The Music and Literacy Connection

Emily H. Park

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The Music & Literacy Connection

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Abstract

Is there a connection between music and literacy development? If so, what is this connection? Does the study of or exposure to music have a positive impact on children’s literacy development? Finally, if there is a positive relationship, how can elementary classroom and music teachers use music to enhance their students’ literacy development? In an attempt to answer such questions, I assembled a literature review of books and articles pertaining to this topic, conducted interviews of professionals in the field (i.e., general music educators and researchers), and collected suggestions for classroom teachers based on this research. After gathering data from the literature review and the interviews, I compared the findings. Both have identified specific connections between literacy and music, and have confirmed that using musical activities is a valid way to support children’s literacy development. However, I suggest that further research is needed to strengthen the arguments in favor of a music-literacy connection.
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# Table of Contents

**ABSTRACT** .................................................................................................................. 2

**ACKNOWLEDGEMENTS** ............................................................................................... 3

**TABLE OF CONTENTS** ................................................................................................. 4

**INTRODUCTION** ............................................................................................................ 6

**STATEMENT OF PURPOSE** .......................................................................................... 7

**LITERATURE REVIEW** .................................................................................................. 9

- **INTRODUCTION** .......................................................................................................... 9
- **CONTROVERSY** ........................................................................................................... 10
- **THE BRAIN AND MUSIC AND LEARNING** ................................................................ 12
- **RIGHT VS. LEFT BRAIN** ............................................................................................... 15
- **MULTIPLE INTELLIGENCES** ......................................................................................... 18
- **MUSICOGENICEUAPIDIA** ........................................................................................... 19
- **EMPIRICAL EVIDENCE: MUSIC HELPS LANGUAGE ARTS DEVELOPMENT** .............. 19
- **MUSIC AND LITERACY—COMMON FEATURES** ......................................................... 23
- **OVERVIEW OF SPECIFIC SKILL CONNECTIONS** ..................................................... 27
- **RHYTHM** .................................................................................................................... 28
- **PITCH** ......................................................................................................................... 29
- **PHONOLOGICAL AWARENESS & MUSIC** .................................................................. 30
- **MUSIC, SPEECH AND VOCABULARY** ...................................................................... 36
- **PROSODY** .................................................................................................................. 39

**METHODS** .................................................................................................................... 42

**RESULTS** ........................................................................................................................ 43

- **DEMOGRAPHICS OF INTERVIEWEES** ...................................................................... 43
- **RESPONSES TO TEACHER INTERVIEWS** ................................................................... 45
  - **Question 1** .................................................................................................................. 45
  - **Question 2** .................................................................................................................. 46
  - **Question 3** .................................................................................................................. 46
  - **Question 4** .................................................................................................................. 47
  - **Question 5** .................................................................................................................. 47
- **RESPONSES TO RESEARCHER SURVEY** ................................................................... 48
  - **Question 1** .................................................................................................................. 48
  - **Question 2** .................................................................................................................. 48
  - **Question 3** .................................................................................................................. 49
  - **Question 4** .................................................................................................................. 50
  - **Question 5** .................................................................................................................. 51
  - **Question 6** .................................................................................................................. 51
  - **Question 7** .................................................................................................................. 52

**DISCUSSION** .................................................................................................................. 54

- **TABLE 2** ....................................................................................................................... 54
- **COMPARISON OF RESEARCH WITH INTERVIEWS** .................................................. 57

**CONCLUSIONS AND RECOMMENDATIONS** ................................................................. 61

- **IS THERE A CONNECTION BETWEEN MUSIC AND LITERACY DEVELOPMENT?** ........ 61
- **WHAT IS THIS CONNECTION?** .................................................................................... 61
- **DOES THE STUDY OF, OR EXPOSURE TO, MUSIC HAVE A POSITIVE IMPACT ON CHILDREN’S LITERACY DEVELOPMENT?** ..... 61
HOW CAN ELEMENTARY CLASSROOM TEACHERS AND MUSIC TEACHERS USE MUSIC TO AUGMENT THEIR STUDENTS'
LITERACY DEVELOPMENT? ................................................................. 62
RESOURCE SUGGESTIONS .................................................................. 63

BIBLIOGRAPHY .................................................................................. 64
APPENDIX A: LETTER TO TEACHERS .................................................. 68
APPENDIX B: LETTER TO RESEARCHERS ............................................ 69
APPENDIX C: SURVEY OF TEACHERS .................................................. 70
APPENDIX D: SURVEY OF RESEARCHERS ............................................ 71
APPENDIX E: RESOURCE LIST .............................................................. 72

ARTICLES ............................................................................................. 72
WEBSITES .......................................................................................... 72
BOOKS ............................................................................................... 73
MUSIC ................................................................................................. 73
OTHER ................................................................................................. 73
Introduction

What will make our children succeed? How can they thrive, not just survive, in school? How do we help set them apart from their competitors of tomorrow? Such questions are asked, or thought, by parents and educators alike. Nevertheless, in a world of tight finances and budget-cuts, often the questions are reduced to simply, “What can we do without?” Sadly, for the children, the arts are often the first to go. They are simply “extras,” and therefore dispensable, is the reasoning. However, this has become a point of contention. The question is not only whether we should cut them out, but what will happen if we do. Or rather, what are the benefits of training in the arts?

“The arts” include visual arts, music, drama, and dance. Sharlene Habermeyer (1999), music lecturer and author of Good Music, Brighter Children, suggests: The studies and stories are overwhelmingly convincing that infusing music and the arts into the curriculum enhances a child’s individual learning style, and when children learn through their strengths, learning and processing information is easier and more effective” (p. 145). In Creating Meaning through Literature and the Arts (2003), Cornett expounds on eight different reasons to integrate the arts into the curriculum. These reasons include positively affecting children socially, cognitively, and emotionally.

The ancient Greeks considered one of these arts particularly important to a person’s education. In fact, the “Greek Triangle” is often used to describe their view of education. The three facets of this triangle included math, physical education, and music. They sought to form what we moderns might call a “well-rounded” individual by exercising the mind, body and spirit respectively (Feierabend, 1995). Moreover, according to Habermeyer (1999), “Nearly every age throughout history has recognized music as essential to the learning process and, thus, an integral
part of the education process” (p. 156). Yet, today’s society requires “evidence”—hard facts and documented, scientifically based research—to “prove” that music is helpful. Thus, in an effort to save the arts, researchers have conducted studies on whether the arts have not only intrinsic value, but may also contribute to higher academic success in other subjects (i.e., reading and math). For instance, one study showed improved reading scores for 13,000 children from 43 different schools after introducing the arts into their curricula (Habermeyer, 1999).

In the midst of this research, a number of studies reflect connections not only between the arts in general and “academic” subjects, but also between specific arts—such as music—and other subjects. It is this facet of the research that most concerns the present paper. For example, one study demonstrated that children who received music instruction improved significantly in both reading and math, even to the extent that those in the experimental group who began behind the control group eventually had equivalent scores in reading and excelled them in math (MENC, 2002). According to music education instructor, Jean M. McIntire (2007), of Eastern University, “Rhythm and rhyme seem to magically increase learning” (p. 46).

Statement of Purpose

With the above in mind, might one be more specific? Could the research and practice demonstrate more precise connections between subjects? For an elementary education major with a music minor, the possibility of connections between music and literacy are intriguing. What might a music education provide for children besides enjoyment and appreciation of this art? Are there implications for the language arts (literacy)? Though many people recognize the benefit of using music to teach other subjects, that is, using music as a tool, perhaps there is a
more fundamental relationship between these two fields. For example, could it be that the rhythm we feel in music is likewise expressed and felt in the rhythm of words while we read? If this and other elemental connections are true, what is the nature of this connection? Does training in music inherently spur development of literacy in children?

Thus, the questions I set out to answer were: First of all, is there a connection between music and literacy development? If so, what is this connection? Does the study of, or exposure to, music have a positive impact on children’s literacy development? Finally, if there is a positive relationship, how can elementary classroom teachers and music teachers use music to augment their students’ literacy development? In order to address these questions, I conducted a literature review to determine what research says about connections between musical concepts and literacy concepts, and how the study or use of music (listening, playing, singing, etc.) enhances the development of literacy skills in elementary age students. Furthermore, I interviewed (or surveyed) experts in the field—both classroom music teachers (K-6) as well as university faculty and researchers (hereafter referred to as “researchers”). Through these interviews I sought to identify current practices and observations and compare them with the research data. Finally, assuming a connection, I sought to determine some of the best music practices that general classroom elementary teachers could implement to foster literacy development.
Literature Review

Introduction

A literature review was conducted of research pertaining to the study of music and its affect on literacy development. Throughout this section three primary terms will surface frequently, namely, language arts, literacy, and reading. Though sometimes used interchangeably in this thesis, there are indeed differences between the terms. The Merriam Webster Online Dictionary (2006-2007) defines language arts as: “the subjects (as reading, spelling, literature, and composition) that aim at developing the student's comprehension and capacity for use of written and oral language.” The International Reading Association (IRA) and the National Council of Teachers of English (NCTE) define literacy as the ability “to carry out the complex tasks using reading and writing related to the world of work and to life outside the school” (as quoted in Tompkins, 2007, p. 2). This then leads to the definition of the term reading. Snyder (2006) says, “Reading is a literacy skill complemented by writing, speaking and listening” (p. 15). There are five key elements that “must be explicitly taught to children who have difficulty learning to read”: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Perret & Fox, 2004, p. 121).

Just how, then, might music instruction enhance each of these five key elements? Or, does it? Remarkably, Greene (2006) recognized that in her music classes she too was teaching language arts components, namely “phonemic awareness, syllables, rhyme, parts of speech, grammar, vocabulary, spelling and other early literacy concepts and skills” (p. 38). Fitzmaurice and Well, speaking of a pilot study conducted in 1973, explain the conundrum: “The amount of overlap [between music and reading] is difficult to estimate accurately because of the fact that different degrees of overlap occur in different times. We feel that the important fact, however, is
that such a substantial quantity of commonality does indeed seem to exist" (as quoted in Wagner, 1983, p. 22).

