Themes include the impact of music and movement on memory, music as a bridge, and the most common ways teachers use HeidiSongs as an instructional tool in the elementary school classroom. Research question results are also provided

in this section. The central research question concerns elementary teacher descriptions of the ways they use HeidiSongs music as an instructional tool in the elementary school classroom. Sub-questions focus on the usage of HeidiSongs music in the whole group, small group, and individual instructional settings.

Theme Development

Three major themes developed from document collection and individual interviews. The three major themes that were identified are the impact of music and movement on memory, music as a bridge, and the most common ways teachers are using HeidiSongs as an instructional tool in the elementary school classroom. Data were coded manually by highlighting and color-coding similar responses by subthemes, and then organizing by color into larger themes (see Appendix H). These themes were further discussed and clarified during a focus group interview of four teacher participants. Focus group participants agreed that movement is impactful and fun. The focus group consisted of teacher participants, and all participants in the study use HeidiSongs in the whole group setting.

Major Theme 1: Music, Movement, and Memory

The first major theme that developed through the study was the impact of music and movement on memory. This theme first developed during document collection and was confirmed during individual and focus group interviews. All participants noted in individual interviews and in the focus group interview that the cross-body movements performed by students while singing HeidiSongs helped reinforce meaning and trigger memory for their students. All teachers also stated that they appreciate the cross-body movements used in HeidiSongs because of the kinesthetic actions and a resulting increase in engagement among students. All the kindergarten teacher participants expressed a daily need for activities that

involve focused movement as a remedy for “kinder wiggles,” which is developmentally appropriate for an age when students have a difficult time sitting still for extended periods.

Kindergarten teacher, Phoebe, begins every morning of instruction with the counting to 100 HeidiSongs, which has “great movement and rhythm” and is “always a great warm-up that is fun, engaging, and works on cross-body movements, which are so important to my little kinders.” At the time of the interview in early May, she noted that her students are “definitely in summer mode” and noted that because students were “antsy,” they “play music a lot to get up and start moving around.” HeidiSongs, Phoebe said, “gets us up and moving.”

For Amber, having her TK students moving around is very important. At first, Amber reported feeling a little apprehensive if an administrator walked in while she was demonstrating a movement song with her students, but she now knows the necessity of movement for TK students and is unashamed to be “dancing around with them” when an administrator walks in to observe. Another participant, Stephanie, “does not dance,” but her students still enjoy participating. Stephanie noted that all her students complete the actions and stay on task, and Sally reported students often practice writing the words or numbers on a whiteboard during a HeidiSongs, but “a lot of them stand up and dance in between.” One participant, Diane, used only the audio CD version of the songs at first and noticed that some of her students would get up and “have a little dance, a little little dance” along with the HeidiSongs.

The HeidiSongs movements can make transitioning to a new school easier for students. Diane reported that one of her new students was able to join in class instruction upon arrival due to his familiarity with the movements taught through HeidiSongs. Since then, Diane has transitioned to using DVD of the songs and enjoys how the songs “get a movement into it.” However, most of the time, she stated that she holds up flashcards and plays or sings an audio

only version of the song. Even though students are not performing Heidi's motions exactly as they appear in HeidiSongs videos, the movement is still an important part of the experience. Diane's whole class stands up together. She affirmed, "When we're counting, we're doing motions with the count, and we try to get their whole body into it."

Gina also uses only the audio versions of HeidiSongs. Gina, however, creates song motions based on American Sign Language (ASL). In the past, Gina taught students with family members that used ASL at home. With this in mind she performed ASL instead of the standard Heidi motions. As a result, Gina rarely plays the videos of HeidiSongs for her class. Instead, she fully participates and demonstrates the motions with ASL as she sings or plays the CD. Although she uses different movements, Gina fully believes that "movements help support meaning." She also believes movements enhance student engagement and interest.

Emily uses only the video versions of HeidiSongs. Emily's students know all the motions to the songs. She said her students love the motions and noted that the movement "helps get some of those wiggles out." Emily models the song motions for students every time "even though we're watching this Heidi do it on the screen." Since the pandemic began and Emily's school moved to virtual learning, she has continued playing HeidiSongs for her classes on Zoom, which is an online video conferencing tool. Movement is still important for virtual learning, she said, and teachers need to model this for their students: "even virtually, if we're using any videos where there are motions, if I'm also on Zoom doing it, they're much more likely to also be doing the motions." Emily reported that without modeling the HeidiSongs movements, some of her students will perform the motions on their own, but there "are others that maybe need a little bit more" to encourage them to do the movements. Overall, she noted that the HeidiSongs actions "are pretty fun and so they tend to like doing that." The coordinating motions also help with

engagement, so the songs are almost like a brain break in which students pause from learning to dance. According to Emily there is also “backdoor learning coming at them.” Emily stated she believes the multiple modalities of HeidiSongs are what make the songs effective instructional tools: “they can see it, they can hear it, they can move to it.” She also uses the movement as a purpose-driven activity during transitions, in which students have only the amount of time for one HeidiSongs to transition themselves into the new location.

Jessica stated she believes that “music and movement are great for all students, but especially for English Language Learners and the kinesthetic child.” She said that “children learn through movement” and that the music’s “movement helps them internalize it.” Without the music or movement, a lot of her students “wouldn’t be retaining the information.” For this reason, Jessica uses music intentionally throughout the school day, planning for different types of music in different learning scenarios as well as frequent breaks for songs with motions. She reported that “for kinders, I really, really believe they need music and movement throughout the day.” According to Jessica, music and movement help her students with muscle memory, behavior, engagement, and being able to internalize new information. Tiffany echoed this connection between music and movement. When asked which was more effective for long-term memory of information, the music alone or the music with the movement, she replied: “I think the music and the movements, because it hits more of the senses for them.” Tiffany frequently has former students, now high school age, come back to visit and they can remember and perform complete songs for her.

Melissa pointed out that kindergarten students “use varying degrees of gross and fine motor movements as they become developmentally ready to learn.” The movements in HeidiSongs “help kids cross the midline,” which “will aid in handwriting and drawing skills

too.” Melissa stated she believes that the motions in HeidiSongs are an integral part of the songs. The students love the motions to such an extent that Melissa can use them for classroom management: she “could just start singing that and doing the motions and they all start joining in, and when they finished the song, they’d be quiet and ready to start the next thing.” However, Melissa emphasized that to get students to buy in, the teacher must also demonstrate the motions and participate each time. She uses the DVDs but cautioned that “if you just turn it on, it’s like every other show they’ve watched on TV and the students will sit and watch.” To encourage students to participate in the motions, Melissa models the motions and verbally encourages students by making statements such as “Ooh I think that is so good we’re going to video you!” She said, “Kids love being recorded and will show off for the camera, so this was a good way to get them to fully participate.” Melissa sometimes uses a puppet in her hand when she demonstrates song movements “because you have to draw their attention somehow, and they just get kind of used to the same thing every day, so you have to change it up, and you have to be an actor, or they won’t pay attention.”

Major Theme 2: Music as a Bridge

The second major theme identified through the study was the cognitive and emotional bridge provided by music to overcome divides in preferences, abilities, learning style, and socioeconomic status. Teachers used a wide variety of music in the classroom for many different students. They also reported that most students make both emotional and interpersonal connections while performing HeidiSongs. Sally feels like HeidiSongs gives students more “buy-in” because the songs are based on “something familiar, and that they can sing.” She added, “What I do like is so many of her songs or nursery rhymes are familiar to them.” Diane noted that one of the songs is set to the tune of the Barney song, which was from a popular television

show of the same name, and her students love this song because they can immediately make a connection to it through its familiar tune. Children “connect a word, and then they learn that word so fast.”

Music is one of the best ways for people to learn and remember things, according to Sally. She believes it “activates the brain.” Stephanie agreed, saying that “the brain truly does learn through music” and that “worksheets don’t grow dendrites, but music does.” According to all the teachers in this study, everyone can connect to music, regardless of cultural heritage, academic ability, income level, or behavioral needs. According to Phoebe, “HeidiSongs works great with them because every kid loves to sing, no matter their ethnicity or race or background.” Using music in the classroom makes learning more joyful, fun, and engaging. Teachers also used music to gain student attention when necessary.

According to all participants in this study, HeidiSongs promotes fun, interactive learning. Tiffany uses HeidiSongs because they promote learning in “a fun and musical way... by using catchy well-known tunes that students remember even years after they leave your classroom.” Singing and dancing is a normal activity for everyone in Tiffany’s class, and she said they all enjoy HeidiSongs so much that they will remind her to play them. Shy students eventually “always get over their shyness and they start to join along” during the songs: “almost all of them get involved, although my real shy ones and my new ones tend to take a little while to warm up and follow along.” The interactive engagement with classmates and with the song prompts children to actively engage in classroom instruction.

Students of all backgrounds connect with HeidiSongs. “It pretty much works for everybody,” said Emily. These diverse backgrounds include shy students, ELLs, SPED students, and students on behavior plans. Stephanie noted that her SPED students seem to be particularly

impacted by HeidiSongs, and Sally feels that her ELL students benefit as well. Students on behavioral plans request classroom management songs in Stephanie's classroom, and she "can sit and play music for 20 minutes and have no behavior issues." Stephanie believes music, "in and of itself, just lends itself to not create problems" because all students are engaged, participating, and staying on task. HeidiSongs have been instrumental for Stephanie's classroom instruction when it comes to finding "different ways to reach kids and make it fun." When one of Stephanie's SPED students couldn't learn to spell his name, Stephanie put his name to the tune of a HeidiSongs. Her class began singing this song "all day long," and the student soon learned to spell his name.

Some students make emotional connections to HeidiSongs. Certain HeidiSongs create an especially joyful and "giggly" reaction for Tiffany's students. "The dog in the doodoo always cracks them up," Tiffany said, "and the white with underwear." These emotional connections help with their memory, and Tiffany stated she often has former students come back to her and say, "oh, I remember that song, and they will sing it back. Tiffany reported that her students are thrilled about singing the songs and often "don't realize they're learning it, they're just excited about it." Phoebe uses this emotional connection to the song to help students remember sight words. She frequently uses printed screenshots of the HeidiSongs videos to help students recall words. This helps students link the visuals from the songs to the content. As a result, students can often remember an entire song when they see a single screenshot from a HeidiSongs video.

Teacher participants enjoy using HeidiSongs. Kimberly, who plays HeidiSongs during lunchtime, feels good about using this media because she knows her students are having fun while learning. "I didn't realize how much they liked it until we started listening to it at lunch," Kimberly said, "and I realized I might have to not let them listen to this because they're having

too much fun and not eating!” Gina’s students love the songs so much they sing them “anytime throughout the day and at home.” Emily’s students sing the HeidiSongs so much at home that “in general, parents will be like... yeah, you know, that song, we’ve heard that song a lot lately.” Diane reported that during virtual learning classes, while playing HeidiSongs, she would frequently see “other siblings popping in...even the toddlers were wanting to come over to hear this music, and that was cute: it’s like it draws them in wherever they are.”

Teachers reported positive personal feelings associated with HeidiSongs. If Gina is “feeling tired or overwhelmed, doing music with [her] students brings [her] up.” She reported that she found the happy feelings associated with HeidiSongs to be particularly useful this year as she has served as a union negotiator during the pandemic. Her students seem to enjoy the songs too. Diane said that she loves HeidiSongs and “gets jazzed about... seeing kids latch on to the words.” Kids also love song and dance in general, said Phoebe, and the HeidiSongs “put us in a good mood.” Phoebe describes this love of song and dance as “something that spans across... language barriers, cultural diversity, ... HeidiSongs works great ... because every kid loves to sing, no matter their ethnicity or race or background.”

