USING MUSIC IN LITERACY INSTRUCTION AND LITERACY DEVELOPMENT

by

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CERTIFICATION OF THESIS/PROJECT CAPSTONE WORK

We, the undersigned, certify that this project entitled USING MUSIC IN LITERACY INSTRUCTION AND LITERACY DEVELOPMENT by EMILY M. DAVIS, Candidate for the Degree of Master of Science in Education, Literacy Birth to Grade 12, is acceptable in form and content and demonstrates a satisfactory knowledge of the field covered by this project.

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ABSTRACT

Traditionally, learning to read meant learning one's ABCs. However, children did not learn their letters just by saying the alphabet, but also by singing it using the "Alphabet Song." So begins the relationship between music and literacy, but the precise role of music in literacy instruction and development has not been clearly determined. This research study addresses this problem of precision by asking the question, what does research show about the role of music in literacy instruction? The most appropriate way to answer this question is with a review and synthesis of the literature, which has determined five findings. First is that direct uses of music for positive results in literacy instruction include singing, playing instruments, listening, processing rhythm, and reading lyrics. Second is that direct use of music in literacy instruction is effective with diverse students such as struggling readers, EFL students, and students from low socio-economic status. The third finding is that direct use of music in literacy instruction is also as effective as traditional teaching methods for improving literacy skills. The fourth finding is that the primary indirect use of music in literacy instruction is as background music, with a positive effect on literacy performance coming from music that is characteristically soft, slow, and instrumental: for example, Baroque and Classical music. The fifth finding is that the types of background music that do not have a positive effect on literacy performance are characteristically complex, fast, and vocal: for example, hip hop and popular music with lyrics.

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Chapter 1: Introduction

Statement of the Problem

Traditionally, learning to read meant learning one's ABCs. However, children did not just learn to say the alphabet; they learned their letters by singing the "Alphabet Song." So begins the relationship between music and literacy. Teachers have used music in literacy classes to help with fluency (e.g.: Edwards, 2012), phonics (e.g.: Hachmeister, 2010), and vocabulary growth (e.g.: Maslina, 2015). However, the precise role of music in literacy instruction has not been clearly determined. The precise relationship of music to literacy development has also not been clearly determined. This research study addresses this problem of lack of clarity by asking the research question, what does research show about the role of music in literacy instruction? The most appropriate way to answer this question is with a research synthesis.

Background

Music is one of my passions and has been for many years. Music fills my life through various forms such as singing, playing instruments, and listening. I have played flute for many years and have learned additional instruments throughout my musical career. I listen to music wherever I go and sing along to the music on the car radio or on a music streaming website. Starting in sophomore year of high school, I decided to make music part of my professional career. Originally, I had intended to be a music teacher exclusively, but various circumstances led my career down another path where I discovered that I could still teach music to elementary students by becoming a elementary school teacher. One music course I took during my teacher preparation program was designed specifically for pre-service elementary teachers with a minor in music; it taught strategies and routines for how to daily incorporate music into the classroom. The first topic discussed was about the similarities between how young children learn language and learn music. After this course, my interest moved to literacy and teaching literacy, but I remained interested in the relationship between learning music and learning to read. Therefore for my capstone research, I have chosen to research the relationship between music and literacy instruction.

Terminology

There are two key concepts that form the basis for this research study. They are "literacy" and "music." Literacy is primarily the ability to read and write. According to Kucer (2014), literacy has four dimensions, including cognitive, linguistic, and developmental. Therefore, literacy "encompasses a wide range of knowledge and skills" (Hansen, Bernstoff, & Stuber, 2007, p. 2). This research study considers literacy as including the linguistic skills of fluency and phonics, as well as the reading skills of vocabulary development when "reading" a linguistics "word-based" text. Literacy is also considered in terms of its developmental dimension. The second key concept is "music." Music also has many dimensions, and rather than try to define them, it is sufficient for this research to identify them. The dimensions or aspects of music include producing music by singing or playing a musical instrument; listening to music by attending a live performance or turning on a radio or playing a CD; and reading music by reading the lyrics of a song or the notes on sheet music. All of these aspects have been considered when searching and reviewing research articles for this research synthesis.

Theoretical Framework

This research study combines two theories of reading. The first is that literacy is a social practice (Gee, 2001). This theory says that literacy is embedded in a social situation, a context, or a "Discourse" (Gee, 2001). Music is a context and a Discourse. It has its own form of literacy and reading skills. An individual becomes literate in music by practicing music's reading skills. However, because many of the "reading" skills of music are similar to the reading skills of linguistic text-based reading (Menard & Wilson, 2014), this research study also uses a psychological theory of literacy where reading is a cognitive function (Kucer, 2014). Music and reading are connected psychologically because both sets of the skills are learned cognitively by an individual.

Rationale

From the time a child sings the A-B-C "Alphabet Song," the child recognizes a connection between music and literacy. However, the precise nature of that connection is not always known or used for maximum student benefit by teachers. There appears to be a lack of clarity about the role of music in literacy instruction and in literacy development. The goal of this study is to help clarify that role and connection. With greater knowledge about the relationship between music and literacy instruction and between music and literacy development, classroom teachers may be able to find new ways to use some of the dimensions of music in their literacy instruction and to assist the literacy development of their students.

Chapter 2: Literature Review

Introduction to the Review

To address the research question of using music in literacy instruction, an extensive literature review was conducted. The studies for this research synthesis were found after a search of the major education databases using the search terms of "music and literacy," "music and literacy instruction," "music and fluency," "music and vocabulary," "music and comprehension," and "music listening and comprehension." A total of 32 studies were found. These studies were organized into two major categories: direct use of music in literacy instruction and indirect use of music in literacy instruction. The category direct use of music in literacy instruction contains 14 studies. The category indirect use of music in literacy instruction contains 18 studies. In each category of the literature review, research studies are organized by age or grade level of the participants.

Direct Use of Music in Literacy Instruction

This category contains 14 research studies on the direct use of music in literacy instruction. The first seven research studies examine the direct use of music as an interactive tool in literacy instruction. The research studies in this section are arranged according to the age or grade level of participants. The second seven research studies involve the direct use of music in literacy instruction with English as a Foreign Language (EFL) students. The research studies in this section are also arranged according to the age or grade level of participants.

The study with the youngest participants worked with kindergarten students. Register (2004) compared the effects of a music program "designed to teach reading skills" (p. 2) against the *Between the Lions* television program. The music program used strategies such as singing, movement, and instrument playing "paired with books or letter and word cards" (p.4) to teach phonics, phonemic awareness, and early reading skills. The *Between the Lions* television program used stories, music, and puppets to teach "the purposes of reading (for pleasure or for information), understanding print awareness concepts, knowledge of the alphabet and high-frequency words, and understanding the nature and structure of various texts" (p. 2). Participants

were 86 kindergarten students between the ages of five and seven years from lower socioeconomic status. Participants were from four classrooms at the same public elementary school, and in each classroom, participants received instruction in a treatment condition: music and video, music only, video only, and no contact, the control condition. Data were collected using four subtests from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) and three subtests from the Test of Early Reading Ability, third edition (TERA-3). Analysis of data from the TERA-3 revealed that all participants "showed progress" (p. 16), but there was "no statistically significant difference between groups" (p. 16). Analysis of the data from the DIBELS and the TERA-3 revealed the participants in the music only condition and music and video condition "achieved the highest increases in mean scores" (p. 2) between the pre-assessment and the post-assessment on four of the seven subtests. Register determined that the music program, which used singing, movement, and instrument playing strategies for learning literacy, was more effective than the television program alone in teaching participants early reading skills, phonics, and phonemic awareness. Therefore, the direct use of music in literacy instruction with kindergarten students appears to be more effective than a reading-focused television program alone.

Moving from kindergarten to first grade students. Kouri and Telander (2008) compared the effects of listening to storybook text set to a song against listening to a story that is read aloud on students' comprehension. Storybooks used in the experiment were for kindergarten and first grade, and were chosen based on a storyline with "an easily identifiable general theme" (p. 333), had "main characters with a goal to achieve" (p. 333), and had illustrations relating to the text. Participants listened to two storybooks in each session: one storybook was read aloud to participants, and one storybook was a recording of the text sung to the tune of a familiar children's song. Participants were 30 first grade students between the ages of five and eight years who had "histories of speech and language delay" (p. 329) and were "at risk for developing reading problems" (p. 333). After each story, participants recalled as much about the story as they could and answered several comprehension questions about the characters, setting, and plot. Analysis of the data from participants' answers revealed that scores for story recall and comprehension "did not differ between conditions" (p. 329) and "a significant difference was not revealed between conditions for total question points earned… or for percentage of questions answered correctly" (p. 339). Data analysis did reveal that "participants used a greater number of

different words when retelling sung stories… compared with spoken stories" (p. 338). The researchers concluded that although "music did not enhance these particular response parameters, other types of linguistic ability were facilitated" (p. 340). Therefore, the direct use of music in literacy for comprehension of narrative text with first grade students appears to have little effect on comprehension.