Within this literature review, a variety of topics are explored. These are identified by subtitles, however a brief overview may provide a sort of “road map” for this section. Some controversies surrounding this topic are discussed first, to provide “clarification” and balance prior to the research that supports a connection between music and literacy. Then, research regarding the brain and music is followed by a look at the role multiple intelligences may play in this topic. Next, a phenomenon called “musicogeniceupadia,” which simply means using music as a tool for learning other subjects, is briefly explored. A more substantial section on actual research studies ensues. As the literature review continues, commonalities between music and language are explored as well as more specific skills and various aspects of music and language (i.e., pitch, rhythm). The section concludes with a look at music compared to speech as well as vocabulary connections.

Controversy

Though this thesis is seeking to establish a connection between music and literacy development, some objections or concerns must be mentioned. Improvement scores in reading, though apparent, are not large-scale. According to Douglas and Willatts (1994), though their study showed a connection between the two disciplines, they explained that the reading improvement as a result of music study was small. Nevertheless, there was indeed improvement.

Gardner (1993), in his *Multiple Intelligences: The Theory in Practice*, advises against assuming that a skill learned in one subject area will transfer to another. Speaking of lessons on “critical thinking,” Gardner says students will not necessarily be able to implement critical
thinking within specific subjects simply because of isolated critical thinking lessons. "There is considerable neuropsychological evidence for the separation of linguistic memory from spatial, facial, bodily, or musical memory" (p. 42).

In *Music, the Brain, and Ecstasy*, Jourdain (1997) noted that despite the parallels, there are distinct differences between music and language. Though sentences in language arts can be compared to melodies in music, the latter does not consist of the grammar that makes up sentences. The smaller parts of a melody can be changed around with greater ease and with a less detrimental effect. In other words, unlike sentences, "musical phrases are highly malleable and tolerant of ambiguity" (p. 276).

Others have questioned whether factors besides music might contribute to the results of music students' higher scores. This was particularly an issue when considering the higher SAT scores of music students. Those in music appreciation classes outscored non-arts students by 63 points on the verbal portion of the SAT, while instrumental music students outscored non-arts students by 57, according to a National Report (as cited in MENC, 2002). However, the verbal scores of drama and theatre appreciation students were even higher (Demorest & Morrison, 2000).

Some researchers suggest that high literacy scores may be a *characteristic* of music students in general rather than a *result* of their music study (Douglas & Willatts, 1994). In their discussion, "Does Music Make You Smart," two music professors recognize that music students have been reported as scoring higher in reading than those who are not active in music activities at school. Yet, they propose that *music instruction might be something that good students do* rather than the cause of their success (Demorest & Morrison, 2000).
Though these critiques do raise valid considerations for the topic at hand, they do not appear to overturn arguments in favor of the music-literacy connection. Nevertheless, these controversies should be considered in order to give a more fair and balanced view of the research.

The Brain and Music and Learning

Obviously, the starting point or processing center for all learning is the brain. Whether discussing musicianship or literacy, mathematical skills or scientific theories, all learning must pass through this small yet vital organ. After reviewing 36 different studies, James Hanshumacher (1980) inferred that language development, creativity, and reading readiness are enhanced through arts education (cited in Jensen, 1998, p. 38). Then, speaking more specifically about music, Jensen says research demonstrates it has positive effects on reading scores and stimulates the brain. According to Cornett (2003):

If the child’s environment is rich in music, the brain’s structure will reflect it. Eventually, these silent inner sounds become the foundation for learning to read as children connect them to print and learn to conjure the music of words during silent reading. (p. 334)

Similarly, neuropsychologist Robert Zatorre says, “I have very little doubt that when you’re listening to a real piece of music, it is engaging the entire brain” (quoted in Jensen, 1998, p. 36). McIntire (2007) further emphasizes this idea of music enhancing brain development: “By adding rhythm, music, and movement to a learning experience, we send messages to the brain through various pathways and create a richer learning experience” (p. 46). Another musical asset to brain development is playing instruments like the xylophone where hands cross over each other. This strengthens the weaker sides of children’s brains and provides exercises in crossing the midline
of the brain (Van Gunten, 2006, p. 13). Professor Norman Weinberger, researcher at the Center for Neurobiology of Learning and Memory, says, “Teachers should be encouraged to bring or increase music in the classroom” (quoted in Jensen, 1998, p. 39).

Research on infants’ brains has led to interesting findings. During their first year of life, infants develop a “map” of phonemes or sounds (i.e., Spanish rolled “r”). The brain, in turn, “dedicates special neurons to be receptive to those particular sounds” (Jensen, 1998, p. 23). All sounds infants hear shape their brains, “even music and rhythm. In fact, research at the University of California at Irvine suggests that infants are quite receptive to and discerning about music” (Weinberger, 1994, cited in Jensen, 1998, p. 23).

Jensen (1998) identifies three ways in which music can be used—“for arousal, as a carrier of words, and as a primer for the brain.” First, background music is an example of music used to stimulate the brain for other learning (such as reading comprehension). Secondly, as a carrier, music is used as a mode of transporting information to our brains, such as learning the alphabet song. Thirdly, music is used as a primer to ready the brain for a task, or, in scientific terms, to “prime the brain’s neural pathways.” In fact, research indicates that the auditory cortex in our brains “responds to pitch and tones rather than simply raw sound frequencies, and individual brain cells process melodic contour. Music may, in fact, be critical for later cognitive activities” (p. 37).

Research has given insight into the brains of musicians, and the differences between their brains and those of non-musicians. For example, a study in Leipzig (Schlaug, Jancke, Huang, & Steinmetz, 1994) noticed that the brains of musicians had a bigger planum temporale and thicker corpus callosum. The planum temporale is a “brain region related to some reading skills,” and
the corpus callosum, "the bundle of nerve fibers that connects the two halves of the brain" (cited in MENC, 2002, Benefit Three, ¶ 7).

A study from USA Today (2005) compared the music and language differentiating abilities of a group of adult musicians (those who had begun an instrument before the age of seven and continued till the time of the study) to non-musicians. The study used adults ranging in age from 28-40 years. The brain scans revealed that in both processes, the musicians excelled over the non-musicians: they had "more focused and efficient" processing in the music test and "more accuracy and speed" in the language portion. The study found that, "musical training can help the brain differentiate between rapidly changing sounds, an ability that is key to understanding and using language effectively" (cited in Associated Press, 2005, ¶ 7-8).

Another study (Chan, Ho, & Cheung, 1998) compared adults who had received (6 years of) music training before age 12 with those who had not and found that the verbal memory of the music group was stronger. "Adults who received music training before the age of 12 have a better memory for spoken words than those who did not. Music training in childhood may therefore have long-term positive effects on verbal memory." Brain research seems to back this up. It has shown that the left planum temporale region of musicians is larger than that of non-musicians, and the left temporal lobe is where most verbal memory is mediated (p. 128).

The traditional, and now outdated, bias toward music has seen it as a "right-brain frill" (Jensen, 1998, p. 8). Though this thought-line is no longer accepted, research on the brain has produced interesting information about how both music and language are processed. A very interesting idea, especially in light of the traditional (and faulty) view of the brain, is that musicians use their left hemisphere to process music, while novices process it in their right (Jensen, 1998). Jourdain (1997) agrees with this, but places the emphasis on the melodic
analysis. He says that research shows a migration of "cerebral dominance for melody" from the right hemisphere to the left (p. 84).

*Right vs. Left Brain*

So, if there are differences between the right and left hemispheres of the brain, what are they? Furthermore, what does the differentiation between the two sides of the brain have to do with music and literacy development?

There are some key differences between the two sides of the brain. While the left hemisphere dominates language, especially "consonant sounds and rules of grammar," and category classification for language, the right hemisphere seems to have a greater role in spatial tasks (Gardner, 1982, p. 283). Other aspects handled by the left hemisphere include "analytical thinking, successions of complex physical movements, and the perception and generation of rhythmic patterns" (Jourdain, 1997, p. 281). The right hemisphere of the brain controls "body position, and the relations among concurrent sounds, including musical chords" (p. 281). Most individuals perceive harmonic intervals in their right brain. Speaking specifically of musical analysis, the right brain is key in identifying tones as well as melody. This is not surprising considering that melodies spring directly from "harmonic relations among the tones of a scale" (p. 83). Pitch and timbre discretion appear to be located in the right hemisphere (Gardner, 1982). Furthermore, Jourdain explains, the left hemisphere is also active in perceiving melodies, but it focuses more on the *rhythms* within the melodies. In fact the left hemisphere appears to be the most responsible for rhythms (Jourdain, 1997; Gardner, 1982). Nevertheless, there must be some sharing of these skills between the two sides of the brain.
Left-brain damage does not wipe out rhythmic skill to the degree that right-brain damage can wipe out harmonic skill... Presumably rhythmic function is so widespread in the brain, and shows such resiliency in the face of brain damage, because time is a factor in all kinds of cognition; in contrast, harmony is solely a property of hearing. (Jourdain, 1997, p. 151)

So, we see that though the musical functions of the brain are carried out in different sides of the brain, they are not completely segregated. Though the right-brain dominates music comprehension and the left-brain controls most language functions, both sides of the brain do deal with both language and music (Armstrong, 2003).

Brain-damage and brain-disease have provided ample opportunities for researchers to study the human brain. Thus, through these diseases they have learned much about how the brain works—or does not work. Studies on people with “specific language difficulties, including stuttering and aphasia” have led researchers to believe that “words and music...can facilitate the processing of language and literacy” (cited in Armstrong, 2003, p. 58). People suffering from impaired language ability (i.e., aphasia patients) usually simultaneously experience deterioration in their ability to read musical notation, though this is not always the case. Aphasia patients do not react the same way to the disease, and all language skills are not necessarily affected. For example, an individual with aphasia might be able to write but not read well. Nevertheless, a rehabilitation therapy for aphasia patients, called “melodic intonation therapy,” has succeeded in helping to notably improve their language output (Gardner, 1982). Furthermore, music and rhythm appear to have aided in decreasing symptoms of such diseases and language difficulties, contributing to improvement in people’s oral communication and language comprehension skills (Armstrong, 2003).