Major Theme 3: Most Common Usage of HeidiSongs

The third major theme identified through the study was the most common usage of HeidiSongs, which is in the whole group setting. Seven teachers used HeidiSongs in the small group setting and seven teachers used HeidiSongs with individual students during independent worktime. However, according to study participants, most HeidiSongs instruction occurs in the whole group setting. All participants in this study used HeidiSongs in the whole group setting. Phoebe and Kimberly use HeidiSongs exclusively with the whole group. Three of the teachers,

Sally, Phoebe, and Kimberly, also use HeidiSongs during breakfast and lunch times so students gain additional sight word practice while eating.

All teacher participants in this study used HeidiSongs in the whole group setting as an instructional tool. Other participants, including Jessica and Diane, use HeidiSongs mostly for the whole group instruction but reported they also use this tool with smaller groups when possible. Seven teachers in this study also use HeidiSongs in the small group setting. However, three of these participants who use HeidiSongs in small groups only use vocal references of the song to help a student recall a tune: they are not playing the songs or videos in the small group setting. It is difficult for Kimberly to use HeidiSongs individually or with small groups “without distracting everybody else.” According to Kimberly, HeidiSongs music will immediately gain the attention of the whole classroom, which can be problematic when certain groups or individual students are supposed to be concentrating on other tasks.

Seven participants also use HeidiSongs during individual instruction or independent work time, but two of these participants use recall only. The others play audio or video HeidiSongs with individual students. Melissa uses HeidiSongs with individual students to make up for learning gaps. To compensate for academic diversity among her students, she differentiates lessons and schedules to meet the academic needs of her students. These literacy centers often include watching HeidiSongs on a computer, practicing HeidiSongs handwriting, or singing HeidiSongs while spelling sight words with letter manipulatives.

Teacher participants use HeidiSongs for a variety of reasons. Most used specific HeidiSongs to enhance literacy, linguistics, math skills, and classroom management routines. “We use it for everything,” said Phoebe, “because it just hits that mark.” Amber also uses HeidiSongs “frequently, particularly at the beginning of the year for classroom management

songs and the alphabet.” The HeidiSongs used most often by teachers are the sight word songs, alphabet songs, and counting songs. For kindergarten teachers, HeidiSongs are used primarily during instructional time. According to Melissa, the “most important instructional tool you can use is music and movement.” However, all teacher participants in this study use HeidiSongs in the whole group setting for other non-instructional purposes, including brain breaks, classroom management, and transitions. Tiffany uses the songs when students are “moving from one center to the next, and I play the song... when the song is done you need to make sure that you’re ready to go at your next table.” Seven participants used HeidiSongs as transitions between activities such as math, literacy, and centers. Seven others used HeidiSongs to help with classroom management. Four participants used HeidiSongs for both transitions and management. The songs “remind [the students] what they’re supposed to be doing,” said Gina. Six participants sometimes use HeidiSongs specifically as brain breaks.

Though all the teachers interviewed stated they use music every day, they use different amounts and types of HeidiSongs music for instruction throughout the year. Melissa memorized the songs and “very quickly learned” that she could use them “all the time, all day, all the time, all year.” The music and the movement of the songs would get her students’ attention. However, Melissa shuffles the songs to maintain interest. Sally uses brain breaks “every half hour or so” to fill student needs for movement.

Most participants increased their usage of HeidiSongs during the COVID-19 pandemic, both for in-person and virtual instruction. According to Gina, the streaming service was easier to use during COVID-related virtual learning. The participants used a wide range of audio-visual presentation types for HeidiSongs, with three participants memorizing and performing the songs and motions themselves, six playing CDs, six playing DVDs, and five using the current

streaming service. One teacher uses sign language motions with the older audio version of HeidiSongs. All participant teachers sing along, and only one does not dance with the music. Six of the participants currently use HeidiSongs for kindergarten students, but others teach prekindergarten, 1st grade, 2nd grade, or SPED. Table 2 includes the most common HeidiSongs usages, including classroom setting, other optional uses, and the method by which the teacher accesses the songs.

Table 4. 1

Most Common Usage of HeidiSongs

Name	Whole Group	Small-Group	Individual Instruction	Other Use	Method of Use
Amber	Yes	-	-	Management, transitions	Videos
Diane	Yes	-	Seesaw	-	CDs only
Emily	Yes	Recall only	-	Transitions, breaks	CDs, DVDs, streaming
Gina	Yes	Recall only	Yes	Management, transitions	CDs only with ASL
Jessica	Yes	-	Benchmark	Management, breaks	CDs, DVDs, Benchmark
Kimberly	Yes	-	-	Management, transitions, breaks	DVDs
Melissa	Yes	Yes	Seesaw and computer stations	Management, transitions	CDs, DVDs, streaming
Phoebe	Yes	Yes	Recall only	Management, breaks	DVDs, streaming
Sally	Yes	Recall only	-	Breaks, transitions	Streaming
Stephanie	Yes	Yes	Yes	Management	DVDs, streaming
Tiffany	Yes	Yes	Recall only	Breaks, transitions	CDs, videos (prefers older ones without animation)

Research Question Responses

Each of the study's research questions was addressed through data collection and analysis. The purpose of the study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. The central research question and subquestions focused on how teachers use HeidiSongs in different classroom scenarios, including whole group instruction, small groups, and individual instruction or independent work time. Data collected through documents established an overall picture of teachers' descriptions of their experiences using HeidiSongs. Individual interviews and a focus group interview identified specific classroom scenarios from whole group, small group, and individual instruction.

Central Research Question

How do teachers use HeidiSongs music as an instructional tool in the elementary school classroom?

Three themes were identified through interpretive data analysis: the impact of music and movement on memory, music as a bridge, and the most common usage of HeidiSongs. Teacher participants, in this study, primarily used HeidiSongs as an instructional tool for teaching the alphabet, sight words, and math concepts. However, teachers also frequently used HeidiSongs as a tool for engagement, repetition, background noise, transitions, classroom management, and brain breaks. Participants described their use of HeidiSongs as joyful, engaging, successful, and necessary throughout the school day and year. Teachers use HeidiSongs because, as Melissa said,

It hits all the marks: it's a full-body activity where the whole child is involved and learning with the music, both visual and auditory, and it has the kinesthetic movement

and fine and gross motor, and that motor memory that they develop with their whole body is part of what makes them do better.

Emily uses HeidiSongs in her classroom every day for multiple purposes. “It’s a really good way to just engage them,” she said, “because they learn so much more quickly when you present things in a song.” Kimberly also uses HeidiSongs every day and gradually increases the number of sight word songs. Many of the teachers use the movements included in the HeidiSongs videos, but one teacher, Gina, creates her movements for students to perform along with the songs.

SQ1

How do teachers use HeidiSongs music for whole group instruction?

Teachers in this study most commonly use HeidiSongs music for whole group instruction. The whole group “is how we learn all the songs and continue to reinforce concepts,” said Gina. Gina advised, “It never hurts anyone to have a review.” Many participants in this study used HeidiSongs to introduce new sight words each week.

When introducing the songs, some teachers approach the first viewing differently. For instance, when Kimberly introduces a new HeidiSongs, she asks her students to sit down and listen the first time. Kimberly then plays the video, pausing after each line to tell the students what the words say. She also points to each word as she says it. After they complete the whole song in this manner, Kimberly and her class stand up to perform the motions and the song together as they play the video again from the beginning. Sally has a microphone that she uses to model and sing the songs to her class and will often call up a student helper or “leader of the day” to lead the whole group's HeidiSongs performance. Senior college students working in Sally’s classroom sometimes lead the songs. Tiffany and Melissa introduce new sight words in literacy lessons and then play the corresponding HeidiSongs to reinforce the concept.

Tiffany uses music as background noise during independent work time because “I know that some of my children need to make sounds, or hum, or that type of thing, but when they are singing along with the HeidiSongs that helps my students that don’t really like sounds and kind of made it more of a quiet setting.” Singing along to the songs while working also helps them to focus on the task at hand rather than playing or talking to their neighbor across the table.

Kimberly plays an entire HeidiSongs CD during lunch every day to continue to reinforce learning. Another teacher, Melissa, played the CDs during rest time every day. Phoebe has the songs playing every morning when her students come to school and while they eat breakfast in the classroom. Sally turns on the songs while students practice writing the words or numbers on their whiteboards. Repetition seems to be a key factor in learning, so Stephanie frequently repeats the songs about words students struggle with most. All these activities occur in the whole group.

SQ2

How do teachers use HeidiSongs music for small group instruction?

The impact of music and movement on memory was evident in this study. In the small group setting, three teachers used the engaging nature of HeidiSongs music to enhance student recall by humming snippets of songs to help students remember specific words or songs. Students had previously practiced the movements that correspond to each song, which may have helped them with recall. The three teachers who used simple recall during small groups were Emily, Gina, and Sally. Teachers would hum one of the HeidiSongs to the students to remind them of the song and reinforce what children had already learned. “In a small group,” Phoebe said, “it’s a lot of me humming it or singing it” until students remember the word they are looking for. Students remember the tunes because they previously learned the songs in the whole

group. The humming part of the song allows them to recall the song in its entirety. Sally also uses recall only when utilizing HeidiSongs in small groups. She refers to specific songs while small groups work on writing or math lessons, and this “differentiation is what they need at the moment.” Stephanie does the same. Tiffany sings the songs back to her 2nd grade small groups to support their recall during writing lessons.

Melissa, now retired, was the most avid user of HeidiSongs in the small group setting. She would frequently play HeidiSongs for a mini lesson in a small group. For instance, they would watch one of the letter formation songs. Then Melissa would turn off Heidi’s handwriting CD or DVD and students began the practice part. As the students wrote, Melissa would sing the letter formation song slowly to them while they were working so they could “get directionally oriented, you know, and so they knew where to start all the time.” Melissa also used HeidiSongs on iPads with small groups. She often played the songs while a small group of students used manipulatives to spell words or find letters. This worked with groups of three to four students at a time. Another thing that worked very well for Melissa was to “put a child who is getting them well with a child who’s developmentally not quite there yet, and so the first child is modeling, like the teacher.” Pairing students of different abilities to work on HeidiSongs had positive benefits for both students.

Diane had an extra half-hour block of instruction with only her ELL students, so she would repeat HeidiSongs played earlier in the day so that the ELLs could have some extra repetition: “the more you hear this song... they can lean on it later.” During this instructional time, the ELL students were the only ones in Diane’s classroom, so she was able to play the songs just for them. Emily did not do any HeidiSongs instruction for small groups in her classroom because “my classroom is tiny, right, and if I did anything like that in a small group,

they would all just disrupt everyone.” This was a common sentiment among other teachers, and the most highly cited reason for not using HeidiSongs with small groups or with individuals. Kimberly said, “I guess I don’t know how to use them in a small group without distracting everybody else in the class.”

SQ3

How do teachers use HeidiSongs music for individual instruction?

Seven participants used HeidiSongs for individual instruction or during independent work time. However, all teachers have noticed that students often remind themselves of the songs during independent work time. They will hear the students humming one of the tunes, doing motions, or showing other signs of recall while trying to figure out how to read, write, or spell a word on an assignment. Seven teachers also provided this recall support to students on an individual basis, either humming or singing a HeidiSongs back to them when necessary.