No studies were found with second grade students, but Cole and Hilliard (2006) worked with third grade students. Cole and Hilliard studied the effects of a "web-based reading curriculum program featuring music and video" (p. 353) on the reading performance and motivation of struggling readers. The reading program, Reading Upgrade, incorporated music in lessons through R&B-style songs that broke up a series of long words into syllables. Participants were 36 third grade students from low socioeconomic backgrounds. Participants were randomly selected to the experimental condition, where they received the web-based reading instruction, or the control condition, where they received traditional reading instruction. Participants in the experimental condition listened to the songs in the program to complete lessons. Data were collected using the Developmental Reading Assessment (DRA) and the Wide Range Achievement Test, third edition (WRAT-3). An analysis of the data revealed that participants in the experimental condition "performed higher" (p. 366) on the post-assessment than did participants in the control condition. Specifically, the experimental group achieved "significant increases in measures of decoding, fluency, and comprehension" (p. 372). The researchers determined that the web-based reading curriculum featuring R&B-style songs was more effective than traditional reading instruction on the literacy performance of third grade students from low socio-economic backgrounds. Therefore, the direct use of music in literacy for reading performance appears to have a positive effect on decoding, fluency, and comprehension in third grade students.

No studies were found with fourth grade students. However, Bennet, Calderone, Dedrick, and Gunn (2015) worked with fifth grade students to study the effects of a reading and singing software program on reading fluency. The researchers used the reading and singing software program as a reading intervention for struggling readers to "increase students' ability to sing on pitch" (p. 53) and "increase their reading fluency and prosody" (p. 53). Participants were 24 fifth grade students at an urban school who were determined "struggling" based on scores from the Florida Comprehensive Assessment Test. Participants included 14 English Language Learners

and six students with disabilities. Thirteen students were assigned to the control condition. Eleven participants were randomly assigned to the treatment condition where they used the reading and singing software program to increase their abilities in singing and reading fluency. Participants did so by singing songs, re-reading lyrics, and repeating songs. The program selected songs based on each participant's singing range and reading ability. Data from the reading section of the yearly Florida Comprehensive Assessment Test were used for pre-assessment and post-assessment. An analysis of the data revealed a larger increase in scores for the treatment group than for the control group. On the pre-assessment, the control group scored higher than the treatment group on the reading section. On the post-assessment, the treatment group scored higher than the control group on the reading section. The researchers determined that the reading and singing software program, which incorporated repeated reading of lyrics and repeated singing of songs, was effective in increasing participants' reading fluency. Therefore, the direct use of music in literacy instruction for fluency with struggling fifth grade students appears to have a positive impact on reading fluency.

Bonacina, Cancer, Lanzi, Lorusso, and Antonietti (2015) worked with 28 middle school students between the ages of 11 and 14 years in Lombardy, Northern Italy; all participants had been previously diagnosed with developmental dyslexia (DD). The purpose of their study was "to evaluate the effectiveness of the computer-assisted version of a new intervention, called Rhythmic Reading Training (RRT), aimed at improving reading skills in students with DD, in which reading exercises are combined with rhythm processing" (p. 2). The researchers designed an experiment where the participants were randomly assigned to one of two groups "of the same size, matched for gender, school grade, and level of reading impairment" (p. 3). One group received the RRT intervention over a period of 9 weeks; the control group did not. Data were collected through pre-assessments and post-assessments measuring participants' skills in fluency, accuracy, and word and pseudo-word reading. An analysis of the data revealed that the Rhythmic Reading Training program "improved participants' reading skills" (p. 4). Participants' scores in reading speed and accuracy increased, and these increases were "significantly higher in the intervention than in the control condition" (p. 5). The researchers concluded that the intervention program that combined rhythm with reading exercises was effective in improving the reading speed and accuracy of middle school students with developmental dyslexia. Therefore, the direct use of the rhythm component of music in literacy instruction appears to have a positive impact

on students with developmental dyslexia. Even though this Bonacina et al. study was with students in Italy, given the nature of dyslexia, there appears to be no reason to think that similar results may not be possible with English students in America.

The second subgroup of seven research studies in this category examine the direct use of music in literacy instruction with English as a Foreign Language (EFL) students. Starting with the youngest students, Fisher (2001) investigated the use of singing and listening to music in kindergarten and first grade instruction and its impact on literacy development. Participants were 80 students whose first language was Spanish entering kindergarten in an urban school. All participants received free lunch. Participants were chosen from the population of kindergarten students enrolled in bilingual classes. Participants were randomly assigned to four teachers, two of which used music in different areas of instruction while two did not use music as often in instruction. Participants had the same teacher for two years (kindergarten and first grade). Daily literacy instruction for all classrooms included read-aloud, guided reading, writing, working with words, and independent reading; however, for two classrooms, the teachers had a "music-rich environment" (p. 39). Observations of the music-rich classrooms showed how the teachers used music in their literacy instruction with bilingual students. First, the classrooms' morning routine included songs that focused on pride, self-esteem, and feeling good. When working with words, the literacy instruction involved using words from song titles and then playing those songs. During independent reading, participants listened to books accompanied by songs. Data were collected on participants' literacy performance at the beginning of kindergarten and at the end of first grade using the Student Oral Language Observation Matrix, the Yopp-Singer Test of Phoneme Segmentation, and the Development of Reading Assessment (DRA). Analysis of the data revealed that participants from the music-rich classrooms achieved higher scores on the Student Oral Language Observation Matrix and the Yopp-Singer Test, but not on the DRA. Fisher concluded that systematic use of music in a kindergarten and first grade classroom has a positive impact on the literacy development of bilingual (EFL) students. Therefore, the direct use of music through singing and listening to songs in literacy instruction appears to have a positive impact on the literacy performance of kindergarten and first grade students.

In another study with first grade students, Calavalle, Izzo, Raimondi, Rocchi, Sisti, and Stocchi (2014) studied the effects of psychomotor activities and reggae/hip hop songs on vocabulary acquisition. Participants were 66 first grade students from two classrooms at a school

in Italy but with the same English teacher; participants were of middle class backgrounds and their first language was Italian. The experimental group had 36 participants who received instruction in vocabulary that was accompanied with musical activities and physical activities. The control group had 30 students who were taught English using the "traditional methodology" (p. 272). Data were collected on pre-assessment and post-assessment for "receptivity and knowledge of the target language vocabulary" (p. 273). Analysis of the data revealed that compared with participants in the control group, participants in the experimental group scored a "higher average percentage of correct answers" (p. 275). However, analysis of the data also revealed that "regardless of the teaching method employed, both groups showed improvement" (p. 275) in English vocabulary. Therefore the combination of music and physical activity appears to be effective for increasing vocabulary acquisition in first grade EFL students, but no more effective than traditional teaching methods.

Moving from first grade to second grade EFL students, Fonseca-Mora, Jara-Jimenez, and Gomez-Domiguez (2015) "tested the efficacy of a phonological training program, with and without musical support that aimed at improving early reading skills" (p. 1). Participants were 63 Spanish-speaking second grade students between the ages of seven and eight years learning English as a Foreign Language (EFL). Participants were divided into three groups: a control group, an experimental group with non-musical intervention, and an experimental group with musical intervention. Participants in all groups participated in activities that focused on phonological awareness and phonics. The experimental group that received musical intervention used several forms of music: singing, watching and listening to video songs, and reading lyrics in subtitles of song videos. Participants also learned to sing the songs in the videos. The experimental group that received non-musical intervention learned the same concepts, but used non-music videos, posters, and audio books. Data were collected using a socio-cultural survey to "identify main family characteristics and reading habits of the children" (p. 3). Data were also collected on participants' musicality, auditory memory span, and early reading skills including letter knowledge, initial sound identification, and oral reading fluency. Analysis of the data revealed that participants in both experimental groups "performed significantly better" (p. 6) than participants in the control group on letter reading and identifying initial sounds. The researchers concluded that the "phonological training program" (p. 1) was effective in improving participants' phonological awareness, "but the further impact of the music support was not

demonstrated" (p. 1). The direct use of music in literacy instruction of second grade EFL students appears to be effective, but it is no more effective than non-musical teaching methods.