Howard Gardner (1982) cites examples of various composers or performers, whose experiences after suffering brain damage promote fascinating speculation into the way the brain
encodes language and music. For example, Shebalin (a Russian composer) suffered from aphasia after having a stroke. Nevertheless, Shebalin was able to continue composing and teaching as before. Another musician, Swiss pianist Gil Assal, was no longer able to understand others or express himself following a “severe Wernicke’s aphasia.” Still he was able to recognize music, learn new pieces, et cetera. A third musician, an American choral composer, provided what Gardner took as “evidence that musical symbols and verbal symbols are processed by the nervous system in different ways.” Although he was left with a severe reading disorder (likewise from severe Wernicke’s aphasia), he continued composing as before. Maurice Ravel, on the other hand, following the same debilitating disease, “could recognize melodies and point out when errors were made . . . [but] Ravel had difficulty in reading notes and performing from a score and, mostly notably, was unable to compose anymore” (p. 328). Furthermore, damage to the left side of his brain caused Ravel to lose his absolute pitch as well as his language skills. Interestingly, recent research has allegedly located the absolute pitch phenomenon in the left brain, “smack dab in the region most credited with the comprehension not of music but of language” (cited in Jourdain, 1997).

Other research has shown some similarly puzzling results. Storr (1992) explains a procedure whereby one half of a person’s brain can be sedated. He says that when the left hemisphere is sedated, the person “is unable to speak, but can still sing” (pp. 35-36). He also says, “Stammerers can sometimes sing sentences which they cannot speak, presumably because the stammering pattern is encoded in the left hemisphere, whilst the singing is predominantly a right hemispheric activity” (p. 36). Obviously, the brain connection between music and language is not a simple one.
Multiple Intelligences

The work of psychologist Howard Gardner presents an interesting dynamic to the study of the music-literacy connection. His work on multiple intelligences led him to name both music and linguistics as individual intelligences in their own right. Speaking of his work, Baum, Veins and Slatin (2005) define two central aspects of linguistic intelligence:

- Involves perceiving or generating spoken or written language
- Allows communication and sense making through language (p. 14)

Furthermore, having linguistic intelligence entails using it for communication in your own or a second language. Individuals such as poets, writers, and speakers demonstrate this intelligence greatly. Baum et al. explain the concept of musical intelligence via its two key abilities:

- Involves perceiving and understanding patterns of sound
- Includes creating and communicating meaning from sound (p. 15)

Another way to view musical intelligence is, “the capacity to think in music” (Gardner & Checkley, quoted in Baum et al., 2005, p. 15).

One might question whether these intelligences can be learned, to which Baum et al. (2005) respond in the affirmative. Nevertheless, an “intelligence” and a subject area are not identical terms—an individual subject area, such as language arts or music, incorporates various intelligences. Finally, Baum et al. contend that no intelligence stands alone, separate from the others. Rather, aspects of the intelligences overlap. “Put simply, the musical domain generally requires high levels of musical intelligence, but other intelligences must be tapped in order to permit successful performance in this domain” (p. 23).

Though Gardner sees music and literacy as two separate intelligences, the overlap of intelligences within a “subject,” such as language arts, indicates a connection between the two.
Furthermore, when considering the key aspects of each intelligence (listed above), the parallels are striking. Both involve perceiving, understanding, and generating sound (whether musical patterns, or spoken or written language).

**Musicogeniceupadia**

According to Cornett (2003), “Learning through music can seem effortless, because the brain almost automatically picks up musical patterns, even when we are not conscious of it happening.” She defines *musicogeniceupadia* as “using music as a learning vehicle,” and explains that through musicogeniceupadia students can increase general vocabulary, sight word knowledge, use of idiomatic expressions, oral fluency, visual tracking along a line, concentration, understanding of rhyme, rhythm, repetition, alliteration, and syllables, phonemic awareness, concepts of beginning-middle-end, sequence, diction, knowledge of states and capitals, and parts of speech. (Douglas & Willatts, 1994, cited in Cornett, 2003, p. 337)

Thus we see that music can indeed be used as a learning tool. Music can bring a book to life, allow for enriching vocabulary development, stimulate multi-style learners, aid memory, and help students to visualize (Marshall, 1999).

**Empirical Evidence: Music Helps Language Arts Development**

So we see that “it requires no great leap of imagination” to perceive the similarities between the uses of oral and written language in both the music and the literacy classroom (Pitcairn, 2006, p. 26). Research also reveals that the study of music may enhance reading skills. In fact, research from over twenty years ago demonstrates that music reading contributed to language reading development, and thus including music in reading lessons was encouraged
(Habermeyer, 1999, p. 151). Furthermore, empirical evidence suggests that students of music score higher in reading than non-music students (Demorest & Morrison, 2000). After looking at statistics and the results of several experiments, Nierman (1996) concluded that studying music seemed to promote language development. According to Claudia Cornett, PhD (2003), Professor Emerita at Wittenberg University, music enhances the development of several facets of literacy, namely language arts, words, writing, and spelling.

In a study by Eisenstein elementary-aged students demonstrated greater participation and more correct answers in reading situations after attending “two 22-minute guitar sessions, three days each week for one month” (cited in Womack, p. 19). An analysis of 31 correlational and experimental studies found a “strong and reliable association between the study of music and performance on standardized reading/verbal tests” (Butzlaff, quoted in Womack, 2006, p. 19 and Gromko, 2005, p. 200).

“Nonmusical Effects of the Kodaly Music Curriculum in Primary Grade Children” (Hurwitz, Wolff, Bortnick, & Kokas, 1975), found that children who had received Kodály-based music instruction scored better on reading tests than those in the control group. These students all attended the same school. Furthermore, a reading readiness test given to both groups prior to the experiment showed an insignificant difference between the scores of the two groups. When the researchers analyzed the two groups by gender, they found that the girls within each main group were equally proficient at the beginning of the year, while by the end of the experiment, those receiving the music instruction significantly out-tested the control group in reading achievement. By the end of the year, the boys in the experimental group were equivalent to the control group on their reading test scores. This, however, was significant because the boys in the experimental group had score lower at the beginning of the year than the boys in the control group. Therefore,
as the researchers suggest, “both boys and girls in the Kodaly program did in fact benefit from special music instruction, so that the boys’ results indicate a compensatory effect for their initial relative deficit in reading readiness” (p. 49). While this study was conducted with first graders, they found a positive correlation between music instruction and reading scores in following years as well (when the experiment was continued). “The results were striking in that those children who received the Kodaly training turned out to be better readers and were presumably receiving less of the usual instruction in reading by the regular classroom teacher” (p. 50). They recognize that motivation may have been a factor, thus the evidence is not conclusive. Nevertheless, it is “striking.”

An article by Weinberger (1994), which looked at several different studies, suggests a direct correlation between music and reading. He shows how the study above, by Hurwitz et al. (1975), demonstrated a significant difference in reading scores between two groups of children with the same teacher over a one year period. One group received extensive musical instruction while the control group did not. The results indicated an 88th percentile score for those in the musical group as opposed to the control group, who scored in the 72nd percentile. Then the project was continued for a second year, with the musical group continuing to lead. Weinberger deducts, “These findings clearly support the view that music education facilitates the ability to read” (p. 3). He goes on to say that one may even interpret this as “a cause-effect relationship between music and reading.” Though Weinberger sees this as a cause-effect relationship, he is forced to ask two questions. The first is whether the reading improvement was a direct result of the instruction or of the “more varied school program” in general. The second question involves how music training “could…possibly improve reading” (p. 4). Nevertheless, Weinberger concludes, “the findings of both studies [Hurwitz et al., 1975 and Lamb & Gregory, 1993]
dovetail nicely and together provide evidence that music education facilitates reading and a mechanism by which music exerts its beneficial effect” (¶ 7).

Nierman (1995) also mentions the study by Hurwitz et al. (1975) along with another study. Though Hurwitz et al. used music based on the Kodály method of music instruction, the second study used an Orff-based approach. Still, both studies demonstrate better reading test scores by the music treatment groups than the control groups. This seems to indicate the gains in literacy were not contingent on the specific music program used. Finally, though Nierman cautions “a positive correlation does not establish causation,” both showed similar positive results (cited in “Studies Involving Primary Children,” ¶ 2).

This phenomenon of music increasing reading skills appeared in Hungary in 1969, where positive results were reported after the Kodály method was added to the curriculum. Then, in 1975, an American reported similar finding, according to Lamb and Gregory (1993). The same study has been quoted by many others, including McIntire (2007), who cites it when she asserts, “Researchers have found that musical development and literacy development are linked” (p. 46).

According to Perret and Fox (2004), one doctoral student/school psychologist conducted a study that revealed “children in early elementary grades who have all the same opportunities as their peers develop stronger building blocks for reading with the addition of nine hours of special music instruction” (p. 115). They also mention a project at Bolton Elementary School, which incorporated visits by a quintet. This study suggests yet another method by which music could have a great effect on the development of struggling readers.

Studies have also shown increased development in language skills of exceptional students who participated in music instruction. Examples of improvement included speech articulation, spoken expression, and discrimination (cited in Nierman, 1996). Nierman concluded that “music
study appears to aid language development," regardless of the age or ability of the student. Furthermore, "students who have studied music seem to have both better discrimination skills for perceiving language as well as better articulation skills for speaking language" (Conclusion Section). Douglas and Willatts (1994) surmise, "While it is not being suggested that training in music is essential for good literacy skills, it does seem plausible to propose that children who have already been identified as having difficulty with reading might benefit from a structured [program] of musical activities" (p. 105).

Music and Literacy—Common Features

Humans are "hardwired for language," say Perret and Fox (2004, p. 117). Furthermore, they add, both music and language "come naturally to human beings" (p. 119). Going a little further, another author notes, "Language has its own built in musicality" (Jourdain, 1997, p. 62). A third writer, as well as music teacher, suggests three different "languages of childhood," namely music, speech, and movement. These three languages "share the eight fundamental elements of rhythm, tempo, duration, pitch, intonation/melodic shape, dynamics, stress and pauses" (Greene, 2006, p. 36). Furthermore, "the features that music and words share in the brain include meter, duration, contour, and timbral similarity" (Lerdahl, 2001, quoted in Armstrong, 2003, p. 58). Music instructor Marilyn Pitcairn (2006) writes: "areas of congruity extend from the very structure of both curricula. They share the cornerstones of oral language, the same goals and the same best practices" (p. 26).

What other common features does literacy development share with music? Any casual observer may notice that music and literacy have a common medium—sound. Music is sung or played while language is spoken or read (aloud). Thus, both use sound as a method of sending
and receiving information. Furthermore, music and language both have aesthetic and communicative goals or functions (McCoy, 1980). Another writer in the early 1980’s, Wagner (1983), suggests that though little evidence was available at that time to prove a correlation, “anyone who understands the learning processes involved in reading and music can agree that such a correlation exists” (p. 24).