One of Stephanie’s students now receives individual support using HeidiSongs with his SPED teacher. Recently this student has been struggling with the alphabet, so the SPED teachers at Stephanie’s school decided to try playing the HeidiSongs alphabet song for him during individual sessions, and according to Stephanie “it’s helping a lot because he can remember the songs, but he can’t always remember the letters.” In the past, Stephanie has used parent volunteers and a portable DVD or CD player to provide further individual support to students. These parent volunteers would work individually with a student in the hall outside the classroom. However, they can’t provide this individual support this year because of pandemic restrictions on parent volunteers.

Diane has been using technology to use HeidiSongs for individual students. Both Diane and Melissa use HeidiSongs on a platform called Seesaw to create individual activities and assignments for independent student work. Similarly, Jessica uses her district's Benchmark curriculum technology to make individual students "a Miss Heidi playlist." Each month she provides students with ten customized sight words they need to learn. At the end of each month, she rechecks assessment data to make a new list for each student. Kimberly said she is unable to provide this level of individual support using HeidiSongs because of a lack of iPads and access, but "that would be something that would be beneficial."

Melissa often sent individual students who were shy to computer centers to practice their HeidiSongs in a less intimidating environment. She also scheduled students more often for these individual computer centers if she noticed they needed more exposure to a particular sight word song. Sally sent home CDs and songbooks for students in her class who needed further access to the songs. While individual instruction using HeidiSongs is not as common as whole group usage, teachers did use HeidiSongs to support students who needed extra practice. The engaging and joyful nature of HeidiSongs music along with its corresponding movements enhanced individual instruction.

Summary

Chapter Four included detailed descriptions of the study's 11 participants, their demographic information, and an overview of their experiences using HeidiSongs in the elementary school classroom. All participants were veteran teachers who have used HeidiSongs in the elementary school classroom.

The focus of this study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom through documents, interviews, and a focus

group interview. Analysis of collected data via naturalistic generalizations (Creswell, 2018) and explanation building allowed me to identify three major themes: the impact of music and movement on memory, music as a bridge, and the most common usage of HeidiSongs. All teachers in this study reported using HeidiSongs for whole group instruction. Some small group support is provided, but this varies by classroom due to the inherently engaging (and thus potentially distracting) nature of HeidiSongs. Five teachers use recall to support students in the small group and individual setting by humming or singing a portion of a relevant song to trigger student memory. Teachers described HeidiSongs as engaging, fun, and helpful for teaching literacy and math concepts during instructional time. They also used HeidiSongs for brain breaks, transitions, and classroom management.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this qualitative case study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. A qualitative case study was appropriate for this research because I wanted to investigate multiple cases of teachers who use HeidiSongs. By developing a rich description of how teacher participants use these songs in the classroom setting, other teachers can learn from these descriptions and apply this knowledge in multiple scenarios. A case study's research questions focus on the how and the why (Yin, 2018). This chapter includes a summary of the study findings, a detailed discussion of those findings, delimitations and limitations of the study, and suggestions for future research. This chapter also includes a discussion of the theoretical, practical, and empirical implications of this study.

Summary of Findings

Triangulation uses different and multiple methods, sources, theories, and investigators to corroborate evidence (Creswell, 2018). To triangulate data, this study includes data collected from documents, individual interviews, and a focus group interview. The documents provided introductory information about each participant. In these documents, teachers wrote a letter to a hypothetical new teacher describing their use of HeidiSongs in the elementary school classroom. The primary source of data came from individual interviews with the participants. Each of the 11 individual interviews and one focus group interview was recorded and transcribed for analysis. During the focus group, participants reflected on the collected data and confirmed a consensus.

CRQ: What are elementary teacher descriptions of the ways they use HeidiSongs music as an instructional tool in the elementary school classroom?

In the elementary school classroom, Phoebe described music as a game-changer. “I think they just make such an emotional connection that you can’t help but pull it in academically,” Phoebe said, “because it becomes so ingrained in part of their day, and they love it.” Once teachers began using HeidiSongs, they saw positive results and continued to use them. Participants noted they used HeidiSongs in a variety of ways: for literacy and math instruction, brain breaks, classroom management, and transitions between activities. All participants in this study used HeidiSongs to help students learn sight words. Participants also used HeidiSongs in different settings, including whole group, small group, and individual instructional scenarios.

SQ1: What are elementary teacher descriptions of the ways they use HeidiSongs music for whole group instruction?

All participants used HeidiSongs avidly in the whole group setting. This instruction looks different for each teacher. Two participants played the audio songs only as they engaged students in literacy or math instruction, but most used video versions of the songs for instructional, transitional, and classroom management purposes. Though teachers agreed that the music and motions of HeidiSongs are already engaging, all participants model movements for their students to encourage full buy-in. All teachers participated in the singing, and all except Stephanie participated in the dancing. Most students fully participated, even the shy ones and ELLs.

SQ2: What are elementary teacher descriptions of the ways they use HeidiSongs music for small group instruction?

Seven of the 11 participants in this study used HeidiSongs in the small group setting. Overall, participants cited the naturally engaging nature of HeidiSongs as a potential distraction that limited its use for small groups in the classroom setting. However, nine of the 11 participants used video and audio versions of the songs in small groups or individual instruction. Four

teachers in this study used video versions of HeidiSongs in small groups. Three participants used HeidiSongs in small groups by initiating a recall and humming or singing the HeidiSongs back to the students. Students were then able to recall necessary information because they had learned these songs previously in a whole group setting.

SQ3: What are elementary teacher descriptions of the ways they use HeidiSongs music for individual instruction?

During independent work time, all teachers either noticed or prompted individual students to recall HeidiSongs by humming the song to themselves or performing the motions. They described this brief recall as sufficient to help students recognize sight words or properly spell words. Teachers noted they often prompt students by humming the song during assessments or independent worktime to help children with recall. Five teachers used HeidiSongs for independent students in work centers on computers or tablets. To do this, they play HeidiSongs on the screen while students listen through speakers or headphones. Two teachers set up personalized playlists and assignments for students using technology. The students then access the personalized assignments at home for extra practice. One teacher has parent volunteers use a portable disc player to provide individual instruction for students in the hall outside the classroom where the extra motion and noise do not distract other learners.

Discussion

The findings of this study closely align with the theoretical and empirical literature presented in Chapter Two. The theoretical foundation for this study includes Gardner's theory of multiple intelligences (2011) and Krashen's theory of second language acquisition (1984). Study data supports these theories by showing how HeidiSongs music incorporates multiple intelligences (including musical and kinesthetic) and impacts classroom engagement. Results of

this study support the positive impact of music on literacy and learning (Martin, 2017; Nelson et al., 2016).

Theoretical Literature

The theoretical foundation of this study is twofold. Howard Gardner's theory of multiple intelligences directly named many types of intelligence innate in humans (Gardner, 2011). Among these types of intelligence are musical and kinesthetic (Gardner, 2011). The second theory, Stephen Krashen's theory of second language acquisition, connected low anxiety situations, such as those provided by music, to increased learning capabilities in students (Krashen, 1984). Both theories support the positive effects of using multisensory music-based programs like HeidiSongs as an instructional tool and explained why they might be useful for many students with different types of intelligence or language abilities.

According to Gardner, IQ tests measure traditional scholastic intelligence (2017). In his theory of multiple intelligences, Gardner (2017) explained that human beings exhibit several types of intelligence (including musical, bodily-kinesthetic, intrapersonal, interpersonal, naturalist, social, and emotional intelligence). This study helped illuminate how teachers use HeidiSongs to help students utilize multiple intelligences in the classroom setting. HeidiSongs addresses musical intelligence and kinesthetic intelligence by using songs with motions (HeidiSongs, 2017). Teachers noted a need to model appropriate levels of kinesthetic participation for their students. One participant, Melissa, frequently paired students of different academic ability levels for additional musical and kinesthetic HeidiSongs instruction given peer to peer.

Classrooms have a myriad of students with musical, kinesthetic, interpersonal, scholastic, spatial, linguistic, and naturalistic tendencies, capabilities, and learning styles (Tomlinson, 2014;

Zadina, 2014). Teacher participants confirmed this when they described their classrooms as “very diverse.” Participants served students in different grade levels from different socioeconomic levels in different regions of the country, and each of them stated they must address multiple needs and learning styles within their classrooms. Without exception, all teacher participants described HeidiSongs as instruction that works for everyone and does not require differentiation. Using music as an instructional tool in the classroom covers a diverse array of scholastic, interpersonal, musical, spatial, and bodily-kinesthetic intelligence (Markova, 2016).

Krashen’s (1984) affective filter hypothesis from his second language learning theory stated that high anxiety impedes learning. The affective filter is a metaphor that refers to the learner’s attitude and emotional variables that they bring with them when attempting to learn a second language (Krashen, 1984). When the learner is stressed or has high anxiety, the filter is high, and language learning will not be successful (Krashen, 1984). Lowering the filter increases learning capacity (Krashen, 1984). Ways to decrease the affective filter include increasing positive emotions such as hope and enjoyment and decreasing negative emotions such as anger and anxiety (Pekrun & Linnenbrink-Garcia, 2012; Pekrun et al., 2011). Using music in the classroom can lower anxiety and increase engagement (Nelson et al., 2016). Teachers participating in the study described HeidiSongs as a fun and engaging activity that increased engagement.

Making music together increases participants’ positive perceptions of each other because of the synchronization, common purpose, and closeness mediated by participation in the music-making (Harwood et al., 2016). Teachers in this study all utilized whole group instruction for HeidiSongs, which involved making music together. Performing these songs and motions as a group could also affect interpersonal and intrapersonal intelligence (Harwood et al., 2016;

HeidiSongs, 2017). During the focus group interview, teacher participants confirmed that they believed the fun and engaging nature of music led to increased academic achievement for all students. “It pulls them out, even the shy ones,” said Melissa during the focus group. ELLs also seemed to react positively to the songs. Teachers mentioned that data may not immediately show this growth for ELLs because they may still be in a pre-production stage of language development. However, the engaging nature of the songs helps ELLs learn (Dzanic & Pejic, 2016; Martin, 2017; Nelson et al., 2016).

Empirical Literature

Music and movement have positive benefits (Dzanic & Pejic, 2016; Singh & Balasubramian, 2018; Sousa, 2017). All cultures create music (Sousa, 2017). Music is linked to attention, sensory-motor integration, motor-skill learning, sound processing, and memory storage and retrieval (Singh & Balasubramian, 2018). Movement increases cognitive function and motor skills (Sousa, 2017). Academic instruction is most effective when children are excited about and engaged in the learning experience (Guthrie, 1997).

Participants in this study emphasized the importance of music and the effectiveness of HeidiSongs. Teachers who did not have access to or chose not to implement the video version of HeidiSongs or its associated movements made up their movements to go along with the song. Participants connected the multiple tiers of HeidiSongs (music, movement, and visual components) to increased learning. Four teachers also directly told their students that performing the songs was important because it would form new connections in their brains and help them learn. According to Stephanie, “the brain truly does learn through music.” The more parts of the brain are activated by a given activity, the greater the overall plasticity and synaptic learning

(Berezniuk et al., 2018). Stephanie says a single HeidiSongs is “10 times better than any worksheet.”