There appear to be no studies investigating the use of music with EFL students after grade two until university level. Beasley and Chang (2008) investigated the influence of listening repetition, song likeability, and song understandability on vocabulary acquisition in Taiwanese university EFL learners. Participants were 196 Taiwanese university students, but only 161 participants completed the full experiment. Participants were between the ages of 18 and 32, with 63% of the participants being 19 to 20 years old. Data were collected through a website which participants used for an initial survey, a pre-assessment to measure vocabulary skills, and a cultural literacy pre-assessment. Through the website, participants listened to and studied the six treatment songs "as many times as necessary to fully understand them as well as complete the associated learning activities" (p. 4). Treatment songs represented different musical styles, tempos, and themes. After studying the treatment songs, participants completed a final survey, a vocabulary post-assessment, and a cultural literacy post-assessment. An analysis of the data revealed "no significant correlations" (p. 7) between participants' listening repetition and vocabulary scores, but there was a "moderate correlation" (p. 7) between song likeability and "perceived amount of English Language learned for the amount of time spent" (p. 7). The researchers suggested that "both song likeability and song understandability significantly and positively influence web-based learning environment enjoyment" (p. 1), and the researchers determined that song likeability and song understandability contributes to perceived second language vocabulary acquisition for university level EFL students. Therefore, the direct use of music in literacy instruction appears to be effective in the vocabulary acquisition of university level students, but students' comprehension of and favor towards the songs impacts vocabulary acquisition.

In another study with university students, Li and Brand (2009) investigated the "effectiveness of varying the use of songs (lyrics and music)" (p. 73) on vocabulary acquisition of EFL students. Participants were 105 university EFL students in the People's Republic of China. The average age of participants was 23 years. Participants in the study were divided into three conditions: "total song-based ESL instruction, a mix of song and non-song based ESL instruction, or non-song based ESL instruction" (p. 76). The music chosen for the total song-based instruction group and the mix of song and non-song instruction group included American

and British pop songs. The songs "were [used] for developing listening comprehension, reading comprehension, pronunciation/speaking practice, and the learning of grammar and stress patterns" (p. 78). Data were collected using "research-designed instruments" (p. 78) for measuring participants' vocabulary acquisition and "motivation, enjoyment of, and confidence in their ESL instruction" (p. 78). Analysis of the data revealed that students who were received more instruction with music achieved higher scores on the post-assessments. The researchers concluded that "varying the degree of use of songs produced differential English language achievement" (p. 73), and participants who received more instruction with music produced higher achievement results. Therefore, the direct use of music in literacy instruction for vocabulary appears to be effective with university EFL students.

In yet another study with university students, Chesley (2011) studied the vocabulary acquisition of African-American English (AAE) vocabulary by non-African-American students through listening to hip hop music. Chesley "hypothesized that a preference for hip-hop music would be positively associated with participants' AAE comprehension vocabulary" (p. 2). Participants were 168 university students in introductory courses in music, linguistics, and sociology at University of Minnesota. Using a survey, data were collected on participants' gender, age, ethnicity, hometown population, musical tastes, social networks, and pop culture knowledge. Participants also responded to 64 vocabulary items with a subset specific to African-American English. An analysis of the data revealed that "musical preferences, weak social ties to African-Americans, and knowledge of popular culture were significant in predicting a participant's AAE vocabulary score" (p. 2). The results of this research study "support the hypothesis that non-African-american young adults learn African-American English (AAE) vocabulary through listening to hip-hop" (p. 5), and the results suggest that vocabulary acquisition is a "multifaceted process in which personal identity, in the form of cultural knowledge, social ties, and other musical elements, plays a crucial role" (p. 5). Chesley determined that vocabulary acquisition, especially of African-American English by non-African-American university students, may be accomplished through listening to culturally-specific music. Therefore, the direct use of music in literacy instruction for vocabulary acquisition appears to be effective with university students.

Indirect Use of Music in Literacy Instruction

This category contains 19 research studies that examine the indirect use of music in literacy instruction. The research studies are arranged according to the type of method or application of the music use and by age or grade level of the participants in each type. These first two studies examine the indirect use of music for cognitive tasks: one study with preschool students and one with university students. In a study with preschool children, Hui (2006) investigated the effect of listening to recorded music written by Mozart on children's ability to complete cognitive tasks, specifically tasks connected to the spatial-temporal abilities of children. The study was a replication of Rauscher et al. 1993 study which found an "increase in spatial-temporal ability after listening to Mozart music" (p. 411). This effect became known as the "Mozart effect." Hui (2006) studied the "Mozart effect" in preschool children. The participants were 41 preschool children between the ages of three and five years, with an average age of participants was 4.7 years. Participants "attempted a series of pencil-and-paper maze tests after each of three listening conditions: Mozart's Piano Concertino in A Major (K488), age-appropriate popular music, and silence" (p. 411). Participants listened for eight minutes and were given 15 minutes to complete the mazes. Data were collected from the mazes and participants received two points for each correctly completed maze. Analysis of the data revealed that there were "no statistically significant differences among the three interventions" (p. 411). Participants showed "no improvement" (p. 415) in spatial-temporal abilities in the three listening conditions. Hui determined that the type of music played before completing the cognitive tasks did not have an effect on the performance of preschool children. Therefore, the indirect use of music in literacy instruction appears to have no effect on the cognitive performance of preschool children.

The second study that examined the indirect use of music for cognitive tasks worked with university students. Furnham and Allass (1999) investigated the effects of "complexity in background music on the performance of four cognitive tasks by extroverts and introverts" (p. 27). Participants were 24 introverts and 24 extroverts, all of whom were university psychology students. Participants completed cognitive tasks while listening to three different conditions of music: complex musical distraction, simple musical distraction, and silence. The researchers chose contemporary songs based on several factors of complexity: tempo, repetition, rhythmic complexity, melodic complexity, vocal meaningfulness, instrumental layering, and overall

complexity. Participants were randomly assigned to complete a different cognitive task in each condition. The cognitive tasks, which were used for data collection, were a reading comprehension test, an observation test, and a memory test. Analysis of the data revealed that complex background music was more distracting than simple music or no music. Analysis of the data also revealed that introverts' scores on the reading comprehension test decreased "from silent condition, through the simple to the complex music background condition" (p. 34) while extroverts' scores did not show this pattern. The researchers concluded that complex music does not have a positive effect on the cognitive task performance of university students. Therefore, the indirect use of music in literacy instruction appears to not have a positive effect on the cognitive task performance of university students when complex music is used.

       These next two studies examine the indirect use of music for test-taking: one with ten year old students and one with seventh grade and eighth grade students. Bloor (2009) conducted a study with 47 ten year old students from "socio-economically diverse schools" (p.263) in England. Specifically, Bloor (2009) studied the different effects of background music on the behavior and attainment of musicians and nonmusicians. Participants were classified as musicians and nonmusicians after interviews were conducted with teachers and the students themselves. Data were collected using observations, interviews, and "two mathematics tests and two reading tests; two with music and two without" (p. 263). This meant participants completed one mathematics test and one reading test with background music and one mathematics test and reading test without background music. During interviews, teachers answered questions "about their perception and current use of music in the classrooms" (p. 264), and participants answered questions "about their musical experiences and how they felt the music helped with any tests" (p. 264). Analysis of the qualitative data from observations revealed that participants exhibited more behaviors that qualified as distractions as they "tired toward the end of the activity" (p. 268). Data analysis also revealed that more musicians performed better on the reading test when music was playing, but more musicians performed less well on the math test with background music. The researchers concluded that ten year old musicians' reading test scores can improve with background music, but music may hinder ten year old musicians' math test scores. Therefore, the indirect use of music in test taking appears to assist ten year old students who are musicians, but it does not appear to apply to all school subjects.

Moving from ten year old students to seventh grade and eighth grade students, Anderson and Fuller (2010) studied the effects of vocal background music on the test taking abilities of students. Participants in the study were 334 seventh and eighth grade students who were "general education students" (p. 181) and "proficient… in English" (p. 181). Participants completed the reading comprehension subtest of the Gates-MacGinitie Reading Test, a standardized test, under two testing conditions: silence and vocal background music. The vocal background music consisted of nine popular songs from the "top hit songs listed in *Billboard Magazine* for the week the study was conducted" (p. 182). Following the condition with music, participants completed a survey on their "study habits and music preferences" (p. 181). Analysis of the data revealed a "significant" (p. 183) difference between reading test scores from the music environment and reading test scores from the non-music environment. Analysis of the data also revealed that 74.5% of students "did less well on the reading comprehension test while listening to [vocal] music in the background" (p. 183). Anderson and Fuller concluded that the results "support the assumption that studying while listening to music detracts from the reading performance of adolescents" (p. 184). However, Anderson and Fuller decided that their study may have concluded differently if instrumental music had been used in place of popular vocal music from *Billboard Magazine*. Therefore, the indirect use of music during test taking appears to not have a positive effect on seventh grade and eighth grade students' test scores when popular music is used.

These next three studies examine the indirect use of music in the vocabulary instruction of English as a Foreign Language (EFL) students. The youngest participants were between the ages of 16 and 20 years in a study in Iran. Moradi and Zamanian (2014) used background music in their study and investigated "whether the use of soft music during studies improves students' learning of English language words" (p.341). Participants were 70 male intermediate EFL learners divided between one experimental group and one control group. Participants read four English passages, and in each passage, translations of difficult English words were written below the passage. Participants studied the passage and translation for 35 minutes. Data were collected by assessing participants' vocabulary after reading. Analysis of the data revealed that participants "learned and memorized significantly better" (p. 341) with soft background music. The researchers concluded that soft background music improved the vocabulary acquisition of EFL students between the ages of 16 and 20 years. Therefore, the indirect use of music in

literacy instruction for vocabulary appears to have a positive effect on the vocabulary acquisition of EFL students when soft music is used.