If this is the case, what are these elements? In her article, “Music and Language,” McCoy (1980) identified some common characteristics. First, while reading uses multiple words, music has many tones. Secondly, both disciplines are arranged according to a format. Thirdly, both music and reading development occur in a sequential manner. The article also says these two disciplines have physical components of sound in common: frequency, duration, and quality of intensity. Other commonalities include “psychological attributes of pitch, loudness, and timbre and continuance” (p. 5). Furthermore, “music and language are dependent upon each other for complete growth. True comprehension of a spoken language requires the ability to discriminate intonation variations and to differentiate the rhythmic patterns and accents of language” (Munn, 1965, cited in McCoy, 1980, p. 5).

Writing several years later, Wagner (1983) identified a long list of similarities between the two disciplines. For example, both require the auditory ability to perceive sounds and differentiate between them, as well as recall and repeat sounds. The same tasks are necessary in the visual realm. Other parallels include logical thinking, hand-eye coordination, and language expression. Finally, both music and reading skills entail putting sound on paper (writing or composing) as well as decoding (reading) written symbols in order to reproduce the sounds. These similarities might best be summarized by the following table:
Table 1

<table>
<thead>
<tr>
<th>Reading Skills</th>
<th>Music Skills</th>
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<tbody>
<tr>
<td>Auditory reception/Listening</td>
<td>Listening</td>
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<td>... discrimination</td>
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<tr>
<td>... memory</td>
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<td>Visual reception</td>
<td>Reading</td>
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<tr>
<td>... discrimination</td>
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<td>... memory</td>
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<tr>
<td>Tactile discrimination</td>
<td>Writing; Moving to music; Playing instr.</td>
</tr>
<tr>
<td>Motor skills (fine &amp; gross)</td>
<td>Moving to music</td>
</tr>
<tr>
<td>Kinesthetic mode</td>
<td>Reading; Playing musical instruments</td>
</tr>
<tr>
<td>Eye-motor coordination</td>
<td>Reading</td>
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<tr>
<td>Language reception</td>
<td>Singing; Composing</td>
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<td>... expression/communication</td>
<td>Thinking skills</td>
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<td>Logical thinking</td>
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<td>Spatial relationships</td>
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<td>Vocabulary Development</td>
<td>Rhythm</td>
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<td>Rhythm</td>
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*Source: Adapted from Wagner (1983, pp. 23-24) and McIntire (2007, p. 47).*

Reading specialist Marilyn Murphy (1981), says both music and reading are founded upon a developmental skill sequence, and thus, the learner of either must first become aware of sounds. Furthermore, both music and reading are symbolic, and require decoding and interpretation (Marshall, 1999). After explaining that “music has a complex language of its own,” Van Gunten (2006) continues, “Children who are fluent in multiple languages are gifted with the ability to describe, examine, compare, analyze, evaluate, interpret, apply and create anew from the discoveries they find in the world around them” (p. 13). Thus, she compares musical literacy to bilingualism, thereby demonstrating another connection between music and literacy.
President of Inventive Designs for Education & the Arts, Sue Snyder, PhD (2006), sees similarities when the building blocks of literacy and music are compared. These language “materials” can be viewed as almost physically building upon one another in the sense that phonemes become words, which combine to make phrases and so on. (Note that this is not the same as stages of reading development.) The “progression” may be visualized thus:

phonemes → words → phrases → sentences → paragraphs → stories.

The musical version of this may be seen as:

sounds → motifs/patterns → phrases → sections → composition.

A pattern evolves. Beginning with small units, whether individual phonemes (which are sounds) or “sounds” in music, multiple sounds become motifs, which form phrases, and so on. Both music and literacy elements combine into larger components. Thus a connection in the structure, or “grammar,” of the two disciplines becomes apparent.

Music teachers appear to not be the only ones noticing these connections. In a paper presented to the Annual Texas Council of Teachers of English Conference in 1999, Bradley and Bradley listed six reasons music is important to language arts development:

1. Singing songs introduces children to new words and concepts.
2. Singing increases student attention span and improves their listening skills.
3. Nursery rhymes set to music promote oral language development.
4. Children can see the words and hear the words at the same time as the teacher models.
5. Music transmits cultural heritage.
6. Research indicates that there is a connection between participation in music and improved academic performance in other subjects. (p. 3)
Overview of Specific Skill Connections

A variety of specific musical aspects seem to relate to the literacy development of children. Rhythm and pitch are two of these. Likewise, various aspects of literacy development are tied to music (i.e., vocabulary, verbal memory tasks, and phonemic development). Medd (1990) provides a wonderful overview of some of these connections:

Giving children assistance in developing acuity in pitch, loudness, duration and rhythmic patterns of sounds strengthens their skills in phonetic and structural analysis and enables them to discriminate the pitches of the letter sounds and inflections. Loudness of sounds determines accent in music or speech; duration determines vowels and consonants. The development of these abilities begins with listening. (¶ 2)

Cornett (2003) also identifies a variety of aspects in which music and literacy skills overlap:

Music ability has been found to enhance reading skill (Douglas & Willatts, 1994; Kantrowitz & Leslie, 1997; Lamb & Gregory, 1993) and singing naturally integrates the language arts of listening, speaking, and reading. Which words are to be stressed? what rate? volume? Singing also emphasizes clear enunciation of words, and because we usually sing words, vocabulary is built through singing. By pointing out lyrics on a large chart or the overhead, students make the speech-to-print match essential for reading success.

When children learn to compose original songs, collect favorite songs with lyrics, and keep responses to songs and music in journals, they are writing—another language arts area. Because of the patterned nature of music, it can be an assist in learning spelling as well. (p. 340)

According to Armstrong, all words “ride upon a stream of music.” Rhythm, meter and music play a large role in language and literacy (2003, p. 55). Three other areas, aural discrimination, sequential learning, and mid-line development, are identified by Marshall (1999) as ways in which music instruction stimulates growth. Through aural discrimination tasks, children’s voices expand “from the dull, expressionless monotone to a wide range of pitches, volumes, and subtleties” (¶ 11). Sequential learning not only aids students in math skills, but also
in skills required for language development. Finally, large motor skill activities usually “transfer to fluid eye movement for reading” (¶ 13). Kodaly believed that learning to differentiate between musical patterns developed children’s language, reading, and coordination (Cornett, 2003, p. 355). Furthermore, there is a connection suggested by Wishey (1980) between music and writing due to hand-eye coordination skills. These same skills required for writing “are enhanced and developed by learning to play a musical instrument” (cited in Habermeyer, 1999, p. 151). Perhaps this connection is due to the fine-motor skills necessary for both writing and instrument-playing tasks.

A reading program developed in 1978, Reading 350, maintained that musical training could greatly enhance language development. It identified a causal relationship between practicing listening skills (i.e., pitch and rhythm discrimination) as well as duration and timbre to “distinguishing phonemes and morphemes, recognizing similar sounds in words and gaining fluency in reading through an awareness of the rhythmic structure of language (cited in Lamb & Gregory, 1993, Abstract, ¶ 13).

Rhythm

Rhythms have historically been very important in language—such as oral traditions, works of literature by Shakespeare, the Bible, and Beowulf. We have lost a great deal of this, as witnessed by the monotone voice used in the media. However, the importance of rhythm is still quite evident in some forms of language. Poetry, literature, and speeches are illustrate the use of rhythm. (Armstrong, 2003).

They found that rhythm showed a connection to reading and spelling. Though the experiment demonstrated only a "fairly small" correlation, "the findings of this investigation indicate that there is a link between musical ability and reading ability" (p. 106). Douglas and Willatts suggest that a common locus in the left hemisphere of the brain could be the reason behind the connection.

In *Art, Mind, & Brain*, Gardner (1982) explains that children are able to identify the "underlying pulse" (or beat) of a piece of music after they can recognize the "surface rhythm." That is, a child learns to clap a steady beat, and to extract it from the rhythm of the piece (p. 154). Interestingly, Snyder (2006) identifies keeping a steady beat as a pre-reading skill. In *Music and the Mind*, Storr (1992) says, "The effect which music has upon repetitive physical actions is predominantly rhythmic. Rhythm is rooted in the body in a way which does not apply so strikingly to melody and harmony." Examples of this body-rhythm connection include breathing and walking (p. 33). Finally, according to Cornett (2003), music develops listening skills and learning rhythms, which lead to reading fluency.

**Pitch**

Davis (1994) explains the role of pitch in language. Various languages use pitch changes differently, nevertheless, commonalities appear to exist. When asking a question, pitch rises, and when making a statement, pitch falls. However, other changes in pitch can demonstrate other emotions—such as excitement (p. 87). Perhaps this could be compared to the "question" and "answer" often present in musical phrases.

Citing evidence from a study described in *Journal of Learning Disabilities*, McIntire (2007) says, "Kodály training improved reading performance in first graders due to enhanced
pitch discrimination” (p. 46). Talcott et al. (2000) said the best readers could detect pitch changes in low-frequency sounds (cited in Armstrong, 2003, p. 58). Likewise, Anvari et al. (2002) construed, “Melodic pitch...appears to relate more consistently to phonemic awareness and reading” than does rhythm. Thus, we see conflicting evidence between the studies—some of which show pitch and others rhythm as more strongly related. Nevertheless, both are evidently related to literacy development, and are therefore not mutually exclusive.

An experiment by Lamb and Gregory (1993) was designed to examine the relationship between music and literacy. It shows a correlation between pitch discrimination and the reading tests, no connection between timbre discrimination and reading, and a strong correlation between phonemic awareness and pitch discrimination. The results of this study, along with other research cited by them, suggest a strong connection between differentiating between pitches in music and distinguishing frequencies in spoken sounds. Nevertheless, this study does not assert a causal relationship between the two. Instead, the researchers suggest further studies to establish this. If a causal relationship were found, Lamb and Gregory advise, “carefully structured musical training should be an essential component of the primary school curriculum” (Discussion section, ¶ 10). As the article’s abstract reports, “The results support the hypothesis that discrimination of musical sounds is related to reading performance, but reveal that the influential factor in this relationship is a specific awareness of pitch changes” (¶ 1).