Literature shows that music is linked to attention (Nelson et al., 2016), and this was verified by all the participants in this study. Students were engaged when teachers used HeidiSongs (Martin, 2017). Sally’s students “love the songs so much that they sing them at home too.” Teachers reported using HeidiSongs as a classroom management tool because they could easily gain students’ attention by singing a song quietly to themselves. Soon the whole class would start singing along, and then children would sit quietly with full attention on the teacher. Many teachers were limited to mostly whole group instruction when using HeidiSongs because they said HeidiSongs was so engaging that when they tried to use it in small groups it would distract the other students. Teachers noted that the movements were important for students and that students could learn all the song motions quickly. Classroom data, including ESGI testing and formal classroom assessments, showed improved sight word recognition and memory in students who used HeidiSongs. Music had a similar impact on all students, regardless of culture, background, or academic capacity.

When music creates meaning and engagement, neural connections are strengthened (Langer, 1953). In this study, participants’ experiences confirmed that students were engaged in the music (Nelson et al., 2016) and that meaning was enhanced by movement (Markova, 2016). This directly correlates with improvements in student memory of the alphabet, sight words, spelling facts, and math concepts. Literacy is a primary focus of the classroom during the primary years and involves reading, speaking, listening, and writing (Morrow et al., 2018). Teachers in this study used HeidiSongs heavily for literacy and particularly for sight words, phonics, and the alphabet.

There are multiple pathways to learning in the student's brain, including sensory-motor, emotion, reward, attention and memory, language and math, frontal lobe executive function, and social (Zadina, 2014). The sensor-motor pathway includes speech, vision, auditory, sensory, and motor information (Zadina, 2014). However, scientists deemed visuals as the most critical, claiming that including visuals is necessary for effective learning and teaching (Zadina, 2014). Multisensory learning is more effective for learning than unisensory stimuli because it stimulates the multisensory environment humans to live in (Shams & Seitz, 2008). Though most of the participants in this study used the visual versions of HeidiSongs, a few used audio-only. Interestingly, these teachers emphasized the importance of the visual learning component by using flash cards and incorporating their motions and movements. Teachers credited the combination of senses stimulated by HeidiSongs that contributed to its effectiveness when used in classroom instruction.

Music is considered a universal language (Gasenzer et al., 2017; Lin, 2013; Paynter & Aston, 1970). Participants in this study agreed that their students were able to universally connect to the music in HeidiSongs. Music and language are seen as symbiotic elements in that language may help a person to understand music, and music may help a person to understand language (Gasenzer et al., 2017). Linguistic intelligence is one of many types of human intelligence (Gardner, 2013). Participants in this study use HeidiSongs to help their students learn language skills, including sight words. They also noted the positive effect HeidiSongs had on ELLs (Dzanic & Pejic, 2016; Lin, 2013). Participants reported the music and movement helped their ELL students understand language. Jessica said, "we know how music and movement are so great for all students, but especially for ELLs and the kinesthetic child."

Much research involved the relationship between music and its impact on literacy. When music is embedded systematically throughout the day in early childhood classrooms, the students' literacy and language experiences are enhanced (Nelson et al., 2016). In this study, participants embedded music throughout the day and confirmed academic results were enhanced in the areas of student literacy and language development. Music helps enhance the rhythms and sound patterns in the target language (Nelson et al., 2016). Musical instruction is particularly effective at increasing new vocabulary (Hancock & Wright, 2018; Vaiouli & Andreou, 2016). Music training improves verbal memory (Chan et al., 1998). Singing enhances rhyming skills, word-finding, speech perception abilities (Berezniuk et al., 2018). Using music could increase language development, enhance engagement, and encourage auditory perception skills (Martin, 2017; Nelson et al., 2016). These findings were confirmed through the collection of participant data throughout this study.

Implications

Previous research on multisensory music-based programs did not include detailed teacher descriptions about how they use such programs as instructional tools in the elementary school classroom. This qualitative study addresses this literature gap in the research by providing details about teacher usage of HeidiSongs inside the classroom for the whole group, small group, and individual instruction. The empirical, theoretical, and practical implications of this study are intended to help teachers learn best practices for using multisensory, music education tools with diverse students in the modern classroom. Describing each teacher's year with HeidiSongs in full can help teachers new to HeidiSongs who might not know what to expect throughout the school year.

Theoretical Implications

The theoretical foundation of this study is twofold. First, Gardner's theory of multiple intelligences (2017) recognized the existence of musical, kinesthetic, interpersonal, spatial-visual, and linguistic intelligence (Gardner, 2017). However, there was a lack of research that connected musical intelligence directly to literacy enhancement. Through this study, Gardner's (2017) theory was applied and connected to modern-day elementary school classrooms. Because HeidiSongs explicitly uses a combination of musical, kinesthetic, linguistic, interpersonal, and spatial-visual intelligence, examining teacher descriptions of the use of this product helped connect Gardner's theory to real practice. Bodily-kinesthetic intelligence involves physical movement (Gardner, 2017). Teachers noted that movement is important to meet the kinesthetic needs of kindergarteners. The movement "reinforces learning the words," according to Gina, and also "helps support meaning." Melissa believes that "the most important instructional tool you can use is music and movement." Despite the differences in each student's level of kinesthetic intelligence and needs for movement, engaging in this type of activity could benefit all students.

Teacher participants also reported an underlying human connection to music in all students that crossed the bounds of culture, demographic, or academic ability. According to Stephanie, "the brain truly does learn through music." Musical intelligence involves the capacity to recognize musical components such as rhythm and tone (Gardner, 2017). Music helps enhance the rhythms and sound patterns in the target language (Nelson et al., 2016). Musical instruction is particularly effective at increasing new vocabulary (Hancock & Wright, 2018; Vaiouli & Andreou, 2016).

Participants in this study reported increased student engagement and excitement when using HeidiSongs as an instructional tool. "Students enjoy the short simple repetitive songs," Emily said, "and they love the motions that go with them." Academic instruction is most

effective when children are excited about and engaged in the learning experience (Guthrie, 1997). Singing enhances rhyming skills, word-finding, speech perception abilities (Berezniuk et al., 2018). Using music could increase language development, enhance engagement, and encourage auditory perception skills (Martin, 2017; Nelson et al., 2016).

Teacher participants in this study reported that the creation of emotional and cognitive bridges is a key result of using HeidiSongs. “Every kid loves to sing,” said Phoebe. Krashen’s theory of second language learning refers to the learner’s attitude and emotional variables that they bring with them when attempting to learn a second language (Krashen, 1984). When the learner is stressed or has high anxiety, the filter is high, and language learning will not be successful (Krashen, 1984). Lowering the filter increases learning capacity (Krashen, 1984). Ways to decrease the affective filter include increasing positive emotions such as hope and enjoyment and decreasing negative emotions such as anger and anxiety (Pekrun & Linnenbrink-Garcia, 2012; Pekrun et al., 2011). Using music in the classroom can lower anxiety and increase engagement (Nelson et al., 2016). Teachers participating in the study described HeidiSongs as a fun and engaging activity that increased happiness and encouraged participation from all students, including shy students, ELLs, and SPED students.

Empirical Implications

Before this study, research was lacking on clear qualitative descriptions of teacher experiences using HeidiSongs music as an instructional tool in the elementary school classroom. Martin (2017) examined the positive correlation between the use of HeidiSongs and improvement in kindergarten sight word recognition. This study includes both teacher descriptions of their use of HeidiSongs and their reports on a positive correlation between the use of HeidiSongs and skills in math, sight word recognition, and alphabetic knowledge.

Other studies recognized the positive effect of music on different specific student populations, including ELLs (Hancock & Wright, 2018; Martin, 2017; Montgomery, 2014), students with hearing loss (Nelson et al., 2016), and students with autism (Vaiouli & Andreou, 2016). No teachers in this study reported using HeidiSongs with students with hearing loss.

This study explores HeidiSongs as an instructional tool when applied to the whole classroom setting, small groups, and individual settings. Any instructional method used in an elementary school classroom has unique complexities, difficulties, and benefits (Harshbarger, 2019). This in-depth examination of how classroom teachers use HeidiSongs is crucial to understanding the use of these songs as an instructional tool. Classroom teacher participants in this study reported increased literacy achievement in their students, which correlates with findings from Martin (2017). Participants reported an array of uses for HeidiSongs in the classroom, including transitions, brain breaks, classroom management, math and literacy instruction, and informal settings such as lunch and arrival. However, participants also remarked on the difficulties in using HeidiSongs for small group and individual instruction because of the engaging nature of the songs. These complexities align with Harshbarger's (2019) study on instructional methods. Participant descriptions of the complexities, benefits, and difficulties of using HeidiSongs in an elementary school classroom provides a comprehensive view of multisensory music program usage.

Practical Implications

Describing how HeidiSongs music works in the classroom could help other teachers, students, and schools by providing a clearly defined framework for using a multi-sensory approach throughout the instructional day. Many educators could benefit from this study by learning more about how teachers describe their use of multisensory, music-based programs like

HeidiSongs, including how and when they use it, and with which students. Research has shown the benefits of using music in classroom instruction, but not much is known about how teachers use such instruction from day to day (Martin, 2017; Nelson et al., 2016). Knowing more about how teachers use HeidiSongs could help other educators learn how to use music-based multisensory education tools effectively in small group and individual settings. Teachers now have a clear picture of how to use HeidiSongs and where they might succeed or struggle when implementing these programs in their classrooms.

Practical implications of this study include the deliberate use of HeidiSongs music in small group scenarios including SPED classes. She uses HeidiSongs as her main method of phonics instruction and has seen a correlation between the HeidiSongs she uses and student scores on district sight word tests. This pattern convinced Stephanie that the brain learns through music. Brain activity activated by music is linked to cognition, memory, problem-solving, and the intelligence quotient (Verrusio et al., 2015). Music impacts the brain both emotionally and intellectually (Sousa, 2017) and has both short- and long-term effects on the brain (Levitin, 2007). Stephanie's students are now able to learn the alphabet by October instead of in the spring, and she attributes this to using HeidiSongs. Similarly, Melissa began adding music to her lessons every day once she saw how much it was helping her students learn: "This wasn't an approved curriculum, ... but we saw it helping, so we did it." For this study, specific testing data was not provided by participants.

Practical implications of this study also include more districts paying for services like HeidiSongs in early childhood or elementary curriculum budgets. Most of the participants pay out of pocket for the HeidiSongs DVDs and streaming services. If more districts provided access to HeidiSongs, more teachers could use it. The songs seem to have positive effects on all

demographics, and music is considered a universal language (Gasenzer et al., 2017; Lin, 2013; Paynter & Aston, 1970). However, teacher participants in this study reported that, overall, their higher-income students are perhaps more excited about learning, possibly due to more family involvement in learning. Music could be a way to connect more low-income families to what their children are learning in school. Music training in low-income children is associated with enhanced learning and language skills (Slater et al., 2014). Musical experiences with family in the early years positively correlate with increased language development (Montgomery, 2014; Politimou et al., 2019).

Further, all the teacher participants in this study relied more heavily on music this year during the COVID-19 pandemic than they have in the past. Diane said this is because she “wanted a routine,” and the music helped provide that. During times of stress, music can be a particularly helpful tool. Anxiety can cause real physical pain (Zadina, 2014), but the appealing nature of music decreases anxiety (Dzanic & Pejic, 2016). Both support systems focus on the whole child, including social and emotional needs. Incorporating music into such a support system could benefit students socially and emotionally.