In another international study with EFL students, de Groot (2006) studied the effects of background music on university EFL students. Specifically, de Groot (2006) studied the effects of "three different stimulus variables and background music on paired-associate learning of foreign language (FL) vocabulary" (p. 463). Participants were 36 university students in their first year of study at the University of Amsterdam whose first language was Dutch. Participants were divided into an experimental group and a control group. The control group learned in silence while the experimental group learned with instrumental Baroque music playing in the background. Participants viewed a Dutch word next to its English translation on a computer screen. Participants completed six rounds of words, but data were only collected after the second, fourth, and sixth rounds. Data were also collected one week after the assessment. For each collection, data were collected through a recall assessment. Analysis of the data revealed that in the experimental condition typical foreign language words, foreign language words paired with frequent native language words, and foreign language words paired with concrete native language words "were learned better" (p. 463) than atypical foreign language words and foreign language words paired with "infrequent and abstract" (p. 463) native language words. The researchers concluded that "more learning occurred in the music condition than in the silent condition" (p. 463), and the instrumental baroque music seemed to have a positive effect on the vocabulary acquisition of university EFL students. Therefore, the indirect use of music in literacy instruction for vocabulary appears to have a positive effect on the vocabulary acquisition of EFL university students when using Baroque music.

In a later study with university students, de Groot and Smedinga (2014) conducted similar research. de Groot and Smedinga (2014) studied the effect of background music on "foreign vocabulary learning by means of PAL (paired associates learning)" (p. 687). Participants were 41 university students who were "native speakers of Dutch" (p. 690). Participants viewed 24 words in each of three rounds. Each round, participants were exposed to a different listening condition: lyrics in a language in which participants were fluent (Dutch or English), lyrics in an unfamiliar language (Greek), or silence. After each round, data were collected through a vocabulary recall assessment. Analysis of the data revealed that "learning outcomes were poorer in the familiar language music condition than in the unfamiliar language

music and silence conditions" (p. 681). Data analysis also revealed that "music with familiar language lyrics impairs foreign language vocabulary learning" (p. 695), specifically when music is "vocal pop music" (p. 696). The researchers concluded that university students did not perform as well when listening to vocal popular music with familiar lyrics. However, results may have differed if soft background music or non-lyrical music had been used. Therefore, the indirect use of music in literacy instruction for vocabulary appears to not have a positive effect on EFL university students when using vocal popular music with familiar lyrics.

The remaining studies in this literature review examine the indirect use of music in literacy instruction for comprehension. The study with the youngest participants worked with third grade students. Carlson, Hoffman, Gray, and Thompson (2004) examined if an "interventions combination (chair and 50 to 60 beats per minute of music) might result in improved reading scores" (p. 247). Participants in the study were 13 third grade struggling readers in an urban school. Ten participants were labeled as "at risk" by the school, two participants were in a special reading class, and one student received support services in an ESOL class. The intervention lasted 23 weeks, during which participants used the vibroacoustic chair and listened to relaxing music approximately three times a day for 20 to 30 minutes at a time. While using the chair and listening to the relaxing music, students usually read or completed school work. Data were collected from each participant through pre-assessments and post-assessments in comprehension, oral reading accuracy, and word recognition using the Reading Inventory for the Classroom and the San Diego Quick Assessment Test. The study did not have a control group for comparison with the participants receiving the intervention. Analysis of the data revealed that the intervention combination of a vibroacoustic chair and relaxing music caused a "statistically significant positive impact" (p. 248) on participants' word recognition and comprehension. The researchers determined that the intervention combination of a vibroacoustic chair and relaxing music improved reading scores. Therefore, the indirect use of music in literacy instruction for comprehension appears to have a positive effect on third grade struggling readers when using relaxing music and a vibroacoustic chair.

Moving from third grade to fourth grade through eighth grade, Mulliken and Henk (1985) studied the effects of classical music and rock music on reading comprehension. Participants totaled 45 students with average reading abilities. Between fourth grade and eighth grade, nine students from each grade were chosen randomly to participate in the study. In each grade level,

participants read three passages, and data were collected through 10 comprehension questions with each passage. Participants were exposed to "three auditory backgrounds while reading" (p. 353): no music, classical music, and rock music. Analysis of the data revealed that participants in the classical music condition "seemed to outperform" (p. 355) participants in the no music condition and participants in the rock music condition "at all grade levels tested" (p. 355). The researchers concluded that "auditory background during reading may affect comprehension and that, for most students, rock music should not be played" (p. 353). The researchers determined that classical music can have a positive effect on the reading comprehension of students in grades four through eight. Therefore, the indirect use of music in literacy instruction for comprehension appears to have a positive effect on the comprehension of students in fourth grade through eighth grade when using classical music.

A majority of the studies examining the indirect use of music in literacy instruction of comprehension have participants that are university students and adult participants. The remaining 9 studies in this literature review examine the indirect use of music in literacy instruction for comprehension with university students and adult participants. In the first study with university students, Chou (2010) studied the effects of different types of background music on reading comprehension in Taiwanese university students. Participants were 133 university students in Taiwan whose ages ranged from "early 20's to mid 50's" (p. 40). The average age of participants was 31.8 years. The experiment used two experimental conditions and one control condition. Participants in the first experimental condition listened to light classical music, and participants in the second experimental condition listened to hip hop music. The control condition did not listen to music. Data were collected using a reading comprehension component from a TOEFL preparation manual. Three reading passages with 10 questions each were chosen for this experiment. Analysis of the data revealed that the average score for the control group was 67.67, the average score for the classical music group was 64.41, and the average score for the hip hop music group was 58.32. There was a "significant difference" (p. 43) between the control group and the hip hop music group but not between the control group and the classical music group. The researchers concluded that "music with a higher intensity is more distracting and has a greater effect on task performance and concentration" (p. 36). Chou determined that hip hop music, which had a higher intensity, was more distracting than classical music or no music. Therefore, the indirect use of music in literacy instruction for comprehension appears to

not have a positive effect on comprehension performance of university students when using music with a higher intensity (i.e.: hip hop).

   In another study investigating the distracting effects of music, Furnham and Bradley (1997) studied the "distracting effects of 'pop music'" (p. 445) on the reading comprehension of introverts and extraverts. Participants, university students, were 10 introverts and 10 extroverts. Introverts had an average age of 20.4 years and extraverts had an average age of 23.3. Participants completed a memory test and a reading comprehension test as part of data collection. Participants completed the tests in silence or with pop music playing in the background. Data were also collected through a questionnaire on how distracting the music was and how often participants listened to music while studying. Analysis of the data revealed a "detrimental effect on immediate recall on the memory test for both groups when music was played" (p. 445). Analysis of data from the questionnaire revealed that extraverts were "more likely" (p. 453) to study with music playing. Introverts, however, were "not used to" (p. 453) studying with music playing and "found it distracting" (p. 453). The researchers speculated that if an individual is not used to studying with music playing, "when music is first introduced into a work situation… there is a drop in quality and quantity of work completed" (p. 453). The researchers also proposed that "when music has been played for a long period of time, these effects could disappear" (p. 453). The researchers concluded that background music can have negative effects on memory and comprehension for university students that are not used to background music. Therefore, the indirect use of music in literacy instruction appears to not have a positive effect on university students who are not used to background music.

   In another study on the distractions of background music, Cauchard, Cane, and Weger (2012) studied the influence of "interruption, background speech, and music on reading, using an eye movement paradigm" (p. 381). Participants were 30 university students between the ages of 18 and 29, and all participants were "native English speakers" (p. 383). The experiment used three listening conditions: background speech, background music, and silence. Participants in the background speech condition listened to an audio file from National Public Radio, and participants in the background music condition listened to instrumental songs from a rock music album. In each condition, participants read a passage and answered one comprehension question. Interruptions, in the form of audio news stories, occurred in the middle of a participant's reading. Data on eye movement were collected using an EyeLink 1000 desk-top mounted SR Research

eyetracker, and the eye tracker tracked when a participants was in the middle of a passage. Analysis of the data revealed that comprehension "was not affected by the interruptions" (p. 386), but "participants spent on average 10% extra time processing the paragraphs in the interruption condition compared with the no interruption condition" (p. 386). The "increases in reading time" (p. 386) were "no different" (p. 386) in the three conditions. The researchers determined that university students' comprehension is affected similarly by audio interruptions, but background speech and background music do not affect comprehension. Therefore, the indirect use of music in literacy instruction appears to have no effect on comprehension in university students when audio interruptions occur.