Phonological Awareness & Music

A strong correlation seems to exist between music study and a major concept of reading called “phonological awareness,” as well as one of its sub-categories, “phonemic awareness.” According to the “Put Reading First” (2003) document published by the Partnership for Reading,
"Phonological awareness is a broad term that includes phonemic awareness. In addition to phonemes, phonological awareness activities can involve work with rhymes, words, syllables, and onset and rimes" (p. 4). Examples of this include:

- Identifying and making oral rhymes
- Identifying and working with syllables in spoken words
- Identifying and working with onsets and rimes in spoken syllables
- Identifying and working with individual phonemes in words spoken (phonemic awareness) (p. 3)

The fourth bullet identifies phonemic awareness as a sub-group of phonological awareness. The pamphlet defines phonemic awareness as, “the ability to hear, identify, and manipulate the individual sounds—phonemes—in spoken words” (p. 4). So, phonemic awareness deals with individual phonemes (the individual sounds, such as /a/, /s/, /sh/, etc.). On the other hand, phonological awareness is much broader. The concept includes everything under phonemic awareness, as well as working with larger chunks of sound. These “larger chunks” or word segments, include syllables, whole words, rhyming words, and the two parts of words defined as “onset” and “rime.” Onset refers to the vowels before the first consonant (i.e., “a” in among), and the rime is composed of letters from the first consonant on (i.e. “mong” in among).

Womack (2006) provides further insight into the difference between phonological and phonemic awareness. She summarizes the “Put Reading First” document:

Aural discrimination—a skill that improves word reading, comprehension and spelling—includes phonological awareness and phonemic awareness. Phonological awareness involves activities with rhymes, words, syllables and phonemes (the smallest element of oral language). Phonemic awareness is a type of phonological awareness: it is the ability to hear, identify and manipulate the individual sounds in spoken word [sic]. (p. 19)
Womack cites research showing that phonological awareness is augmented by the concepts of keeping a steady beat and rhythm. Furthermore, a connection has been found between nursery rhyme knowledge and phonological awareness. Other research has shown that using songs helps develop phonemic awareness (cited in Womack, 2006).

"Sing Your Way to Reading Success" (Newman, 2006) identifies three components of phonological awareness:

- Auditory recognition of sounds, which precedes spelling
- Singing to develop vocal emotional qualities
- Development of vocabulary (for use in reading and writing)

Pitcairn (2006) stresses the connection between music and both phonological and phonemic awareness. Phonological awareness, according to Pitcairn, has to do with the "rhythm, pitch and inflection, tone color and the tempo of speech" (p. 27). Then, speaking of phonemic awareness, she says it can be developed by "music lessons that draw attention to the sound features of language." For example, doing chanting activities, working with rhymes, as well as playing drum pieces as musical activities increase phonemic awareness. Pitcairn names intermediate-level struggling readers as a group that particularly benefits from such instruction. These children "continue to need phonemic awareness experiences. These joyful lessons that unify story, speech and music are the most engaging implementations imaginable" (p. 28). Her statement is worth serious consideration, as it not only aids in the phonemic awareness development of these students, but does so in a very engaging way. Does not some research support the idea that students learn best when they are fully engaged and therefore interested in what they are learning?
Another practitioner, music specialist Patricia O’Herron (2006), says that singing provides an opportunity to practice phonemic awareness because children must “learn to form and sustain vowel sounds on pitch while they intersperse consonants on a stream of breath” (p. 22). Furthermore, she explains, “singing is an exercise in segmentation and blending” (p. 24). These two concepts are, by definition, aspects of phonemic awareness. O’Herron lists four ways in which vocal teachers give direct phonemic awareness instruction:

- Auditory processing by listening for changes in vocal pitch and reproducing
- Segmentation and blending of phonemes artificially suspended in song
- Rehearsal of articulation with integrity of diction in placement of consonants and elongation of vowels
- Rehearsal of laryngeal manipulations to perform exact pitches on vowels (p. 25)

Additionally, O’Herron provides other examples of building children’s phonological awareness. The practice of reading a book and having children respond physically or by playing a musical instrument every time a certain word or sound is heard develops their sense of phonological awareness. This practice can be adapted so that children listen for a particular phoneme—thus, phonemic awareness is developed.

The practice of responding to literature in this way is prevalent in a music method called Orff Schulwerk. This system of music instruction was developed just after World War II by a German named Carl Orff. He sought to help children cope with the devastation following the war by providing musical experiences that gave instant “success.” Using instruments such as xylophones and metalophones with removable bars, Orff set up pentatonic scales on these instruments. In other words, he removed certain tones from the instruments, so that the remaining ones formed a pentatonic scale—one in which any notes played together produce a
pleasing sound. In this way, a “wrong note” would not have a jarring effect on the senses. The Orff Schulwerk method employs language experiences frequently. As one Orff practitioner suggested, Orff Schulwerk utilizes “guided listening, repetition, patterning, rhythm and sequencing”—all of which are elements of language arts instruction (Medd, 1990, p. 23).

Research shows that reading and phoneme discrimination difficulties are often associated. Shaywitz et al. (1998) found that people with dyslexia seem to have the most trouble with phonological-musical concepts, especially with reading nonsense words that rhyme (cited in Armstrong, 2003). Armstrong suggests a way to help such students, by “bring[ing] out the musical qualities of phonemes to provide a means of distinguishing between them” (p. 59).

A study by Gromko (2005), “The Effect of Music Instruction on Phonemic Awareness in Beginning Readers,” provides further insight into the phono-musical connection. He “predicted that music instruction that taught children to analyze a simple song into its patterns would enhance children’s ability to segment words into phonemes,” which he referred to as the “near-transfer hypothesis.” Gromko hypothesized:

When children learn to discriminate fine differences between tonal and rhythmic patterns and to associate their perceptions with visual symbols, they will benefit not only musically but in skills related to the processing of sound shown to be necessary for reading. (p. 201)

His results show an increase in the ability to segment phonemes by children who received music instruction over the study’s four-month period as compared to the control group. Gromko establishes the strong connection between phonemic awareness and reading ability by citing several sources. He says research over the past two decades has established phonemic awareness as, “one of the best predictors of how well children will learn to read” (p. 199).

Many published articles have promoted music as a way to enhance reading comprehension by having children read print while singing...However, research reviewed suggested that phonemic awareness, defined as the ability to recognize that a
spoken word consists of individual sounds or phonemes, may be the mechanism that explains the relationship of music instruction to reading skill. (p. 201)

Though his evidence does not conclusively prove a direct relationship between music study and phonemic awareness, it does support the idea. “These results have sufficient credibility to serve as the basis for continued inquiry into near-transfer effects of music instruction” (p. 207).

Other researchers have also found connections between phonological or phonemic awareness and music. Anvari et al. (2002) explain that music perception and phonological awareness both require auditory processing. The two processes appear to be related, which ultimately links them to reading. “Phonemic awareness and music perception ability tap some of the same basic auditory and/or cognitive skills needed for reading” (p. 127). Another study found that as children learned to distinguish between (three-note) chords, their phonics skills, ability to recognize words, and ability to read improved (McMahon, 1979, cited in Lamb & Gregory, 1993). Cornett (2003) supports this view: “When young children use music to explore their environment, they engage in critical phonemic (sound unit) awareness experiences necessary to speak and read” (p. 335). Anvari et al. (2002) sought to determine whether music perception could predict reading success, aside from the phonemic awareness component. Indeed, they did find that aside from phonemic awareness there is still a strong correlation between music perception and reading skill. “There is little agreement on the particular elements of music perception that correlate with reading difficulty in school-age children” (p. 114). Nevertheless, they found a correlation between music study and auditory processes. “Music and speech may depend on many of the same basic auditory processes, and hence, early skill with music might enhance reading acquisition to the extent that reading depends on the same basic auditory analysis skills” (p. 113).
Music, Speech and Vocabulary

“Speech, the basis of reading, and music are essentially the same thing, organized sound.” They contain similar key components—each requires listening, perception, and discrimination abilities (Medd, 1990, ¶ 1). In Music, the Brain and Ecstasy Jourdain (1997) explains the connection between music and spoken language: “For most young children, ‘music’ is largely an experience of language, language distorted in its intonation and rhythm” (p. 61). Likewise, Dean and Professor Robert A. Cutietta, PhD, from the Thornton School of Music at the University of Southern California says: “Several studies have shown convincingly that singing and language skills are interconnected” (quoted in Newman, 2006, ¶ 2). He describes singing and storytelling as identical in that they both use “sequencing, a journey from the beginning to the end” (quoted in Newman, 2006, “Beyond the Alphabet Song,” ¶ 5).

An interesting connection between music and language occurs naturally across the globe. In “infant-directed speech” mothers, or caregivers, change their style of speaking to emphasize various aspects of language. In fact, it is a musical way of speaking in which they use a higher speaking tone, “larger and simpler melodic contours,” slower, more measured rhythms and tempos, as well as exaggeration of pitch and length (Greene, 2006, p. 37). This natural way of speaking to children not only seems to help them learn the nuances of the language, but infant-directed speech itself has inherent musical qualities. Armstrong (2003) also mentions the emphasis placed on rhyme, rhythm, and intonation in infant-directed speech. Greene explains further that as children “read the texts of familiar songs and rhymes, they hear the musical cues of oral language. Songs, rhymes and movement bridge the gap between oral and written language.” Moreover, through these types of activities, children “internalize the musical elements of pitch, rhythm, contour and accents” (p. 38). Furthermore, Greene describes her
observed in second-language learners, in which she likens their learning of an English song or rhyme to that of children, as they “begin by imitating the melodic shape and rhythm” of the language. Thereafter they imitate accented words, and finally adjust their speech to include all the correct words and pronunciations (p. 38). Such observations lend more evidence to the strong ties between music and language as children develop.