Research has shown that using music to teach vocabulary and literacy skills is more effective if it is both participatory and interactive (Wang, 2014). Though three of the participants were avid musicians, an equal number of participants claimed to be “musically challenged.” Some of the participants danced along to the music. Some performed the songs themselves or created their motions and movements. The teacher’s innate musicality or musical ability did not seem to impact positive trends in student learning. However, even the self-proclaimed non-musical teachers made a huge effort to participate in HeidiSongs and to encourage student

participation. Participants revealed that HeidiSongs can be participatory and interactive, especially if the teacher is modeling this participation for students and encouraging interaction.

Delimitations and Limitations

The delimitations of this research study included participants who were current or former users of HeidiSongs in the elementary school classroom. The only requirement to participate in this study was that teachers had previously used HeidiSongs with students in an elementary school classroom. All 11 participants in this study were avid users of HeidiSongs: once they began using the songs and seeing a positive impact on student learning and engagement, they continued to use the songs. All participants increased usage amounts of HeidiSongs over the course of their careers.

Another delimitation of this study is that the sample included only supporters of HeidiSongs. I intentionally selected proponents of HeidiSongs because I sought detailed descriptions of how teachers had used HeidiSongs in the elementary school classroom. All teachers in this study expressed positive emotions about the use of HeidiSongs through their words and usage patterns. Seeking out teachers with a negative opinion of HeidiSongs may have provided insight into why some teachers have differing opinions of HeidiSongs. However, seeking out disillusioned former users of HeidiSongs would have been a difficult task: while HeidiSongs has a large following on social media, I could not find any anti-HeidiSongs groups in which to recruit participants.

The major limitations of this study involved participant demographics. All teachers in this study were veteran, female teachers. Though they had a large range of teaching experience in length, grade level, and geographic location, the sample was largely homogenous. Third

through fifth grade teachers were not represented in this study of elementary teachers. Finally, the participant sample was limited by homogenous ethnicity: all participants were Caucasian.

Another major limitation of this study was the time limit of the focus group. I facilitated the focus group conversation on a free video conferencing platform called Zoom, which has 40-minute time limits on free meetings. Though I felt that 40 minutes would be adequate for the discussion with a focus group of four participants, it could have limited the depth of the conversation.

Recommendations for Future Research

Recommendations for future research include seeking out teachers who discontinued using programs like HeidiSongs in the classroom. Learning why teachers ceased the usage of multisensory music programs in their classrooms could inform future instructional practices. Teachers in this study used a variety of methods to play HeidiSongs: some used purely audio songs, some created their motions, some streamed animated videos, and others played DVDs. Isolating video from audio in multisensory music programs could help researchers learn more about how each impacts instruction, retention, and memory could benefit students. A study that uses observation to understand student engagement and teacher use could also be beneficial.

Quantitative research could help target how HeidiSongs affect learners with different specific learning preferences. Researchers could quantitatively investigate whether kinesthetic learners benefit more from using HeidiSongs than more visual learners. Other researchers might target the learning output differences between classes where teachers use the animated version of HeidiSongs versus classrooms where teachers use printed flash cards and audio only versions of HeidiSongs. Finally, researchers could investigate the success rate of humming for recall on more musically challenged learners. Further qualitative research could investigate these different

inputs and outcomes of using HeidiSongs. This research could tie the use of HeidiSongs music directly to normed assessments, which could provide data linking HeidiSongs to academic success.

This study was limited to the United States. More research should be done to examine cross-cultural differences in the impact or use of multisensory music in the classroom. Further research should be done to compare findings for male teachers to the results of this female-only study. Further studies should investigate differences in usage and impact of multisensory music programs in other countries, continents, and cultures.

Summary

The purpose of this study was to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. HeidiSongs is a multisensory music education program that incorporates music, movement, and visuals. Analysis of data from letters written by teachers, individual interviews, and a focus group interview resulted in the identification of three themes: the impact of music and movement on memory, music as a bridge, and the most common ways teachers are using HeidiSongs. Findings indicated that HeidiSongs music is mostly used in the whole group setting in the elementary school classroom, with teachers and students using recall by humming or singing a song tune in small group and individual worktime to enhance memory. Teachers stated they enjoyed the combination of multisensory music and movement in HeidiSongs and reported an overall positive effect on student engagement, even in diverse populations (Dzanic & Pejic, 2016; Guthrie, 1997). Study participants described their use of HeidiSongs in the classroom as fun, engaging, and successful. Findings from this study aligned with Martin's (2017) results in that three participants in this study reported an increase in test scores that directly correlated with their use of HeidiSongs in

the classroom (Martin, 2017). Participants in this study used HeidiSongs in multiple ways, but all use it in the whole group setting. They attributed the success of their repeated use of HeidiSongs to its combination of familiar tunes with kinesthetic movements and engaging visual components.

REFERENCES

- Altenmüller, E., Finger, S., & Boller, F. (2015). *Music, neurology, and neuroscience: Evolution, the musical brain, medical conditions, and therapies* (First ed.). Elsevier.
- Anvari, S. H., Trainor, L. J., Woodside, J., & Levy, B. A. (2002). Relations among musical skills, phonological processing, and early reading ability in preschool children. *Journal of Experimental Child Psychology*, 83(2), 111-130. doi:10.1016/S0022-0965(02)00124-8
- Back, M., Han, M., & Weng, S. (2020). Emotional scaffolding for emergent multilingual learners through translanguaging: Case stories. *Language and Education*, 34(5), 387-406. doi:10.1080/09500782.2020.1744638
- Bastian, H.G. (2002). Musi(erziehung) und ihre Wirkung. Eine Langzeitstudie an Berliner Grundschulen. [Music education and its effects. A long-term study in elementary schools in Berlin.]. Mainz: Schott.
- Berezniuk, V., Zaitsev, A., & Berezniuk, I. (2018). The role of music activities to the perception of speech and language development in children with cochlear implants...15th International conferences on Cochlear Implants, Antwerp, Belgium, 27-30 June 2018. *Journal of Hearing Science*, 8(2), 118.
- Boardman, K. (2020). An exploration of teachers' perceptions and the value of multisensory teaching and learning: A perspective on the influence of specialist dyslexia training in England. *Education 3-13*, 48(7), 795-806. doi:10.1080/03004279.2019.1653349

- Boddy, C. R. (2016). Sample size for qualitative research. *Qualitative Market Research: An International Journal*, 19(4), 426-432. doi:10.1108/QMR-06-2016-0053
- Bugos, J. A. (2017). *Contemporary research in music learning across the lifespan: Music education and human development*. Routledge. doi:10.4324/9781315625270
- Burke, C., & Grosvenor, I. (2011). The hearing school: An exploration of sound and listening in the modern school. *Paedagogica Historica*, 47(3), 323-340.
doi:10.1080/00309230.2010.530273
- Burton, Suzanne L. (2015) Making music mine: the development of rhythmic literacy, *Music Education Research*, 19:2, 133-142, DOI: 10.1080/14613808.2015.1095720
- Butcher, P. R., Heubeck, B. G., & Welvaert, M. (2021). Anxiety and verbal learning in typically developing primary school children: Less efficient but equally effective. *British Journal of Educational Psychology*, 91(2), 584-599. doi:10.1111/bjep.12380
- Butkus, H. (2019, June 24). Phone interview.
- Butler, J., & Frota, S. (2018). Emerging word segmentation abilities in European Portuguese-learning infants: New evidence for the rhythmic unit and the edge factor. *Journal of Child Language*, 45(6), 1294-1308. doi:10.1017/S0305000918000181
- Chan, A. S., Cheung, M., & Ho, Y. (1998). Music training improves verbal memory. *Nature*, 396(6707), 128-128. doi:10.1038/24075
- Chandler, P. & Tricot, A. (2015). Mind your body: The essential role of body movements in children's learning. *Educational Psychology Review*, 27(365), 365-370.

- Chomsky, N. (1986). *Knowledge of language: Its nature, origin, and use*. Greenwood Publishing Group.
- Clay, M.M. (1982). *Observing young readers: Selected Papers*. Heinemann.
- Clay, M.M. (1991). *Becoming Literate: The Construction of Inner Control*. Heinemann.
- Coghlan, D., & Brydon-Miller, M. (2014). *The SAGE encyclopedia of action research* (Vols. 1-2). SAGE Publications Ltd doi: 10.4135/9781446294406
- Cooper, S. (2010). Lighting up the brain with songs and stories. *General Music Today*, 23(2), 24-30.
- Creel, S. C., Weng, M., Fu, G., Heyman, G. D., & Lee, K. (2018). Speaking a tone language enhances musical pitch perception in 3–5-year-olds. *Developmental Science*, 21(1), e12503-n/a. doi:10.1111/desc.12503
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (Third ed.). SAGE Publications.
- Creswell, J. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- Crutchley, J., Parker, S. G., & Roberts, S. (2018). Sight, sound and text in the history of education. *History of Education: Sight, Sound and Text in the History of Education*, 47(2), 143-147. doi:10.1080/0046760X.2017.1421718
- Cunningham, A., & Stanovich, K. (1998). The impact of print exposure on word recognition. In J. Metsala & L. Ehri (Eds.) *Word recognition in beginning literacy* (p. 235-262). Lawrence Erlbaum Associates, Inc.

Current Population Survey, October 2017. School Enrollment Supplement. Retrieved from <https://www.census.gov/library/visualizations/2018/comm/classroom-diversity.html>

Davies, M. (2000). Learning...the beat goes on. *Childhood Education*, 76(3), 148-153

Dehaene-Lambertz, G., Monzalvo, K., & Dehaene, S. (2018). The emergence of the visual word form: Longitudinal evolution of category-specific ventral visual areas during reading acquisition. *PLoS Biology*, 16(3), e2004103. doi:10.1371/journal.pbio.2004103

De Oliveira, L.C., Gilmetdinova, A., & Pelaez-Morales, C. (2016). The use of Spanish by a monolingual kindergarten teacher to support English language learners. *Language and Education*, 30:1, 22-42. doi:10.1080/09500782.2015.1070860

Dittinger, E., Barbaroux, M., D'Imperio, M., Jäncke, L., Elmer, S., & Besson, M. (2016). Professional Music Training and Novel Word Learning: From Faster Semantic Encoding to Longer-lasting Word Representations. *Journal of Cognitive Neuroscience*, 28(10), 1584–1602. [https://doi.org/10.1162/jocnpass:\[_ \]a_00997](https://doi.org/10.1162/jocnpass:[_]a_00997)

Dodgson, J. E. (2017). About research: Qualitative methodologies. *Journal of Human Lactation*, 33(2), 355-358. doi:10.1177/0890334417698693

Dolch, E. (1948). *Problems in Reading*. Champaign, IL: The Garrard Press.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82(1), 405-432. doi:10.1111/j.1467-8624.2010.01564.x

- Dzanic, N. D. & Pejic, A. (2016). The effect of using songs on young learners and their motivation for learning English. *New Trends in Social and Liberal Sciences*, 1(2), 40-54. doi:10.24819/netsol2016.8
- Ehri, L., Nunes, S., Willows, D., Schtister, B., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly*, 36 (3), 250-287
- Eilbert, K. W., & Lafronza, V. (2005). Working together for community health—a model and case studies. *Evaluation and Program Planning*, 28(2), 185-199. doi:10.1016/j.evalprogplan.2005.01.003
- Fisher, D. (2001). Early language learning with and without music. *Reading Horizons*, 42(1), 39-49.
- Fisher, D., & Frey, N. (2008). *Better learning through structured teaching: A framework for the gradual release of responsibility*. Alexandria, VA: Association for Supervision and Curriculum Development.
- François, C., Chobert, J., Besson, M., and Schön, D. (2013). Music training for the development of speech segmentation. *Cereb. Cortex* 23, 2038–2043. doi:10.1093/cercor/bhs180
- Gangel, K. O. (2005, March). 24 ways to improve your teaching: Teaching through music. Bible.org. Retrieved from <https://bible.org/seriespage/teaching-through-music>
- Gardner, H. (2011). *Frames of mind: The theory of multiple intelligences* (3rd ed.). New York: Basic Books.