In the same year, Thompson, Schellenberg, and Letnic (2012) also conducted research on the effects of background music on comprehension. Participants were 25 adults between the ages of 17 and 26 with mixed amounts of musical training. Participants read a passage for four minutes and answered six multiple choice questions for three questions. Participants completed the baseline assessment in silence, but participants also completed assessments in four conditions with music of varying degrees of tempo and intensity: "slow/low, slow/high, fast/low, fast/high" (p. 700). Comprehension assessments and music stimuli were randomized. Analysis of the data revealed that in the fast/high condition, participants' comprehension fell "significantly below baseline" (p. 700), but in the other three conditions, "performance was similar to baseline" (p. 704). The researchers concluded that background music with a fast tempo and high intensity can negatively affect reading comprehension, but other combinations of tempos and intensities do not have an effect on comprehension. Therefore, the indirect use of music in literacy instruction for comprehension appears to have no effect on comprehension in university students unless the music has a fast tempo and a high intensity.

In yet another study, Doyle and Furnham (2012) studied the effects of background music on the reading comprehension performance of creative and non-creative individuals. Participants were 56 adults between the ages of 17 and 40, and the average age of participants was 27. Participants labeled as creative totaled 24. Participants completed the Runco Ideational Behavior Scale, the Biographical Inventory of Creative Behavior, and the Guilford alternate test to collect data and determine creative individuals from non-creative individuals. Data were also collected using two reading comprehension tests which contained a passage and five questions each,. Participants completed one comprehension test in silence and one with background music. The

background music had a tempo of 120 to 130 beats per minute. An analysis of the data revealed "no significant interactions" (p. 1), but "trends indicated that creative individuals performed better than did non-creative individuals in the music distraction condition" (p. 1). The researchers concluded that creative individuals perform better than non-creative individuals when background music is played. However, Doyle and Furnham may have seen different results with slower music. Therefore, the indirect use of music in literacy instruction appears to have a positive effect on creative individuals' comprehension, but it appears to not have a positive effect on non-creative individuals' comprehension.

In another study on comprehension and background music, Etaugh and Michals (1975) studied the effects of participants' preferred music on their reading comprehension. Participants were 32 university students between the ages of 19 and 22. Participants were asked to bring a "preferred record album to the experimental session" (p. 553). Participants completed two reading comprehension tests which consisted of a reading passage and five comprehension questions. Participants completed one passage in silence and one passage in the presence of the participant's preferred music laying in the background. Analysis of the data revealed that "males performed equally well in the two conditions" (p. 554). Analysis of the data also revealed that in the music condition, the mean reading comprehension scores for males was 6.9, and in the silence condition, the mean reading comprehension score for males was 6.6. However, data analysis showed females' mean reading comprehension score was higher for the silence condition than for the music condition. In the silence condition, the mean reading comprehension score for females was 8.6, and in the music condition, the mean reading comprehension score for females was 6.6. The researchers concluded that "listening to music of one's choice interfered with the performance of females, but not males" (p. 554), and background music affects males and females differently. However, the participants' preferred music was not specified, and it is possible that preferences varied between genders. The indirect use of music in literacy instruction of comprehension appears to have different effects on males and females.

In another study using participants' preferred music, Perham and Currie (2014) investigated how participants "performed reading comprehension tasks under the following conditions: quiet, liked lyrical music, disliked lyrical music, and non-lyrical music" (p. 280). Participants were asked to provide "the liked music from their own music collection" (p. 280). The researchers chose the disliked lyrical music, "heavy/thrash metal" (p. 280), and the non-

lyrical music. Participants were 30 university students between the ages of 19 and 65. Participants read four passages and answered six comprehension questions each as data collection. Data were also collected through a questionnaire. Analysis of the data revealed that on the reading comprehension tasks, participants performed better in the quiet and non-lyrical music conditions, and participants performed less well in "the two lyrical music conditions" (p. 281). Analysis of the data also revealed "no significant differences" (p. 281) between the quiet and non-lyrical music and between the disliked lyrical music and liked lyrical music. The researchers concluded that disliked lyrical and liked lyrical music did not have positive effects on the reading performance of university students. Therefore, the indirect use of music in literacy instruction appears to not have a positive effect on the reading comprehension of university students when using lyrical background music.

In a later study, Etaugh paired with Ptasnik to conduct similar research. Etaugh and Ptasnik (1982) investigated the effects of "studying to familiar music vs studying in silence in conjunction with the effects of post-study relaxation vs activity, i.e., reading unrelated material" (p. 141). Participants were 40 university students between the ages of 18 and 23 years. Participants were 20 females and 20 males. Five participants of each gender were assigned randomly to one of four conditions: music and relaxation, music and activity, silence and relaxation, and silence and activity. In each condition, data were collected using a reading passage and accompanying comprehension questions. Participants studied a passage for 10 minutes either in silence or with preferred music playing in the background. Participants in the music conditions brought to the experiment session their preferred music. Following the reading, participants in the relaxation conditions were instructed to "lie on the floor, close their eyes, and concentrate on gradually relaxing each part of their body for a period of 10 minutes" (p. 142). The remaining participants in each condition read an unrelated article. After 10 minutes, all participants answered five comprehension questions on the original passage they read. Analysis of the data revealed that the mean scores for participants who were instructed to relax after the original reading passage was higher than the scores for participants who were given an additional reading passage. The researchers concluded that a combination of music and post-reading relaxation can positively affect an individual's reading comprehension. Therefore, the indirect use of music in literacy instruction for comprehension appears to have a positive effect on the reading performance of university students when combined with post-reading relaxation.

In another study using participants' preferred music, Johansson, Holmqvist, Mossberg, and Lindgren (2012) studied the effects of background music on comprehension but hypothesized that "[r]eading comprehension is improved by preferred music" (p. 343). Participants in the study were 24 university students. As part of data collection, participants "read four different texts in four different conditions" (p. 339): listening to music participants preferred, listening to music participants did not prefer, listening to noise from a cafe, and listening to no noise or music. After reading each text, participants answered reading comprehension questions. Data were collected from the reading comprehension questions in each condition as well as from eye movement in each condition. Analysis of the data revealed that while listening to non-preferred music, "participants scored significantly lower compared with reading in silence" (p. 339). Analysis of the data also revealed "no significant effects" (p. 339) between other conditions. However, Johansson et al (2012) did not reveal the types of music participants preferred to listen to, so it is possible that participants' interests in music varied significantly. The researchers concluded that non-preferred music was least effective in improving students' comprehension performance. Therefore, the indirect use of music in literacy instruction for comprehension appears to not have a positive effect on the comprehension of university students when using non-preferred music.

Summary of the Review

To address the research question of the use of music in literacy instruction, an extensive literature review was conducted. The literature review contains summaries of the 32 research studies found relating to the use of music in literacy instruction. The first category on the direct use of music in literacy instruction contains 14 studies. The publication dates of these research studies ranged from 2001 to 2015. Seven of these studies specifically worked with English as a Foreign Language (EFL) students. The participants in studies in the first category ranged in grade level from kindergarten to university level. Five of the studies in the first category were international studies. The second category on the indirect use of music in literacy instruction contains 19 studies which range in publication dates from 1975 to 2014. Two studies examine the indirect use of music in completing cognitive tasks. Two studies examine the indirect use of music in taking tests. Three studies examined the indirect use of music in literacy instruction in

vocabulary. Eleven studies examined the indirect use of music in literacy instruction in comprehension. The participants in the studies in second category ranged in grade level from pre-kindergarten to university level and adults. Five studies in the second category were conducted internationally.

Chapter 3: Methodology

To address the research question of what research says about the use of music in literacy instruction, an extensive literature review and research synthesis were conducted. The data collection section below describes the process by which the research studies were found and organized. The data analysis section below explains the process of analysis, the determining of commonalities and patterns, and the resulting findings. The synthesis section within this chapter compiles the findings as a result of the data analysis and presents the results for this research study.

Data Collection

Data for this research synthesis consists of the 32 studies found through the data collection process of exhaustively searching the leading educational databases for peer-reviewed research studies. In an effort to determine the relationship of music to literacy, the studies were organized into two main categories based on the type of music use: direct use of music in literacy instruction and indirect use of music in literacy instruction. These categories emerged from the research question and from an analysis of the preliminary data. These categories then served as the organizing structure for further data analysis, which is explained in the next section.