Music specialist Patricia O’Herron (2006) also observes similarities between vocal music and language arts instruction. “When children imitate properly modeled rhythms of speech, they develop patterns of accent, degrees of volume, inflection and intonation in language” (p. 22). Thus we see how children develop the “native accent” of their first language(s). O’Herron adds that singing allows for pitch, meter, rhythm, and dynamics exploration. She explains that syllables are explored as children chant or sing nursery rhymes like “Mary Had a Little Lamb.” Through such songs they learn where to place emphasis in the strong-weak beats. This “enhances prosody and thus comprehension of text” (p. 22). O’Herron even shows how musical activities, such as clapping beats and rhythms of words and syllables, directly tie to kindergarten language arts standards for the state of California: enhance

- 1.12: Track auditorily each word in a sentence and each syllable in a word.
- 1.13: Count the number of sounds in syllables and syllables in words. (cited p. 23)

These standards are similar to one found in the Alabama Kindergarten Language Arts Course of Study (2005). Namely:

- 4. Develop phonemic awareness.
  - Counting sounds in words
  - Manipulating the sounds of the English language
    Examples: singing, making rhymes and rhythms

_Music in Childhood: From Preschool Through the Elementary Grades_ (Campbell & Scott-Kassner, 1995) says: “Onomatopoeic words (splash, rickety-rackety, etc.) suggest sounds
that can be interpreted musically” (p. 365). Furthermore, the authors identify pitch, rhythm and
accent as the musical elements found in words. They add that song flows from the combination
of music and poetry.

In her article “Orff Schulwerk and Literacy Follow Parallel Paths,” Van Gunten (2006)
describes “playing with spoken language through music” as a form of “literacy readiness” (p.
11). She shows how singing rhyming songs, such as “Wee Willie Winkie,” help children develop
concepts of rhyme, alliteration, and vocabulary. Van Gunten quotes a reading specialist from her
school: “The child can learn through her ears: listening comprehension comes before reading
comprehension. The child can hear rhyme, hear the sounds of phonemes and discriminate
between different sounds” (p. 10). Thus, singing children’s songs appears to support essential
reading readiness skills.

Furthermore, vocabulary is developed through musical experiences with singing (Cornett,
2003). For example, vocabulary can be built through musicogenesis.

Another aspect of vocabulary development via music is described in a study conducted
by P.J. Flowers (2005), who spent “more than 25 years of reading and analyzing music
descriptions written by adults and children.” Through this study, Flowers found that while
writing about music, students develop the ability to listen and to describe. Students “use
expressive language across several domains” and “practice writing or speaking to convey
information” (p. 16). Music enhances vocabulary development as the children learn new words,
new meanings, new definitions, new synonyms, et cetera. Over half of the vocabulary words
examined by Flowers were in a first-grade word list (i.e., fast, slow, note, rest), while many other
words were not (i.e., refrain, ostinato). Though the concept of dynamics is understood by young
elementary students, lessons on this concept should focus on “using dynamics in a musical
manner through singing, moving and playing, or how to create musical interest using different
types of dynamic contrasts” (p. 14). Flowers concludes: “Taken as a whole there are several
characteristics that will contribute to effective verbal communication about music, thus
enhancing language arts as well as musical knowledge.” These include “size and content of the
music lexicon developed through direction listening experiences . . . [and] flexibility in
describing multiple aspects of music by using different semantic categories” (pp. 16-17).

**Prosody**

The prosodic elements of language may have the strongest apparent connection to music.
McCoy (1980) explains, “Children, when learning language, need to experiment with the
prosodic features of language not only verbally but also with isolated sound in order truly to
internalize concepts such as pitch differences, rhythmic variations, accent effectiveness, etc” (p.
5). Storr (1992) gives the linguists’ definition of prosodic elements of speech as “stress, pitch,
volume, emphasis, and any other features conveying emotional significance, as opposed to
grammatical structure or literal meaning (syntactic)” (p. 9). Davis (1994), in *Mother Tongue: How Humans Create Language*, elaborates on these “prosodic” elements of language. He
examines aspects such as pitch, dynamics, tempo, rhythm, and timbre. Davis calls pitch and
dynamics “the two most important aural properties that modify meaning” (p. 87). The following
sentence illustrates how dynamic and pitch changes can alter the meaning of a sentence; the
meaning changes as each word in the sentence is stressed:

*Are you Mr. Brown?*
*Are you Mr. Brown?*
*Are you Mr. Brown?*
*Are you Mr. Brown?*
Davis (1994) also examines several other aspects of prosody. For example, a faster tempo lends a hurried or excited sense, while slower tempos convey “emphasis or importance” (p. 87). “Loudness, pitch, and tempo all converge to create prosodic rhythm” (p. 88). Different languages do this in various ways, but these elements give the characteristics of the rhythm of each language. In addition, sometimes timber of the voice can convey meanings. For example, in English a breathy voice is often used to insinuate sexual undertones. However, using timbre to convey meaning is a very culture-specific aspect of prosody. Interestingly, even non-spoken language (i.e., sign language) has prosodic elements that can be conveyed through nuances in movement. Thus Davis explains how prosody, though specific to individual cultures, conveys meaning beyond the exact definitions of the words. The musical aspects of prosodic elements in spoken language certainly support the notion of a music-literacy connection.

The concept of musical aspects of language via prosody is not new to the 20th or 21st century. “One popular Victorian notion was that music gradually developed from adult speech through a separation of the prosodic elements from the syntactic” (Storr, 1992, p. 10). William Pole wrote in *The Philosophy of Music:*

The earliest forms of music probably arose out of the natural inflections of the voice in speaking. It would be very easy to sustain the sound of the voice on one particular note, and to follow this by another sustained note at a higher or lower pitch. This, however rude, would constitute music. (quoted in Storr, 1992, p. 10)

Nevertheless, this idea was not buried with the Victorian era. In *Music, the Brain, and Ecstasy,* Jourdain (1997) says, “the range of frequencies where most melodies lie is also the range in which speech consonants release most of their energy” (p. 250). Humans do not typically talk like computers, says Jourdain. Rather, we inflect our voices—accenting and modulating phonemes “to express myriad shades of emotion and intention. . . . As words combine into sentences, intonations meld into *prosody,* the ‘singsong’ of language” (pp. 272-
273). This, according to Jourdain, gives the emotional effect to our speech that coincides with the specific words we speak.

Jourdain (1997) also mentions phrasing as another aspect found in both speech and language. "Phrasing may be the closest parallel between music and language. . . . Laboratory work confirms that our brains treat musical phrases and spoken phrases similarly, suspending comprehension as a phrase and then pausing to gulp the whole thing down" (p. 275). He even likens the phrasing of speech to that of musical instruments. Whereas the musician must learn to express a musical line of thought, the reader must carry his voice through a thought with appropriate energy. "Music elements are so embedded in our lives we don't even think about how hard it would be to talk, read, or walk effectively without them" (Cornett, 2003, p. 337).
Methods

In conjunction with the above literature review, I conducted interviews (or surveys) of professionals in the field of music. The purpose of these interviews was to compare the beliefs of experts in the field to the research on this topic. The individuals interviewed included both classroom teachers and researchers/university faculty. A total of nine experts were interviewed, including four “researchers” and five “teachers”—one of whom was a general classroom teacher, while the other four were music teachers. Interviewees were identified through reading their research, seeing their names in print sources, or through personal contacts. The interviews were conducted in several different formats, according to the preference of the interviewee. One interview was conducted in person, several were strictly via email responses, and the rest were conducted over the telephone after an initial introductory email request.

The questions on the interview forms for “teachers” and “researchers” were used to collect the data. (Refer to Appendixes A and B for copies of these forms.) The surveys included gathering demographic information about the individuals, their experience and expertise, and asking them the music and literacy connection questions. These questions included whether the individual had noticed any connections between children’s development of musical skills and literacy development, as well as their perception of the strength of the connection. The interviews also asked for specific examples to support their observations, research they were familiar with, and suggestions they had for implementing musical activities into the general K-6 classroom. The interview for teachers differed slightly from that used with the researchers. The “Survey of Researchers” consisted of seven questions, and the “Survey of Elementary Music Teachers” consisted of six. The one general elementary classroom teacher was interviewed with the form used with the other teachers.
Results

Following a discussion of the demographics of the experts interviewed, a compilation for the data from both sets of experts is given. First, the responses of the teachers are discussed, question by question. Secondly, the researchers' responses are similarly discussed. Then, Table 2 provides a graphic representation and overview of the responses of both groups.

Demographics of Interviewees

It must be noted that the sampling was very limited, as the demographical information will attest. For example, though men were contacted, those who responded were all women. Furthermore, of the nine experts interviewed, only two identified their ethnicity as other than white or Caucasian. One described herself as African-American, and the other as a "White Jewish woman." Such nearly homogeneous factors reveal the limited scope of this survey. Yet, given the expertise of the individuals interviewed, the survey is nevertheless beneficial and worthy of serious consideration. All of the interviewees' education consisted of graduate level work. Most had earned master's or doctoral degrees. It should also be noted that there was some "overflow" between the two designated sets of experts. For instance, one of the "teachers" is currently in a university setting, yet she responded to the Elementary Music Teacher Survey. Furthermore, all of the "researchers" have had teaching experience to varying degrees and in various settings, ranging from preschool through college.

Despite the limited nature of this survey, there was a fairly wide demographic range in the schools in which the teachers taught. The schools represented spanned the state of Alabama, with one located in California. The "types" of schools ranged from Title I, to high socio-
economic level, to K-12 private preparatory schools. The teachers interviewed had between approximately 7 and 25 years of teaching experience.

The researchers interviewed consisted of four individuals with diverse backgrounds. The variety of their degrees and experiences presents an interesting assortment. Their degrees ranged from PhDs in Music, Music Education, and Curriculum & Instruction, to master's in Music and Music Education. Bachelors degrees mentioned included Fine Arts, Vocal performance, and Music Education. Perhaps their unique research specializations speak the most for their diversity and therefore make their similar findings all the more striking:

- 22 years of neuro-biological research on how music affects the brain and learning and author of *Good Music, Brighter Children*, 1999, Prima Publishing. Translated into 5 languages. (Sharlene Habermeyer, MA)

- How music affects medical-surgical patients (Deforia Lane, PhD)

- Effective music practice, how adults can best impact children's musical development, and how effective practice effects neural patterning and brain development (Linda Neelly, PhD)

- The Arts—music, movement, dance, drama, visual arts, language arts—and Literacy (Susan Snyder, PhD)

Following is a summary of information gathered from both the teacher interviews and researcher interviews.
Responses to Teacher Interviews

Question 1

*In your teaching, have you noticed any connections between children's development of musical skills and literacy development? If so, what are some examples (specific skills, etc.)?*

The general consensus among the music teachers was that some correlation exists. The only exception was the one general classroom teacher interviewed, who said she had never noticed a connection. However, she qualified her statement by saying that she was not a music teacher. "I just always knew that they loved to sing the songs that I taught to them. They always responded to music in energetic, joyful ways." Among the music teachers, the examples given from their observations were diverse. For instance, the ability to follow words in a song was connected to word recognition, and the process of tracking and reading left to right was mentioned with regards to both music and literature. Another teacher said she had repeatedly noticed a connection between children's ability to keep a steady rhythm and their reading development. She said that if children are having trouble keeping a steady beat, they also seem to be having difficulty learning to read. This teacher speculated that motor skill and brain development (internalization of the processing) could be the cause behind this. Another teacher said the children who keep a steady beat earlier (i.e., fall of their kindergarten year) appear to be the highest readers. Her suggestion for the "reason" was that the highest achieving students of reading are good students in general, and thus are the most attentive in music class. Yet another teacher mentioned several connections that she has noticed or found through research, which included aspects of duration, pitch, dynamics, vocabulary, and print concepts. However, the focus of her interest is in the phonemic awareness developed through music, which is a key feature of literacy development.
Question 2

Do you have any particular examples from your teaching that demonstrate this—any stories of children who showed dramatic improvements in literacy skills/development as a result of musical activities (training, etc.)?