- Gardner, H. (2017). Taking a multiple intelligences (MI) perspective. *Behavioral and Brain Sciences, 40*, 67.
- Gasenzer, E., Kanat, A., & Neugebauer, E., (2017). Neurosurgery and music; the effect of Wolfgang Amadeus Mozart. *World Neurosurgery, 102*, 313-319.
doi:10.1016/j.wneu.2017.02.081
- Gaugne, R., Nouviale, F., Rioual, O., Chirat, A., Gohon, K., Goupil, V., Toutirais, M., Bossis, B., Gouranton, V. (2018). EvoluSon: Walking through an interactive history of music. *Presence: Teleoperators and Virtual Environments, 26*(3), 281-296.
doi:10.1162/pres_a_00298
- Goodman, J. (2017). Experimenting with sound and silence: Sonorous bodies, sonic selves, acoustic topographies, and auditory histories of schooling. *Paedagogica Historica: Themed Issue: Educational Soundscapes: Sounds and Silences in the History of Education, 53*(5), 528-541. doi:10.1080/00309230.2017.1335334
- Gordon, R. L., Fehd, H. M., & McCandliss, B. D. (2015). Does music training enhance literacy skills? A meta-analysis. *Frontiers in Psychology, 6*, 1777. doi:10.3389/fpsyg.2015.01777
- Gottfried, M.A. (2014). ELL School Readiness and Pre-Kindergarten Care. *Educational Policy (Los Altos, Calif.), 31*(1), 39-72. doi:10.1177/0895904814558011
- Gough, P., Hillinger, M. (1980). Learning to read: An unnatural act. *Bulletin of the Orton Society, 30*, 180-196.
- Griffith, P. L. (2008;2014). *Literacy for young children: A guide for early childhood educators*. Corwin.

- Gromko, J. E. (2005). The effect of music instruction on phonemic awareness in beginning readers. *Journal of Research in Music Education*, 53(3), 199-209.
- Guthrie, J. T. (2004). Teaching for Literacy Engagement. *Journal of Literacy Research*, 36(1), 1–30. Doi:10.1207/s15548430jlr3601_2
- Guthrie, J.T. & Wigfield, A. (1997). *Reading Engagement: Motivating Readers Through Integrated Instruction*. International Reading Association.
- Hallam, S. (2010). The power of music: its impact on the intellectual, social and personal development of children and young people. *International Journal of Music Education*, 28(3), 269-289.
- Hancock, D. R., & Wright, S. W. (2018). Enhancing early childhood development through arts integration in economically disadvantaged learning environments. *The Urban Review*, 50(3), 430-446. doi:10.1007/s11256-017-0440-y
- Haning, M. (2016). The association between music training, background music, and adult reading comprehension. *Contributions to Music Education*, 41, 131-143.
- Hanna, K. S., (2005). Planning for sustainability: Experiences in two contrasting communities. *Journal of the American Planning Association*, 71(1), 27-40.
doi:10.1080/01944360508976403
- Harris, J. (2016). The correspondence method as a data-gathering technique in qualitative enquiry. *International Journal of Qualitative Methods*, 1(4), 1-9.
doi:10.1177/160940690200100401

- Harshbarger, D. (2019). "Lightbulb" moments for all learners. *Science and Children*, 57(2), 49-55. https://doi.org/10.2505/4/sc19_057_02_49
- Harwood, J., Qadar, F., & Chen, C. (2016). Harmonious contact: Stories about intergroup musical collaboration improve intergroup attitudes. *Journal of Communication*, 66(6), 937-959. doi:10.1111/jcom.12261
- HeidiSongs (2017). Retrieved from <https://www.heidisongs.com/pages/research>
- Herriott, R. E., & Firestone, W. A. (1983). Multisite qualitative policy research: Optimizing description and generalizability. *Educational Researcher*, 12, 14-19.
- History of Music Therapy (2020). American Music Therapy Association. Retrieved from <https://www.musictherapy.org/about/history/>
- Hogenes, M., van Oers, B., & Diekstra, R. (2014). The impact of music on child functioning. *The European Journal of Social & Behavioural Sciences*, 10(3), 1507-1526. doi:10.15405/ejsbs.135
- Hornickel, J., & Kraus, N. (2013). Unstable representation of sound: A biological marker of dyslexia. *The Journal of Neuroscience: The Official Journal of the Society for Neuroscience*, 33(8), 3500-3504. doi:10.1523/JNEUROSCI.4205-12.2013
- Hurwitz, I., Wolff, P. H., Bortnick, B. D., and Kokas, K. (1975). Nonmusical effects of the kodaly music curriculum in primary grade children. *J. Learn. Disabil.* 8, 167-174. doi: 10.1177/002221947500800310
- Ingold, T. (2011). *Being alive: Essays on movement, knowledge, and description*. New York; Abingdon, Oxon: Routledge. doi:10.4324/9780203818336

- Jacobsen, J.-H., Stelzer, J., Fritz, T. H., Chételat, G., Joie, R. L., Turner, R., & La Joie, R. (2015). Why musical memory can be preserved in advanced Alzheimer's disease. *Brain: A Journal of Neurology*, 138(8), 2438–2450. <https://doi.org/10.1093/brain/awv135>
- Joshi, R. M., Dahlgren, M., Boulware-Gooden, R. (2002). Teaching reading in an inner-city school through a multisensory teaching approach. *Annals of Dyslexia*, 52(1), 229-242.
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a Research Paradigm and Its Implications for Social Work Research. *Social Sciences*, 8(9), 255.
- Knight, A., & Rabon, P. (2017). Music for speech and language development in early childhood populations. *Music Therapy Perspectives*, 35(2), 124-130. doi:10.1093/mtp/mix014
- Krashen, S. (1984). *Writing: Research, Theory and Applications*. Pergammon.
- Krashen, S. D. (2003). *Explorations in language acquisition and use: The Taipei lectures*. Heinemann.
- Kraus, N., & Chandrasekaran, B. (2010). Music training for the development of auditory skills. *Nature Reviews Neuroscience*, 11(8), 599-605. doi:10.1038/nrn2882
- Kraus, N., Hornickel, J., Strait, D. L., Slater, J., and Thompson, E. (2014). Engagement in community music classes sparks neuroplasticity and language development in children from disadvantaged backgrounds. *Front. Psychol.* 5:1403. doi:10.3389/fpsyg.2014.01403
- Kuppen, S. E. A., & Bourke, E. (2017). Rhythmic rhymes for boosting phonological awareness in socially disadvantaged children. *Mind, Brain, and Education*, 11(4), 181-189. doi:10.1111/mbe.12148

- Lamont, A. (2003). Toddlers' musical preferences: Musical preference and musical memory in the early years. *Annals of the New York Academy of Sciences*, 999, 518.
- Langer, S. K. (1953). *Feeling and form: A theory of art*. Charles Scribner's Sons.
- Leslie, K. R., Johnson-Frey, S. H., & Grafton, S. T. (2004). Functional imaging of face and hand imitation: Towards a motor theory of empathy. *Neuroimage*, 21(2), 601-607.
doi:10.1016/j.neuroimage.2003.09.038
- Levitin, D. J. (2007). *This is your brain on music: The science of a human obsession*. Plume.
- Lin, P. (2013). In-service elementary ESOL teachers' perspectives, usage, and difficulties of teaching English through music. University of Missouri - Columbia; 2013.
- Lin, N. C., & Cheng, H. (2010). Effects of gradual release of responsibility model on language learning. *Procedia, Social and Behavioral Sciences*, 2(2), 1866-1870.
doi:10.1016/j.sbspro.2010.03.1000
- Lutz Klauda, S., & Guthrie, J. T. (2015). Comparing Relations of Motivation, Engagement, and Achievement among Struggling and Advanced Adolescent Readers. *Reading and writing*, 28(2), 239–269. doi:10.1007/s11145-014-9523-2
- Markova, I. (2016). Effects of academic and non-academic instructional approaches on preschool English language learners' classroom engagement and English language development. *Journal of Early Childhood Research: ECR*, 15(4), 339-358.
doi:10.1177/1476718X15609390

- Martin, K. (2017). The impact of song and movement on kindergarten sight word acquisition. ProQuest Dissertations Publishing; 2017.
- Mavilidi, M.F., Okely, A.D., Chandler, D.P., & Pass, F. (2015). Effects of integrated physical exercises and gestures on preschool children's foreign language vocabulary and learning. *Educational Psychology Review*, 27, 413-426
- McConachie, S. M., Petrosky, T., & Resnick, L. B. (2010). *Content matters: A disciplinary literacy approach to improving student learning* (1st ed.). Jossey-Bass.
- McCormick, S., & Zutell, J. (2015). *Instructing Students Who Have Literacy Problems*. Pearson.
- Mills, A. J., Durepos, G., & Wiebe, E. (2010). *Encyclopedia of case study research* (Vols. 1-0). SAGE Publications, Inc. doi: 10.4135/9781412957397
- Miranda, D., & Gaudreau, P. (2020). Music and cultural prejudice reduction: A review. *Musicae Scientiae*, 24(3), 299-312. doi:10.1177/1029864918802331
- Moghal, A. S. K. S., & Aziz, F. (2018). Mixed-age group teaching in second language learning: An observational study of a Montessori classroom in Pakistan. *Journal of Early Childhood Care and Education*, 2.
- Moon, K., Brewer, T. D., Januchowski-Hartley, S. R., Adams, V. M., & Blackman, D. A. (2016). A guideline to improve qualitative social science publishing in ecology and conservation journals. *Ecology and Society*, 21(3), 17. doi:10.5751/ES-08663-210317
- Montgomery, A., & Smith, K. M. (2014). Together in song: Building literacy relationships with song-based picture books. *Language & Literacy (Kingston, Ont.)*, 16(3), 27-53. doi:10.20360/G23886