Data Analysis

All studies collected were analyzed within each category to determine commonalities and patterns within the data. The first category contains studies with participants five years old and older. Analysis shows that the direct uses of music are singing, playing instruments, listening, processing rhythm, and reading lyrics. Listening occurred in eight of the 11 studies (Kouri & Telander, 2008; Cole & Hilliard, 2006; Fisher, 2001; Calavelle et al, 2014; Fonseca-Mora et al, 2015; Beasley & Chuang, 2008; Li & Brand, 2009; Chesley, 2011). Singing occurred half as often in four studies (Register, 2004; Bennet et al, 2015; Fisher, 2001; Fonseca-Mora et al, 2015). Playing instruments occurred in one study (Register, 2004), rhythm processing occurred in one study (Bonacina et al, 2015), and reading lyrics occurred in two studies (Bennet et al, 2015; Fonseca-Mora et al, 2015). Of the 11 studies examined in this category, seven specifically

targeted English as a Foreign Language (EFL) students (Fisher, 2001; Calavelle et al, 2014; Fonseca-Mora et al, 2015; Beasley & Chuang, 2008; Li & Brand, 2009; Chesley, 2011). Also, one study targeted students from low socioeconomic status (Register, 2004), one study targeted struggling readers from low socioeconomic status (Cole & Hilliard, 2006), and one study targeted students with developmental dyslexia (Bonacina et al, 2015). Overall, analysis of these studies (see Figure 1) indicates that the direct use of music in literacy instruction is effective with diverse students including students from low socioeconomic status (Register, 2004; Cole & Hilliard, 2006), struggling readers (Cole & Hilliard, 2006), and EFL students (Fisher, 2001; Calavelle et al, 2014; Fonseca-Mora et al, 2015; Li and Brand, 2009; Chesley, 2011).

Figure 1: Direct Use of Music in Literacy Instruction

Type of music	Use	Literacy	Grade	Impact
Music program - singing, movement, playing instruments	- with books and letter cards - students from low socioeconomic status	Phonics, phonemic awareness, early reading skills	K	Music program - more effective than reading-focused television program alone.
Listening to storybook text set to song	Compared to listening to storybook text read aloud	comprehension	1st	No difference between sung storybook text and read aloud storybook text.
Listening to R&B-style songs	- software reading program - struggling readers from low socioeconomic status	Reading performance: decoding, fluency, and comprehension	3rd	More effective than traditional reading instruction
Singing songs and reading lyrics	Software program with repeated singing and reading	Fluency	5th	Effective in improving fluency
Rhythm processing	- Combined with reading exercises - students with developmental dyslexia	Fluency	Middle school	Effective in improving fluency
Singing and listening to music	- EFL students - morning routine, song titles for word work, books accompanied by songs	Literacy development	K & 1st	Effective in improving literacy development
Listening to reggae/hip hop songs and psychomotor activities	EFL students	Vocabulary	1st	Effective, but no more than traditional teaching methods
Singing, watching and listening to video songs, and reading lyrics in songs	- EFL students - phonological training program - compared non-musical intervention with musical intervention	Phonological awareness	2nd	Effective, but no more than non-musical intervention
Listening to English-language pop songs	- EFL students - repeated listening	Vocabulary	university	Song likeability and understandability contribute to perceived vocabulary learning
Listening to American and British pop songs	- EFL - practicing speech patterns and pronunciation	Vocabulary	university	More music in instruction was effective
Listening to hip hop music	EFL - non-African American	Vocabulary	university	Culturally-specific music effective in vocabulary learning of African-American English by non-African-Americans

Analysis of these studies also indicates that the direct use of music in literacy instruction is as effective as traditional teaching methods with EFL students (Calavalle et al, 2014; Fonseca-Mora et al, 2015).

The second category contains studies that explore the indirect use of music in literacy instruction. Analysis shows that the indirect use of music is primarily listening to background music. Of the 18 studies examined in this category, two studies focused on the effects of background music on cognitive task performance (Hui, 2006; Furnham & Allass, 1999). Also, two studies focused on the effects of background music on test taking (Bloor, 2009; Anderson & Fuller, 2010). Three studies focused on the effects of background music on vocabulary acquisition (Moradi & Zamanian, 2014; de Groot, 2006; de Groot & Smedinga, 2014). The remaining 11 studies focused on the effects of background music on comprehension (Carlson et al, 2004; Hulliken & Menk, 1985; Tze-Ming Chou, 2010; Furnham & Bradley, 1997; Cauchard et al, 2012; Thompson et al, 2012; Doyle & Furnham, 2012; Etaugh & Michals, 1975; Perham & Currie, 2014; Etaugh & Ptasnik, 1982; Johansson et al, 2012). In this category, studies incorporated a variety of music types and styles including vocal popular music (Anderson & Fuller, 2010; de Groot & Smedinga, 2014; Furnham & Bradley, 1997; Perham & Currie, 2014), instrumental Baroque music (de Groot, 2006), and Classical music (Hui, 2006; Huliken & Menk, 1985; Tze-Ming Chou, 2010). Overall, analysis of these studies (see Figure 2) reveals patterns in the types of music that appeared to positively affect performance and negatively affect performance.

Figure 2: Indirect Use of Music in Literacy Instruction

Type of music	Use	Literacy	Grade	Impact
Mozart's music vs rock music	Background music	Cognitive tasks	Pre-K	No effect on performance
Simple contemporary music vs complex contemporary music	Background music	Cognitive tasks	university	Complex music had a negative effect
Not specified	Background music	Test taking	Age 10 years	Positive effect on reading test scores of musicians
Vocal popular songs from *Billboard Magazine*	Background music	Test taking	7th & 8th	Negative effect
Soft music	Background music EFL students	Vocabulary	Ages 16-20 years	Positive effect
Instrumental Baroque music	Background music EFL students	Vocabulary	university	Positive effect
Vocal popular songs w/ familiar vs. unfamiliar language lyrics	Background music EFL students	Vocabulary	university	Negative effect
Relaxing music at 50-60 bpm (beats per minute)	Background music struggling readers With vibroacoustic chair	comprehension	3rd	Classical music had a positive effect
Classical music vs. rock music	Background music	comprehension	$4^{th} - 8^{th}$	Classical music had a positive effect
Classical music vs. hip hop music	Background music	comprehension	university	Hip hop music had a negative effect
Popular music	Background music Introverts &extraverts	comprehension	university	Negative effect on individuals not used to background music
Instrumental rock songs	Background music vs background speech	comprehension	university	No effect with audio interruptions
Songs of varying tempos & intensities: slow -low/high, fast--low/high	Background music	comprehension	Adults 17-26 years	Fast music with a high intensity had a negative effect
Songs at 120-130 bpm	Background music Creative and non-creative individuals	comprehension	Adults 17-40 years	Negative effect on non-creative individuals
Preferred music	Background music	comprehension	university	Preferred music had negative effect on females, no effect on males
Preferred vocal music, disliked vocal music, & instrumental music	Background music	comprehension	university	Vocal music had a negative effect
Preferred music	Background music combined with post-reading relaxation/ activity	comprehension	university	Positive effect when combined with post-reading relaxation
Preferred music vs. non-preferred music vs. background noise	Background music	comprehension	university	Non-preferred music was least effective.

Characteristics of music that had a positive effect on performance included soft (Moradi & Zamanian, 2014), instrumental (de Groot, 2006), Baroque (de Groot, 2006), slow (Carlson et al, 2004), and Classical (Hulliken & Menk, 1985). Characteristics of music that had a negative effect on performance included complex (Furnham & Allass, 1999), vocal popular songs (Anderson & Fuller, 2010; de Groot & Smedinga, 2014; Furnham & Bradley, 1997), hip hop music (Tze-Ming Chou, 2010), and fast with a high intensity (Thompson et al, 2012).

Synthesis

The results emerging from the analysis of each category can now be synthesized into findings that address the question of what research says about the use of music in literacy instruction. Categorizing the research studies revealed direct uses of music in literacy instruction and indirect uses of music in literacy instruction. The first finding of this study is that direct uses of music in literacy instruction include singing, playing instruments, listening, processing rhythm, and reading lyrics and produce positive effects on literacy development. The second finding is that direct use of music in literacy instruction is effective with diverse students such as struggling readers, EFL students, and students from low socioeconomic status. The third finding is that direct use of music in literacy instruction is also as effective as traditional teaching methods for improving literacy skills. The fourth finding is that the primary indirect use of music in literacy instruction is as background music, but certain characteristics of types of music are more beneficial than others. Background music that has a positive effect on literacy performance is characteristically soft, slow, and instrumental. Baroque music and Classical music are two types of music that have a positive effect on literacy performance. Background music that does not have a positive effect on literacy performance is characteristically complex, fast, highly intense, and vocal. Hip hop music and popular music are two types of music that do not have a positive effect on literacy performance.

Chapter 4: Results and Application

Results of the Review

After completing a review of the literature to determine what research has been conducted on the use of music in literacy instruction, this researcher has determined five key findings from this synthesis. The first finding is that direct uses of music for positive results in literacy instruction include singing, playing instruments, listening, processing rhythm, and reading lyrics. The second finding is that direct use of music in literacy instruction is effective with diverse students such as struggling readers, EFL students, and students from low socioeconomic status. The third finding is that direct use of music in literacy instruction is also as effective as traditional teaching methods for improving literacy skills. The fourth finding is that the primary indirect use of music in literacy instruction is as background music, with a positive effect on literacy performance coming from music that is characteristically soft, slow, and instrumental: for example, Baroque music and Classical music. The fifth finding is that the types of background music that do not have a positive effect on literacy performance are characteristically complex, fast, and vocal: for example, hip hop music and popular music with lyrics.