The answers to this question were fewer. While one teacher reminded me that “only hard data counts,” she did mention a pilot study she has been running for the past 2 years. This study will attempt to discover whether the children who receive language rich music experiences are above their peers because of music training.

Another teacher mentioned the benefit she had seen for exceptional learners. She replied: “A couple of autistic children have shown dramatic improvement in areas in which they had been weak before having music. Something about music connects the neural cells to establish learning patterns in how to learn to read.” Another teacher replied that passive listening is not nearly as beneficial for children’s development as “doing” music, (i.e., physical stimulation while singing, working with beats). She advocated using a structured approach to music, very much like the structured method of phonics instruction. The last teacher, though believing there was a connection, said it does not appear to be a cause-effect relationship. Her main point was that music provides motivation for children’s literacy development. She uses literature in her music classes, and has found that this appears to attract children who would otherwise be less interested in the literacy experience. She also mentioned that children less inclined toward music might be attracted by the addition of literature to the class. Thus, her perception of music with literature was predominantly motivational.

Question 3

What musical activities do you believe would be most beneficial for a classroom teacher to implement to help with the literacy development of his/her students?
The responses to this question were both profuse and explicit. The teachers advocated integrating music (i.e., instruments) with literature, using music in routines, and using songs to learn other curricula (thus, as a “tool”). They also suggested choral experiences, like singing folk songs, as a way to build cultural heritage. Further suggestions included using Solfege, instrumental ensembles, Kodaly chart reading, and playing recorder and Orff instruments.

**Question 4**

*Do musical activities seem to enhance development of initial literacy skills or to strengthen existing literacy skills?*

While several teachers responded that both seem to be enhanced, one said the musical experiences would not help unless explicit instruction was given towards that goal. Another replied, “A lot would depend on the child and what he’s had musically.” Thus, the opinions about whether music strengthens initial or existing literacy skills or both were somewhat diverse.

**Question 5**

*Can you think of any specific examples from the classroom (yours or another’s) that demonstrates or leads to these conclusions?*

This question appears to have been somewhat repetitive (see question 2). Nevertheless, one teacher explained, that parents have repeatedly praised the positive effect of staff reading on their children’s reading skill development. Apparently parents had noticed that reading awards tended to be given to children with a music background. Another teacher had no (more) specific examples. Rather, she cited an overall effect—“It’s a starting-off point.” One teacher approached this question from a different angle. She demonstrated how *music* might be benefited by strong literacy skills (fluency), as children are able to follow along by reading the words as they sing. In sum, though the teachers pointed out a variety of aspects of the music-literacy connection, they agreed that some connection exists.
Responses to Researcher Survey

Question 1
In your research, have you found a strong correlation between reading or literacy skills and musical concepts or skills? If so, which ones?

Of the 4 researchers, 3 replied that they did see correlations, while the other said she does not look for those correlations in her research. Nevertheless, all four provided specific connections between the two disciplines. One acknowledged a very similar learning process for music and literacy. She mentioned melodic-like contouring present in vocal development of children, the process of decoding sound, and auditory discrimination skills. She described literacy as reading with understanding and applied the same definition to musical literacy.

Another researcher, who found a “very strong correlation,” mentioned listening skills involved in both disciplines as well as the development of “tonotopic maps” in the auditory cortex of the brain. She also explained that children with musical training appear to have larger planum temporale and corpus callosum, both areas of the brain related to reading skills. Another interviewee explained that music is also a language whose written symbols are equivalent to written words. Both systems are read left to right and top to bottom, though music is more complex (the reader must read multiple staffs simultaneously. The three skills common to music and language: reading, listening, and analyzing. The fourth researcher also mentioned left to right reading, listening skills and auditory discrimination, but she added the dimension of rhythm, saying it is present both in music and poetry.

Question 2
How strong is this connection? How beneficial is the overlapping of a child’s development of these skills?

Deforia Lane, PhD likened the strength of the connection to a scale of 1-10. On this
scale, she said the inclusion of music would be a 10 (the highest). She adds, “The way music is used is directly related to the response or the outcome.” In other words, it could be a motivational factor, or it could even teach the child aspects such as hand-eye coordination. Sue Snyder, PhD agreed the connection is “very powerful.” She added an interesting hypothesis. Citing Frank Wilson, Snyder said his MRI studies have shown people reading words and then reading music. When they read music, the brain lighted up like a Christmas tree, while only one area lighted up when they read words. Snyder suggested that when children read words, they should be able to make connections in the brain to allow them to find the pathways to learn another way. She thought an increase in neural networks should open more pathways for learning. Assuming that reading music is a more complex task, says Snyder, reading words would come more easily. She concludes, music “absolutely positively would impact” literacy development. Another researcher, Sharlene Habermeyer, MA, found a similar phenomenon. She explained that due to the large amount of television and video games children are exposed to, “their auditory cortex is basically atrophied from lack of use and hence they exhibit learning challenges in reading.” She believed that because music “involves the entire brain and hence exercises all aspects of the brain” it has a beneficial effect on reading. Fourthly, Linda Neelly, PhD chose to answer this question philosophically. Nevertheless, her “philosophical” approach was completely aligned with the previous ideas, in that neural pathway growth leads to increased learning in all areas.

**Question 3**

*Does your research suggest that musical experiences, activities, exposure, training, etc. could positively impact a child’s development of literacy skills? To what extent?*

Snyder answered succinctly but definitively in response to this question, “Absolutely.”

Neelly explained that emotional, cognitive, and physical components are important in both music
and literacy. She continued that because children learn holistically, music would improve their literacy experiences. Habermeyer cited research by Tony Mickela (“Does Music Have an Impact”, prepared for the 1990 state convention of California Music Educators Association), which found that children who play a musical instrument have increased coordination, concentration and memory skills. Habermeyer continued, “All of those abilities will transfer to literacy and reading skills.” Coordination is related to tracking visually line to line, concentration is necessary to read, and “memory is essential in learning to read—they need to remember from day to day what the sounds of the letters sound like and what various words say.” Finally, Lane has worked with preschoolers in a Head Start program. These children, ages 3-5, were pre-tested on standard literacy concepts and then participated in a session (between 0 and 30 weeks) in which specific music therapy techniques were utilized to increase their literacy skills. Testing showed that scores increased in some of their picture recognition tasks as well as with alliteration tasks. Lane explained that rhyme seemed to be the hardest concept, apparently due to the age of the children.

Question 4

What musical activities do you believe would be most beneficial for a classroom teacher to implement to help with the literacy development of his/her students?

There were a variety of suggestions given by the researchers for implementing musical activities in the classroom. These ranged from using music as a tool for learning other subjects to simply incorporating “any” musical activities. Music enhances the brain and thus all other learning, said Habermeyer, so it will definitely enhance literacy development. However, she cautioned that rap and heavy metal music will actually harm the brain! Her other suggestions included playing music in the background as students study, and playing music for the children to march to at the beginning of the day—as a type of warm-up. (See Appendix C for some
specific resources for using music as a tool.) Snyder suggested that general classroom teachers should collaborate with music teachers to implement activities into their classroom, listening programs could be implemented in the school or classroom, and movement activities are also effective. Textbooks offer songs that can be used by teachers as well. She also explained that the level and aspects of musical implementation in the classroom are dependent on the teacher’s skill and comfort level. There are “three artistic processes”: creating, performing and responding to music. All three of these can be used as teachers are able to implement them. Neelly mentioned singing with children, engaging in vocal exploration, reading books and interpreting them with inflective voicing, and following familiar melodies left to right across the page. Another strategy is to “sing” books. She pointed me to the website “Exploring Links Between Musical and Literacy Development” (see Appendix C) for further ideas. Finally, Lane suggested using music to create an optimal learning environment as well as including rhythms and movement in instruction.

**Question 5**
*Do musical activities seem to enhance the development of initial literacy skills or strengthen existing literacy skills?*

One researcher replied, “Both,” another specifically mentioned only initial skills, while the other two gave qualifying statements, but implied that both could be affected. The conditions mentioned regarded the type of experience and the ability of the teacher to match the musical experiences with literacy experiences. So, in general, the researchers seemed to see potential for both initial and existing literacy skills to be enhanced through music.

**Question 6**
*Do you know of any specific examples from research or school projects that would demonstrate or lead to these conclusions?*
Sue Snyder, PhD said all of her research findings “from every implementation that we have done have shown that when teachers and children engage in integrated projects where music and literacy are woven together, that there are all kinds of positive outcomes.” Examples of these positive outcomes were increased test scores, more imaginative or social children, and increased attendance. Linda Neelly, PhD discussed one classroom with pre-K and kindergarten students, in which children would echo patterns on drums. They were also able to play the rhythm (syllables) of their names on drums. The teachers mentioned “in an impromptu manner” that such activities helped the students sound out words. When the children isolated a rhythm, put that rhythm on their bodies, and then transferred the rhythm to instruments, their literacy development seemed to improve.

**Question 7**

Do you have any further suggestions or additional comments that you wish to share?