- Moreno, S., Marques, C., Santos, A., Santos, M., Castro, S. L., and Besson, M. (2009). Musical training influences linguistic abilities in 8-year-old children: more evidence for brain plasticity. *Cereb. Cortex* 19, 712–723. doi: 10.1093/cercor/bhn120
- Moreno, S., Bialystok, E., Barac, R., Schellenberg, E. G., Cepeda, N. J., & Chau, T. (2011). Short-term music training enhances verbal intelligence and executive function. *Psychological Science*, 22(11), 1425-1433. doi:10.1177/0956797611416999
- Moritz, C., Yampolsky, S., Papadelis, G., Thomson, J., & Wolf, M. (2013). Links between early rhythm skills, musical training, and phonological awareness. *Reading & Writing*, 26(5), 739-769. doi:10.1007/s11145-012-9389-0
- Morrow, L., Gambrell, L., & Casey, H. (2018). *Best practices in literacy instruction, sixth edition*. The Guilford Press.
- National Reading Panel. (2000). Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction. Retrieved from:
<https://www.nichd.nih.gov/publications/pubs/nrp/Documents/report.pdf>.
- Nelson, L. H., Wright, W., & Parker, E. W. (2016). Embedding music into language and literacy instruction for young children who are deaf or hard of hearing. *Young Exceptional Children*, 19(1), 27-38. doi:10.1177/1096250614566539
- Neu, R.A. (2013). An Exploration of Oral Language Development in Spanish-Speaking Preschool Students. *Early Childhood Education Journal*, 41(3), 211-218.
doi:10.1007/s10643-012-0545-6
- New International Version Bible*. (2011). Zondervan. (Original work published 1978)

- Palmer, H. (2001). The music, movement and learning connection. *Young Children*, 56(5), 13-17.
- Paquette, K., & Rieg, S. (2008). Using music to support the literacy development of young English language learners. *Early Childhood Education*. 36, 227-232
- Parbery-Clark, A., Skoe, E., Lam, C., and Kraus, N. (2009). Musician enhancement for speech in noise. *Ear Hear*. 30, 653–661. doi: 10.1097/aud.0b013e3181b412e9
- Parbery-Clark, A., Strait, D., Anderson, S., Hittner, E., and Kraus, N. (2011). Musical experience and the aging auditory system: implications for cognitive abilities and hearing speech in noise. *PLoS One* 6:e18082. doi: 10.1371/journal.pone.0018082
- Patel, A. D. (2014). Can nonlinguistic musical training change the way the brain processes speech? the expanded OPERA hypothesis. *Hearing Research*, 308, 98-108.
doi:10.1016/j.heares.2013.08.011
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (Fourth ed.). SAGE Publications, Inc.
- Paynter, J., & Aston, P. (1970). *Sound and silence: Classroom projects in creative music*. Cambridge U.P.
- Pearson, P. D., & Gallagher, G. (1983). The gradual release of responsibility model of instruction. *Contemporary Educational Psychology*, 8, 112–123.

- Pekrun, R., A. J. Elliot, and M. A. Maier. 2006. "Achievement Goals and Discrete Achievement Emotions: A Theoretical Model and Prospective Test." *Journal of Educational Psychology* 98 (3): 583–597.
- Pekrun, R., T. Goetz, A. C. Frenzel, P. Barchfeld, and R. P. Perry. 2011. "Measuring Emotions in Students' Learning and Performance: The Achievement Emotions Questionnaire (AEQ)." *Contemporary Educational Psychology* 36 (1): 36–48.
- Pekrun, R., and L. Linnenbrink-Garcia. 2012. "Academic Emotions and Student Engagement." In *Handbook of Research on Student Engagement*, edited by J. Fredricks, A. Reschly, and S. Christenso, 259–282. Springer.
- Phillips, E. W., Feng, J. (2012). Methods for sight word recognition in kindergarten: Traditional flashcard method vs. multisensory approach. Retrieved from <https://eric.ed.gov/?id=ED536732>.
- Plesa, M (2020). *Using Multisensory Activities to Supplement Phonics Instruction in a Kindergarten Classroom*. ProQuest Dissertations Publishing; 2020.
- Politimou, N., Dalla Bella, S., Farrugia, N., & Franco, F. (2019). Born to speak and sing: Musical predictors of language development in preschoolers. *Frontiers in Psychology*, 10, 948. doi:10.3389/fpsyg.2019.00948
- Rabkin, N. (2012). Teaching artists and the future of education. *Teaching Artist Journal*, 10(1), 5-14. doi:10.1080/15411796.2012.630633

- Register, D. (2004). The effects of live music groups versus an educational children's television program on emergent literacy of young children. *Journal of Music Therapy*, XLI (1), 2-27.
- Research Design Service (2013). Surveys and Questionnaires. Retrieved from https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2013/05/12_Surveys_and_Questionnaires_Revision_2009.pdf
- Rhode, L. (2015). The comprehensive emergent literacy model: Early literacy in context. *Sage Open*, 1-11.
- Ritblatt, S., Longstretch, S., Hokodda, A., Cannon, B., Weston, J. (2013). Can music enhance school-readiness socioemotional skills? *Journal of Research in Childhood Education*, 27(3), 257-266.
- Rizzolatti, G., & Fabbri-Destro, M. (2010). Mirror neurons: From discovery to autism. *Experimental Brain Research*, 200(3-4), 223-237. doi:10.1007/s00221-009-2002-3
- Roufail, J., Sahyouni, R., Malik, S., Cadena, G., Chen, J. W., Hsu, F. P. K., . . . Vadera, S. (2018). A novel integrative healing services approach for neurosurgery inpatients: Preliminary experiences and cost calculations. *Interdisciplinary Neurosurgery: Advanced Techniques and Case Management*, 13, 124-128. doi:10.1016/j.inat.2018.04.012
- Saab, A. (2014). Review Essays: All You Need Is Music, Sweet Music: Dance Culture and Community in Urban America. *Journal of Urban History*., 40(2), 401-406.
- Sacks, O. W. (2008). *Musicophilia: Tales of music and the brain* (Revised and expanded, first Vintage Books ed.). Vintage Books.

- Saito, K., & Akiyama, Y. (2018). Effects of Video-Based interaction on the development of second language listening comprehension ability: A longitudinal study. *TESOL Quarterly*, 52(1), 163-176. doi:10.1002/tesq.362
- Schoen-Nazzaro, M. B. (1978). Plato and Aristotle on the ends of music. *Laval Théologique Et Philosophique*, 34(3), 261. doi:10.7202/705684ar
- Schwandt, T. A. (2007). *The SAGE dictionary of qualitative inquiry. third edition* SAGE Publications.
- Sen, N. B, Socrates, S., Plato, P., & Aristotle, A. (1967). *Wit and wisdom of Socrates, Plato, Aristotle: being a treasury of thousands of glorious, inspiring and imperishable thoughts, views and observations of the three great Greek philosophers, classified under about four hundred subjects for comparative study*. New Book Society of India.
- Shams, L., & Seitz, A. R. (2008). Benefits of multisensory learning. *Trends in Cognitive Sciences*, 12(11), 411-417. doi:10.1016/j.tics.2008.07.006
- Singh, N. C., & Balasubramanian, H. (2018). The Brain on Music. *Resonance: Journal of Science Education*, 23(3), 299–308. <https://doi.org/10.1007/s12045-018-0619-x>
- Skoe, E., & Kraus, N. (2012). A little goes a long way: How the adult brain is shaped by musical training in childhood. *The Journal of Neuroscience: The Official Journal of the Society for Neuroscience*, 32(34), 11507-11510. doi:10.1523/JNEUROSCI.1949-12.2012

- Slater, J., Strait, D. L., Skoe, E., O'Connell, S., Thompson, E., & Kraus, N. (2014). Longitudinal effects of group music instruction on literacy skills in low-income children. *PLoS One*, 9(11), e113383. doi:10.1371/journal.pone.0113383
- Sousa, D. (2017). *How the brain learns* (Fifth edition.). Corwin Press.
- Sousa, D. A. (2011; 2010; 2012). *How the ELL brain learns*. Corwin.
doi:10.4135/9781452219684
- Stapleton, P. (2019). Avoiding cognitive biases: Promoting good decision making in research methods courses. *Teaching in Higher Education*, 24(4), 578-586.
doi:10.1080/13562517.2018.1557137
- Strait, D. L., Kraus, N., Parbery-Clark, A., and Ashley, R. (2010). Musical experience shapes top-down auditory mechanisms: evidence from masking and auditory attention performance. *Hear. Res.* 261, 22–29. doi: 10.1016/j.heares.2009.12.021
- Strait, D. L., Parbery-Clark, A., Hittner, E., and Kraus, N. (2012). Musical training during early childhood enhances the neural encoding of speech in noise. *Brain Lang.* 123, 191–201.
doi: 10.1016/j.bandl.2012.09.001
- Summerford, C. (2009). *Action-Packed Classrooms, K-5: Using Movement to Educate and Invigorate Learners* (Second Edition). Corwin.
- Takacs, Z. K., Swart, E. K., & Bus, A. G. (2015). Benefits and pitfalls of multimedia and interactive features in technology-enhanced storybooks: A meta-analysis. *Review of Educational Research*, 85(4), 698-739. doi:10.3102/0034654314566989

- Tierney, A. T., Bergeson-Dana, T. R., and Pisoni, D. B. (2008). Effects of early musical experience on auditory sequence memory. *Empir. Musicol. Rev.* 3, 178–186.
- Tierney, A., and Kraus, N. (2013a). “Musical training for the development of language skills,” in *Changing Brains - Applying Brain Plasticity to Advance and Recover Human Ability* (Vol. 207), eds M. M. Merzenich, M. Nahum and T. Vleet (Amsterdam: Elsevier), 209–241.
- Tierney, A., & Kraus, N. (2014). Auditory-motor entrainment and phonological skills: Precise auditory timing hypothesis (PATH). *Frontiers in Human Neuroscience*, 8, 949-949.
doi:10.3389/fnhum.2014.00949
- Tilot, A. K., Kucera, K. S., Vино, A., Asher, J. E., Baron-Cohen, S., & Fisher, S. E. (2018). Rare variants in axonogenesis genes connect three families with sound-color synesthesia. *Proceedings of the National Academy of Sciences - PNAS*, 115(12), 3168-3173. doi:10.1073/pnas.1715492115
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners* (2nd ed.). Alexandria: ASCD.
- Tomlinson, M. M. (2015). Transmodal redesign in music and literacy: Diverse multimodal classrooms. *Journal of Early Childhood Literacy*, 15(4), 533-567. doi: 10.1177/1468798414552509
- Tomporowski, P.D., Davis, C.L., Miller, P.H., Naglieri, J.A. (2008). Exercise and children’s intelligence, cognition, and academic achievement. *Educational Psychology Review*, 20, 111-131.