Application of the Results to a Professional Development Project

The findings from this study have significance to classroom teachers from kindergarten to university level. These findings can assist teachers in knowing about how to use music in their classrooms for literacy instruction and about how the most positive types of music to use as background music in the classroom. Sharing the knowledge from this research synthesis with teachers is a form of professional development. The most appropriate form for this professional development is a brochure. This form of professional development is best suited for giving this knowledge to teachers because the brochure presents the information in a small and quickly readable form and provides a resource that is easy to store and keep for future use.

Design of Professional Development Project

The design of this professional development project will be in the form of a brochure (see Appendix A) intended for teachers from Kindergarten to university. The brochure will be a bifold with bold headings and colorful pictures and diagrams. However, a digital version will lso be created for easier distribution to a wider audience and to keep the cost low. The information and ideas for the teachers will be bulleted and easy to read quickly, and also be supported by the findings from this research synthesis.

  Literacy coaching goals and objectives.

The goal of this professional development brochure is to provide non-music teachers with information about the role that music can have in literacy development and instruction. To address this goal, there are three learning objectives for the use of the professional development brochure. The first objective is that teachers who read the brochure will gain knowledge about the types of music that can be used in direct instruction to teach literacy. Second is that teachers will discover that direct use of music in literacy instruction is effective with many types of diverse students. The third objective of this brochure is that teachers will learn about the two types of background music: the type that has a positive effect on students and the type that has a less positive effect.

  Proposed audience and location.

The audience for this proposed professional development project is non-music teachers from kindergarten to university level. The advantage of a brochure for professional development is that teachers can choose their own location for reading the brochure. However, before reading the brochure, teachers must get it. Copies of the paper brochure will be sent to all school district offices in the surrounding counties. The digital brochure will be posted on Google Drive (or similar digital platform) and the URL will be made available to school principals and school reading specialists who may then share it with their teachers, as they feel appropriate.

Proposed project format and activities.

The format of this proposed professional development project will be a bifold brochure. The brochure will include the findings about how music can be used in both direct and indirect instruction to produce a positive impact on students' literacy development. The inside of the brochure will include suggested activities for using music as part of direct literacy instruction at each grade level. The inside will also include a list of suggested music to use as background music for cognitive tasks like test taking or individual work. The back of the brochure will include the researcher's professional email address and the link to the digital brochure on Google Drive where readers of the brochure can post comments and questions, and also evaluate the brochure.

Proposed resources for project.

The main resource for this project will be the brochure. Other resources are the professional email and contact information of the researcher. Also, other resources are the email and contact information of school district offices, school principals, and the time required to distribute the paper brochure and set up electronic access to the digital version.

Proposed evaluation of project.

To evaluate the brochure created for this professional development project, there will be a direct professional email address to the researcher on the back of the brochure which asks recipients to respond to the usefulness of the brochure and its information (see Appendix B). With the emails received, the researcher will gauge whether or not the brochure was of use to the recipients, whether the learning objectives were met, and if the professional development should be revised for the future.

Project Ties to Professional Standards

   This proposed form of professional development project ties to the following New York State Teaching Standards (NYSED, 2011): *Teaching Standard II: Knowledge of Content and Instructional Planning, Element II.2: Teachers understand how to connect concepts across disciplines, and engage learners in critical and innovative thinking and collaborative problem-solving related to real world context*. This standard aligns with the professional development brochure because teachers who read the brochure will learn how to use music to connect concepts across disciplines. With this new knowledge in the brochure, teachers can help students make connections between literacy in school and the real world context of music. Another New York State Standard that this proposed form of professional development ties to is *Teaching Standard VII: Professional Growth Element VII.2: Teachers set goals for, and engage in, ongoing professional development needed to continuously improve teaching competencies*. By reading this brochure, teachers are engaging in on-going professional development to improve their teaching competencies. Also, this professional development ties into the following International Literacy Standards (IRA, 2010): *Standard 6.3: Candidates participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs*. This standard directly aligns with the professional development brochure because it was designed and will be facilitated to and evaluated by elementary teachers.

Chapter 5: Discussion and Conclusion

Overview of Study and Findings

Traditionally, learning to read meant learning one's ABCs. However, children did not learn their letters just by saying the alphabet, but also by singing it using the "Alphabet Song." So begins the relationship between music and literacy, but the precise role of music in literacy instruction and development has not been clearly determined. This research study addresses this problem of precision by asking the question, what does research show about the role of music in literacy instruction? The most appropriate way to answer this question is with a review and synthesis of the literature, which has determined five findings. First is that direct uses of music for positive results in literacy instruction include singing, playing instruments, listening, processing rhythm, and reading lyrics. Second is that direct use of music in literacy instruction is effective with diverse students such as struggling readers, EFL students, and students from low socio-economic status. The third finding is that direct use of music in literacy instruction is also as effective as traditional teaching methods for improving literacy skills. The fourth finding is that the primary indirect use of music in literacy instruction is as background music, with a positive effect on literacy performance coming from music that is characteristically soft, slow, and instrumental: for example, Baroque and Classical music. The fifth finding is that the types of background music that do not have a positive effect on literacy performance are characteristically complex, fast, and vocal: for example, hip hop and popular music with lyrics. These findings can be presented to teachers in a brochure for their professional development.

Significance of the Findings

These findings are significant to non-music teachers because this new knowledge on the uses of music in literacy instruction has the potential to assist teachers in their work. This study shows that direct use of music can have a positive effect on literacy instruction and on literacy development for both students and diverse students. Results of this study also provide teachers with knowledge about using music indirectly as background music for certain tasks. These

findings are also significant to the field of literacy itself because they contribute new knowledge that clarifies some of the relationship between music use and literacy instruction.

Limitations of Findings

The findings for this study do have limitations. One limitation is that although many studies were found that combined both music and literacy instruction, the types of music studied covered a wide range. Rather than many studies that specifically looked at using one type of music, such as folk songs or familiar folk melodies, incorporated into literacy instruction, studies examined a range of music use. Also, many studies were not specific or clear about the type of literacy instruction they studied. In addition, the research also covered a wide grade range, from kindergarten to university level. This meant that no one grade or component of literacy development was studied in depth.

Conclusion: Answer to the Research Question

The research question for this research study is: what does research show about the role of music in literacy instruction? After conducting this study by performing a research synthesis, this researcher determined that the results show five findings: that direct uses of music for positive results in literacy instruction include singing, playing instruments, listening, processing rhythm, and reading lyrics; that direct use of music is effective with diverse students and as effective as traditional literacy teaching methods; that the primary indirect use of music is as background music; and that background music that is characteristically soft, slow, and instrumental produces positive effects, while background music that is characteristically complex, fast, and vocal does not. Examining these results produces this answer to the research question: research shows that the role of music in literacy instruction is both direct and indirect, with direct benefiting diverse students and indirect soft instrumental music benefitting cognitive tasks including reading.

Recommendations for Future Research

Because of the limitations identified in this research study, the first recommendation is for further research into the impact of specific types of music when used as part of direct instruction with literacy. For example, studies have been conducted on the use of rhythm for reading fluency and song lyrics for vocabulary development; further studies could be conducted on these areas at different grade levels, especially to determine if the type of music used is developmentally appropriate and connected to the literacy level of various ages of students. Another recommendation is for more research into how teachers are actually using music in their lessons and at various grade levels.