- Toumpaniari, K., Loyens, S., Mavailidi, M.F., & Paas, F. (2015). Preschool children's foreign language vocabulary learning by empowering words through physical activity and gesturing. *Educational Psychology Review*.
- Ulfarsdottir, L.O., & Erwin, P.G. (1999). The influence of music on social cognitive skills. *The Arts in Psychotherapy*, 26 (2), 81- 84.
- U.S. Department of Education, National Center for Education Statistics. (2018). The Condition of Education 2018 (2018-144), English Language Learners in Public Schools. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=96>
- Vaiouli, P., & Andreou, G. (2016). "Sing along!": Language development through music for young children with autism. *Nordic Journal of Music Therapy*, 25(sup1), 80-80. doi: 10.1080/08098131.2016.1180062
- Van Hedger, S. C., Heald, S. L. M., & Nusbaum, H. C. (2019). Absolute pitch can be learned by some adults. *Plos One*, 14(9), e0223047. doi:10.1371/journal.pone.0223047
- Verrusio, W., Ettore, E., Vicenzini, E., Vanacore, N., Cacciafesta, M., & Mecarelli, O. (2015). The Mozart effect: A quantitative EEG study. *Consciousness and Cognition*, 35, 150-155. doi:10.1016/j.concog.2015.05.005
- Vygotsky, L. S. (1962). *Thought and language*. MIT Press.
- Walton, P. (2014). Using singing and movement to teach pre-reading skills and word reading to kindergarten children: An exploratory study. *Language & Literacy (Kingston, Ont.)*, 16(3), 54-77. doi:10.20360/G2K88J

- Wang, C. (2014). The role of music in language learning processes in a mandarin immersion preschool. ProQuest Dissertations Publishing; 2014.
- Wolf, M. C., Muijselaar, M. M. L., Boonstra, A. M., & Bree, E. H. (2019). The relationship between reading and listening comprehension: Shared and modality-specific components. *Reading & Writing, 32*(7), 1747-1767. doi:10.1007/s11145-018-9924-8
- Xie, K., Vongkulluksn, V. W., Justice, L. M., & Logan, J. A. R. (2019). Technology acceptance in context: Preschool teachers' integration of a technology-based early language and literacy curriculum. *Journal of Early Childhood Teacher Education, 40*(3), 275-295. doi:10.1080/10901027.2019.1572678
- Yenawine, P. (2013). *Visual thinking strategies: Using art to deepen learning across school disciplines*. Harvard Education Press.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (Sixth ed.). SAGE Publications, Inc.
- Zadina, J. (2014). *Multiple pathways to the student brain: energizing and enhancing instruction*. Jossey-Bass.
- Zanders, M. L. (2018). Music as therapy versus music in therapy. *The Journal of Neuroscience Nursing: Journal of the American Association of Neuroscience Nurses, 50*(4), 218-219. doi:10.1097/JNN.0000000000000379
- Zatorre, R. J. (2013). Predispositions and Plasticity in Music and Speech Learning: Neural Correlates and Implications. *Science, 342*(6158), 585–589. doi:10.1126/science.1238414.

Zendel, B. R., and Alain, C. (2012). Musicians experience less age-related decline in central auditory processing. *Psychol. Aging* 27, 410–417. doi:10.1037/a0024816

APPENDICES

Appendix A – Institutional Review Board Permission Letter

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

April 9, 2021

Leia Jobe
Kenneth Tierce

Re: IRB Exemption - IRB-FY20-21-684 Using HeidiSongs Music as an Instructional Tool in the Elementary School Classroom: A Case Study

Dear Leia Jobe, Kenneth Tierce:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the

contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office

HeidiSongs will post the following announcement on their social media platforms:

“Calling all HeidiSongs teachers! Would you like to participate in a research study investigating how teachers use HeidiSongs as an instructional tool? Sign up here [insert link to a private google form in which participants submit email address].”

In fine print underneath the post, HeidiSongs will include a basic overview of required participant activities to notify potential participants that they will need to sign a consent form, write a letter to a new teacher about how they have used HeidiSongs, and participate in both an interview and a focus group. This fine print also tells participants that they will not be compensated for their participation in the study.

HeidiSongs can change text color or utilize interesting graphics for this post but is not allowed to view email addresses of participants or otherwise influence participation. Email addresses of teachers who sign up to participate are viewable only to the researcher via Google forms. When signing up, participants complete a questionnaire containing screening details (See Appendix C) and submit a letter to a hypothetical new teacher. The researcher will email consent forms to chosen participants. Participants must sign and return the consent form before participating in an interview.

If it is necessary to recruit more participants after a low initial response rate, HeidiSongs may continue to post the above announcement until a minimum of 15 participants have successfully completed both the introduction letter and the consent form.

Appendix B: Social Media Recruitment Letter

ATTENTION HEIDISONGS USERS: I am conducting research as part of the requirements for a doctor of education degree at Liberty University. The purpose of my research is to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom. Participants, if willing, will be asked to write a letter to a new teacher explaining how they use HeidiSongs in the classroom, which should take about 15 minutes to complete. Selected participants will then be asked to participate in a 30-minute interview on Zoom, and a limited number of participants will be asked to be part of a 30 to 45-minute focus group on Zoom. If you would like to participate and meet the criteria below, please click the link provided at the end of this post. You will be asked to fill out some screening details, and then you will have the opportunity to submit the letter you would write to a new teacher. Selected participants will be contacted via email to schedule a follow-up interview.

To participate, you must be a current or former teacher who has used HeidiSongs music as an instructional tool in the elementary school classroom.

To sign up, [click here](#).

Appendix C – Data Collection: Questionnaire with Screening Details

Your name (first name only): _____

Your age: _____

Number of years you have been teaching: _____

Cities and states where you have taught:

Grade levels you have taught:

When did you begin using HeidiSongs? _____

How did you find out about HeidiSongs? _____

What other music-based learning programs do you use? _____

Appendix D – Consent Form for Teacher Participants

Consent

Title of the Project: Using HeidiSongs Music As An Instructional Tool in the Elementary School Classroom: A Case Study

Principal Investigator: Leia Jobe, M.Ed., Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must have used HeidiSongs music as a teacher in your own elementary school classroom. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The study is about understanding the use of HeidiSongs music as a literacy tool. The purpose of this case study is to understand how teachers use HeidiSongs music as an instructional tool in the elementary school classroom.

What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Submit this completed consent form to the researcher along with a letter you write to a hypothetical new teacher in your building about how you have used HeidiSongs in your classroom.
2. Participate in a follow-up interview with the researcher, which will take approximately 30 minutes to an hour. This interview will take place over a video conferencing tool such as Skype, FaceTime, or Zoom. This meeting will be recorded via either audio or visual means and transcribed for use in the dissertation.
3. Participate in one focus group with other participants who have also used HeidiSongs. This focus group will be moderated by the researcher and will take place on a digital platform. It will last approximately one hour and will be recorded via audio or visual means and transcribed for use in the dissertation.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study. Benefits to society include an opportunity for teachers to learn more about how to use music and multisensory learning programs as instructional tools.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or HeidiSongs. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Leia Jobe. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her. You may also contact the researcher's faculty sponsor, Dr. Vonda Beavers.

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Background Questions and Your Consent

Your name: _____

Your age: _____

Number of years you have been teaching: _____

Cities and states where you taught: _____

Grade levels you taught: _____

When did you begin using HeidiSongs? _____

How did you find out about HeidiSongs? _____

What other music-based learning programs do you use? _____

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

The researcher has my permission to audio-record or video-record me as part of my participation in this study.

Printed Subject Name

Signature & Date

Appendix E – Data Collection: Interview Questions

Semi-Structured Interview Protocol: Teachers' Experiences Using HeidiSongs Music As An Instructional Tool in the Elementary School Classroom

Time of Interview: to

Date:

Virtual Platform Used:

Video or Audio:

Interviewer Location (city, state, country):

Participant Location (city, state, country):

Teacher Being Interviewed:

Standardized Open-Ended Interview Questions:

1. In a typical day, how much music of any sort do you use in your classroom? Please tell me what kind of music you use and when you use it. (HeidiSongs, classical, brain breaks, etc.).
2. In a typical school year, how often do you use HeidiSongs in your classroom?
3. How much do you participate in HeidiSongs? I would like to know if you are simply playing the videos, if you are singing along, if you are performing the songs yourself with your own instrument, if you remind students of the songs during other times of the day (such as small group guided reading, transitions, or during spelling tests), etc.
4. How does it feel to use HeidiSongs?
5. How do your students react to HeidiSongs?
6. How does using HeidiSongs impact literacy instruction in your classroom?

7. Tell me about the diversity of your students.
8. In what ways does HeidiSongs music require differentiation in your classroom?
9. How do you use HeidiSongs in the whole group setting in your classroom?
10. How do you use HeidiSongs with small groups in your classroom?
11. How do individual students use HeidiSongs when working independently in your classroom?
12. How do HeidiSongs affect classroom management?
13. How do HeidiSongs affect student engagement?
14. Why would you consider HeidiSongs to be an effective academic activity?

Appendix F – Sample Letter to a New Teacher

Participant: Stephanie

You have to use HeidiSongs! It has made all the difference in the world in how my students have learned. Every year I start with the alphabet songs. We focus on 1 letter a day. So the first day I do the Aa Song. The next day I do the A and Bb songs. By the time we are at the letter Mm the kids are begging to finish the whole alphabet. So for 20 minutes every day I do all the alphabet songs. Every year I have lots of kids who start the year in September knowing fewer than 10 letters. By the first week of October, usually all of my students know all of the uppercase and lowercase letters and their sounds. When I assess the kids a few of them sing the song when they say the name of the letters. I find this especially true of my special education students.

After our alphabet study we move onto the sight words. I start with 5 words and we do them every day. Then I add the color words. Then the kids start requesting songs. This year we had to sing black and off every day for a month! By the second semester I am doing words for 15-20 minutes a day. The streaming has been a game changer. I can pick the words I want. I use my data from ESGI assessments to know which words the fewest number of kids knew and then we sing those songs over and over again. They master those words and move onto the next words that they don't know. They know the words that we do the songs to. This is the first year I have used the streaming and I feel my kids are the best readers I've ever had. This is in the year of COVID. We started hybrid, then went full distance learning and have only been in person since January 22. They shouldn't be this good. I credit HeidiSongs.

The paraprofessionals that work in my room have learned the songs through the years. They sing the songs when their special Ed students forget a word. They usually remember it when they hear a song. The brain truly does learn through music.

This year I have had 15 minutes after Calendar and before our specials. I have used that time to do the math songs. It has been amazing. My students actually cheer when I show them we are doing a math worksheet. They love math and are so confident in it. I have never had a class that is so good at addition. We do the addition fact songs every day and they know all the facts and how you can "mix it up." I have one Special Ed boy that in April still did not know how to spell his name. He can remember all the math songs. His favorite is $3+4=7$. I took that tune and replaced the numbers with the letters in his name. My class sings his name all day long. He now can spell his name! Music works!

I think every teacher should have the streaming service and inundate their students with HeidiSongs. 1 song is 10 times better than any worksheet. Worksheets don't grow dendrites. Music does. It'll be the best investment you'll ever make.

Appendix G – Data Collection: Focus Group Questions

1. What is one surprising thing you have experienced while using HeidiSongs in your classroom?
2. Describe how you use HeidiSongs as an instructional tool.
3. How do you use HeidiSongs for whole group instruction?
4. How do you use HeidiSongs for small group instruction?
5. How do individual students use HeidiSongs during individual student work time or 1-on-1 instruction?
6. How many of you consider yourselves to be a musical person?
7. Tell me about what led you to use HeidiSongs in the first place.
8. Tell me about some specific students that seemed particularly responsive to HeidiSongs.

Appendix H – Data Analysis: Coding into Themes

Themes

Themes	Subthemes	Codes
Music, Movement, and Memory	Movement	Movement (44) Moving (27) Dance (18) Kinesthetic (10) Dancing (6) Cross body (3)
	Memory	Attention (15) Memory (10)
	Participation	Participate (11) Wiggles (2)
Music as a Bridge	Joy	Love (56) Like (17) Positive (6) Joy (6) Happy (3)
	Engagement	Singing (60) Fun (30) Engage (27) Engagement (17) Engaging (10)
	Connection	Excited (13) Connection (22) Everybody (10) Together (7) Diversity (6) Diverse (5) Cultural diversity (3) Multicultural (1)

Most Common Usage of HeidiSongs	By group size	Small group (44)
		Individual (28)
		Whole group (18)
		Everybody (10)
		Everyone (10)
		Other uses
	Humming (4) Humm (4)	Classroom management (33)
		Language (32)
		Transitions (13)
		Low income (12)
		Brain break (4)