References

Anderson, S.A., & Fuller, G.B. (2010). Effect of music on reading comprehension of junior high school students. *School Psychology Quarterly, 25*(3), 178-187. doi: 10.1037/a0021213

Beasley, R.E., & Chuang, Y. (2008). Web-Based Music Study: The Effects of Listening Repetivity, Song Repetition, and Song Understandability on ELF Learning Perceptions and Outcomes. *TESL-EJ, 12*(2), 1-17. Retrieved from http://tesl-ej.org

Bennet, S.V., Calderone, C., Dedrick, R.F., & Gunn, A.A. (2015, Summer). "Do I have to leave?" Beyond linear text: Struggling readers' motivation with an innovative musical program. Reading Improvement, 52(2), 51-60. Retrieved from http://www.projectinnovation.com/reading-improvement.html

Bloor, A.J. (2009). The rhythm's gonna get ya' - Background music in primary classrooms and its effect on behavior and attainment. *Emotional and Behavioral Difficulties, 14*(4), 261-274. doi: 10.1080/13632750903303070

Bonacina, S., Cancer, A., Lanzi, P.L., Lorusso, M.L., & Antonietti, A. (2015). Improving reading skills in students with dyslexia: the efficacy of a sublexical training with rhythmic background. *Frontiers in Psychology, 6*, 1-8. doi: 10.3389/fpsyg.2015.01510

Calavalle, A.R., Izzo, R.E., Raimondi, R., Marco B.L. Rocchi, Sisti, D., & Stocchi, V. (2014). Music and physical activity for L2 vocabulary acquisition in first graders. *Sport Science Review, 23*(5), 267-286. doi:10.1515/ssr-2015-0005

Carlson, J.K., Hoffman, J., Gray, D., & Thompson, A. (2004). A musical interlude: Using music and relaxation to improve reading performance. *Intervention in School & Clinic, 29*(4), 246-250. Retrieved from http://search.proquest.com/docview/211718623?accountid=28748

Cauchard, F., Cane, J.E., & Weger, U.W. (2012). Influence of background speech and music in interrupted reading: An eye-tracking study. *Applied Cognitive Psychology, 26*(3), 381-390. doi: 10.1002/acp.1837

Chesley, P. (2011). You know what it is: Learning words through listening to hip-hop. *Public Library of Science ONE, 6*(12), 1-10. doi:10.1371/journal.pone.0028248

Chou, P.T. (2010). Attention drainage effect: How background music effects concentration in Taiwanese college students. *Journal of the Scholarship of Teaching and Learning, 10*(1), 36-46. Retrieved from http://www.iupui.edu/~josotl

Cole, J., & Hilliard, V. (2006). The effects of web-based reading curriculum on children's reading performance and motivation. *Journal of Educational Computing Research, 34*(4), 353-380. Retrieved from http://jrnledcompresearch.com/index.php/jecr

de Groot, A.M.B. (2006). Effects of stimulus characteristics and background music on foreign language vocabulary learning and forgetting. *Language Learning, 56*(3), 463.

de Groot, A.M.B, & Smedina, H.E. (2014). Let the music play! A short-term but no long-term detrimental effect of vocal background music with familiar language lyrics on foreign language vocabulary learning. *Studies in Second Language Acquisition, 36*(4), 681-707. doi:10.1017/S0272263114000059

Doyle, M., & Furnham, A. (2012). The distracting effects of music on the cognitive test performance of creative and non-creative individuals. *Thinking Skills and Creativity, 7*(1), 1-7. doi: 10.1016/j.tsc.2011.09.002

Edwards, S. (2012, December 19). Using music to improve reading fluency. *Top Teaching Daily Teachers Blog*. Retrieved from http://www.scholastic.com/teachers/top-teaching/2012/12 /using-music-improve-reading-fluency

Etaugh, C., & Michals, D. (1975). Effects on reading comprehension of preferred music and frequency of studying to music. *Perceptual and Motor Skills, 41*(2), 553-54. doi: 10.2466/pms.1975.41.2.553

Etaugh, C., & Ptasnik, P. (1982). Effects of studying to music and post-study relaxation on reading comprehension. *Perceptual and Motor Skills, 55*(1), 141-142. doi: 10.2466/pms.1982.55.1.141

Fisher, D. (2001). Early language learning with and without music. *Reading Horizons, 42*(1), 39-49. doi: 39-49. 10.1111/jrir.12010

Fonseca-Mora, M.C., Jara-Jiménez, P., & Gómez-Domínguez, M. (2015). Music plus phonological input for young foreign language readers. *Frontiers in Psychology, 6*, 1-9. doi: 10.3389/fpsyg.2015.00286

Furnham, A., & Allass, K. (1999). The influence of musical distraction of varying complexity on the cognitive performance of introverts and extroverts. *European Journal of Personality, 13*(1), 27-38. doi: 10.1002/(SICI)1099-0984(199901/02)13:1<27::AID-PER318>3.0.CO;2-R

Furnham, A., & Bradley, A. (1997). Music while you work: The differential distraction of background music on the cognitive test performance of introverts and extroverts. *Applied Cognitive Psychology, 11*(5), 445-455. doi: 10.1002/(SICI)1099-0720(199710)11:5<445::AID-ACP472>3.0.CO;2-R

Hansen, D., Bernstorf, E., & Stuber, G.E. (2007). *The music and literacy connection*. Lanham, MA: Rowman & Littlefield Education.

Hui, K. (2006). Mozart effect in preschool children? *Early Child Development and Care, 176*(3-4), 411-419. doi: 10.1080/03004430500147540

Johansson, R., Holmquist, K., Mossberg, F., & Lindgren, M. (2012). Eye movements and reading comprehension while listening to preferred and non-preferred study music. *Psychology of Music, 40*(3), 339-356. doi: 10.1177/0305735610387777

Kouri, T., & Telander, K. (2008). Children's reading comprehension and narrative recall in sung and spoken story contexts. *Child Language Teaching and Therapy, 24*(3), 329-349. doi: 10.1177/0265659008096296

Kucer, S.B. (2014). *Dimensions of literacy: A conceptual base for teaching reading and writing in school settings*. New York, NY: Routledge: Taylor and Francis Group.

Li, X., & Brand, M. (2009). Effectiveness of music on vocabulary acquisition, language usage, and meaning for mainland Chinese ESL learners. *Contributions to Music Education, 36*(1), 73. Retrieved from omea-ohio.org

Maslina. (2015, April 10). *Using songs to improve students' vocabulary competence*. Blog. Retrieved from https://beagreatteacher.wordpress.com/2015/04/10/an-article-of-using-songs-to-improve-students-vocabulary-competence/

Moradi, M., & Zamanian, M. (2014). On effect of soft music on learning English language vocabulary. *Theory and Practice in Language Studies, 4*(2), 341. doi:10.4304/tpls.4.2.341-348

Mulliken, C., & Henk, W. (1985). Using music as a background for reading: An exploratory study. *Journal of Reading, 28*(4), 353-358. Retrieved from http://www.jstor.org/stable/40030415

Perham, N., & Currie, H. (2014). Does listening to preferred music improve reading comprehension performance? *Applied Cognitive Psychology, 28*(2), 279-284. doi: 2048/10.1002/acp.2994

Register, D. (2004). The effects of live music groups versus an educational children's television program on the emergent literacy of young children. *Journal of Music Therapy, 41*(1), 2-27. Retrieved from http://jmt.oxfordjournals.org

Tarbert, K. (2012). Learning literacy through music. *Oneota Reading Journal*. Retrieved from http://oneotareadingjournal.com/2012/learning-literacy-through-music

Thompson, W., Schellenberg, E., & Letnic, A. (2012). Fast and loud background music disrupts reading comprehension. *Psychology of Music, 40*(6), 700-708. doi: 10.1177/0305735611400173

Tucker, A., & Bushman, B.J. (1991). Effects of rock and roll on mathematical, verbal, and reading comprehension performance. *Perceptual and Motor Skills, 72*(3, Pt 1), 942. doi: 10.2466/PMS.72.3.942-942

Appendix A: Format of Professional Development

Bi-fold Brochure

Cover: Using Music with Literacy
"Research shows that the role of music in literacy instruction is both direct and indirect, with direct benefiting diverse students and indirect soft instrumental music benefitting cognitive tasks including reading."
The cover will also include a colorful image of music notes and letters.

Centerfold: Left Side
Suggested Activities for Direct Use of Music in Literacy Instruction:
Phonemic Awareness, kindergarten: Singing combined with movement.
Phonological Awareness, second grade: Singing and listening to video songs with lyrics on screen
Fluency, elementary grades: Repeated singing and reading lyrics
Vocabulary, first grade: Listening combined with movement
Vocabulary, university: Repeated listening to songs with lyrics
Vocabulary, university: Soft, instrumental background music
Comprehension, 3rd grade through university: Soft, instrumental background

Centerfold: Right Side
Suggested Songs for Background Music:
"Air – Orchestral Suite No. 3 in D Major" - J.S. Bach
"Adagio" – Tommaso Albinoni
"Keyboard Concerto No. 5 in F minor, Largo" – J.S. Bach
"Canon in D Major" - Pachelbel
"Lute and Harp Concerto in B-flat Major, Op. 4 No. 6, II: Larghetto" – Handel
"L'arte Della Fuga – Contrappunto 1" – J.S. Bach
"Moonlight Sonata – Piano Sonata No. 14" – Beethoven
"Piano Sonata in G, Op. 79, II: Andante" – Beethoven
"Piano Sonata, Op. 13, II: Adagio" – Beethoven
"Piano Sonata in C Major, Op. 6, K.545, II: Andante" – Mozart
"Flute and Harp concerto in C Major, K.299, II: Andantino" – Mozart
"Nocturne, Op. 9, No. 2 in E-Flat Major" – Chopin
"Clair de Lune" – Debussy

Back Cover
Emily Davis
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The link to the Google Doc for the brochure
The link to the evaluation of the professional development

Appendix B: Evaluation of Professional Development

Was this brochure beneficial?

Did any piece of information surprise you?

What was the most interesting piece of knowledge?

What ideas would you consider using in your classroom or in your instruction?

What changes or improvements would you recommend?