In answer to this question, Snyder named poverty as one of the seemingly greatest problems for learning. She continued, music is very important because children come into the classroom with a language deficit. Lane cited Michael Thaut, of Colorado State University, as an expert in this field, and said that neurologic music therapy as a new trend, in which she had seen wonderful results in the use of music to teach a number of things. Thirdly, Neelly cited a workshop she had conducted on this topic. The information from her presentation, “Exploring Links Between Musical and Literacy Development” (Neelly, 2001), is available online on the MENC website. This document provides numerous examples of blending music with literacy experiences. Vocal exploration “is one of the first ways young children begin to develop innate musical, thinking, and language capacities. Books can provide many opportunities for vocal exploration.” Suggestions for encouraging vocal exploration include: using expressive voices,
vocally exploring environmental sounds, using manipulatives (sirens, scarves, etc.) (Vocal Exploration section, ¶ 1). Furthermore, Neelly says “singing, speaking rhythmically, and reading musically draws children into the convention of print while developing musical capacity.”

Suggested ideas for such “musical conversations” are:

- Sing a storybook, isolating rhymes and patterns in stories and adding simple instruments.
- Model that words and music sign meaning.
- Encourage children to chime in on small part of song or text (singing or speaking).
- Draw on familiar melodies and patterns as you “sing” books. (Musical Conversations section, ¶ 1)

Professor Neelly also says, “through much repetition of meaningful melodies and words, children begin to understand that words and music sign meaning” (Linking Words, Music, and Meaning, ¶ 1).
Discussion

The following table lays out the major points discussed by the researchers and teachers in the interviews. Though the questions for the researchers and teachers are not identical, the table is arranged to best facilitate comparison of the answers. A key is provided as a note to Table 2, which explains the symbols used to identify the number of each question in the table.

Table 2

Summary of Interview Data: Comparison of Teachers and Researchers

<table>
<thead>
<tr>
<th>Question</th>
<th>Teacher Responses</th>
<th>Researcher Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you found any connections or strong correlations between reading or literacy skills/development and musical skills/development? If so, what are some examples (specific skills, etc.)? (T-Q.1 &amp; R-Q.1)</td>
<td>Correlation found by 5:6 Examples: • Reading left to right • Tracking • Keeping a steady beat (as a predictor of reading ability) • Phonemic awareness • Recognizing words • Following words in a song</td>
<td>Correlations found by 3.4 Examples: • Reading left to right, and top to bottom • Rhythm • Auditory discrimination and listening skills • Analyzing • Melodic-like contours • Decoding sound process • Reading with understanding • Tonotopic maps in brain • Languages (with different symbols)</td>
</tr>
<tr>
<td>Example:</td>
<td>Examples:</td>
<td></td>
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<td>----------</td>
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<td></td>
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<tr>
<td>Connection but not cause and effect; songs seem to help with motivation and attention</td>
<td>Emotionally enriching</td>
<td></td>
</tr>
<tr>
<td>Repetition of songs allowing the child to listen and follow words to a new song</td>
<td>Cognitively enriching</td>
<td></td>
</tr>
<tr>
<td>Autistic children showed “dramatic improvement in areas they had been weak before having music.”</td>
<td>Physically enriching</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ideas included:</th>
<th>Ideas included:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choral experiences</td>
<td>Vocal exploration</td>
</tr>
<tr>
<td>Sing folk songs</td>
<td>Singing</td>
</tr>
<tr>
<td>Use songs to learn other curricula</td>
<td>Use music as a learning “tool”</td>
</tr>
<tr>
<td>Integrating music and instruments with literature</td>
<td>Interpreting books by inflecting voices</td>
</tr>
<tr>
<td>Active listening activities</td>
<td>Listening program</td>
</tr>
<tr>
<td>Use in routines</td>
<td>Warm-up (i.e. marching) activities with music</td>
</tr>
<tr>
<td>Instrumental ensembles</td>
<td>Movement activities</td>
</tr>
<tr>
<td>Solfege</td>
<td>Play background music</td>
</tr>
<tr>
<td>Kodaly chart reading</td>
<td>Create, perform, and respond to music (at level of teacher’s comfort)</td>
</tr>
<tr>
<td>Playing recorder &amp; Orff instruments</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two general answers given:</th>
<th>Answers Given:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both are enhanced</td>
<td>1 = “both”</td>
</tr>
<tr>
<td>Dependent on factors</td>
<td>1 = “initial only”</td>
</tr>
<tr>
<td></td>
<td>2 = Dependent on factors</td>
</tr>
</tbody>
</table>
Can you think of any specific examples that demonstrate or lead to these conclusions? (T-Q.5 and R-Q.6)

- Difficulty with steady beat = difficulty reading
- Motivation to read b/c of music
- Gets students’ attention
- Strong fluency skills increases singing ability
- Rhythm and syllables correlate to higher test scores
- Increased social skills
- Increased imagination

How strong is the connection between these skills? How beneficial is the overlapping of a child’s development of these skills? (T-N/A and R-Q.2)

General Consensus = strong correlation

Examples:
- Motivation
- Hand/Eye coordination
- Neural networking
- Brain exercise

Note: The questions above are adapted from those asked in the interviews, in order to facilitate ease of comparison between the two different interview forms. Key: T-Q refers to Teacher Question [#] and R-Q refers to Researcher Question [#]

As shown in Table 2 above, both the teachers and researchers found a correlation between music and literacy development of children. Though many of their examples given for specific skills were different, both groups mentioned tracking (or reading right to left) as well as rhythms. When asked for suggestions of activities general classroom teachers might implement, both the teachers and researchers proposed vocal experiences, listening activities, as well as a variety of others. In response to the question concerning whether musical activities seem to enhance initial literacy skills or strengthen existing ones, the general consensus was that both may be enhanced, though various factors should be considered. These factors appeared to be related to the experience both of students and teachers, and the quality of the activities implemented.

One interviewee repeatedly referred to empirical research evidence to answer many of the questions. Others provided personal experience or viewpoints, or as one called it, speaking
"philosophically." In general, the teachers and researchers appear most comfortable discussing music as a learning "tool" or as a motivating factor. While connections such as a phonemic awareness and music fall more easily in the research domain, using music as a learning tool or motivator may be less controversial, or require less formal, empirical evidence. Do not advertisers seem to have caught on to some of these less formal music-memory connections? They often use "catchy jingles" to induce potential buyers, knowing the tune will remain with viewers long after the commercial has played.

Comparison of Research with Interviews

The literature review section attests that empirical research has investigated the music-literacy connection. What has it shown? Though it is not without controversy, a connection does appear to exist. While some suggest that the results of music enhancing literacy or reading are small, and others say that music may simply be something good students do rather than the cause of their status, research has demonstrated many connections between these subjects. As the purpose of this thesis was to investigate any connections between music and literacy, that shall be the focus of the remainder of the discussion.

Brain research discussed found that both sides of the brain are involved in music and language (Armstrong, 2003). Another study found a connection between music training and differentiating "between rapidly changing sounds," which is also a necessary aspect of effective language use (cited in Associated Press, 2005, ¶ 7-8). This research correlates with auditory discrimination and decoding skills mentioned by some of the researchers in the interviews.

One neuropsychologist, Robert Zatorre, said, "I have very little doubt that when you're listening to a real piece of music, it is engaging the entire brain" (quoted in Jensen, 1998, p. 36).
This corresponds to a study mentioned in an interview with Sue Snyder. She referred to the work of Frank Wilson, which has shown brain scans of people reading words and reading music. When they read music, their brains lighted up like Christmas trees, while only one area lighted up when they read words. This thought is echoed in the interview with Sharlene Habermeyer, who says that music involves, and therefore exercises, all aspects of the brain.

Jensen (1998) lists three ways in which music can be used to further children’s learning development:

- As a mode of transporting information to our brains
- To stimulate the brain for other learning
- To ready the brain for a task

The first one refers to using music as a tool for learning, which is substantiated throughout this thesis both by research and in the interviews. This also is related to the idea of using music as a motivator, which was particularly reinforced by one of the music teachers interviewed. The other two items seem to be more closely related to the idea of music making neural connections, and thus the idea of the brain as a “Christmas tree.”

Studies suggest that exceptional learners may also benefit from music. For instance, Nierman (1996) concludes, “music study appears to aid language development,” regardless of the student’s age or ability level (Conclusion section). Douglas and Willatts (1994) second this, “While it is not being suggested that training in music is essential for good literacy skills, it does seem plausible to propose that children who have already been identified as having difficulty with reading might benefit from a structured [program] of musical activities” (p. 105). The idea of music helping language development of exceptional children was also mentioned by one of the teachers interviewed. She wrote, “A couple of autistic children have shown dramatic
improvement in areas they had been weak before having music. Something about music connects the neural cells to establish learning patterns in how to learn to read as well as learning in math and science.” Here the experts return again to the phenomenon of neural networking.

In addition to the above considerations, the research reviewed showed specific skill connections between music and literacy. These included rhythm, pitch, phonological awareness, phonemic awareness, speech, vocabulary, and prosody. Douglas and Willatts (1994) found “an association between rhythmic ability and reading” (p. 99). Snyder (2006) identified keeping a steady beat as a pre-reading skill, and Cornett (2003) said that learning rhythms leads to reading fluency. These findings are especially interesting in light of the Pre-K and Kindergarten classroom, mentioned in an interview with Linda Neelly, in which the children were able to play the rhythms (syllables) of their names on drums. The teachers found that these activities helped the students sound out words. When the children isolated a rhythm, put that rhythm on their bodies, and then transferred the rhythm to instruments, their literacy development seemed to improve. Thus both research and practice appear to coincide to promote rhythm as a vital part of music as well as literacy. Another teacher interviewed mentioned that she had seen a connection between children who had difficulty keeping a steady beat and had difficulty reading.

Despite apparently strong connections between rhythm and reading, some would argue that pitch discrimination plays an even greater role in the process (Anvari et al., 2002). Evidence found by Lamb and Gregory (1993), among others, suggests a strong connection between differentiating pitches in music and distinguishing frequencies in spoken sounds. Such pitch discrimination appears to be connected to phonemic awareness, which has been found to connect music and reading experiences. For example, one study showed that as children learned to distinguish between (three-note) chords, their phonics skills, ability to recognize words, and
ability to read improved (McMahon, 1979, cited in Lamb & Gregory, 1993). As shown in Table 2 above, both the researcher and teacher responses to question one included the idea of phonemic awareness and decoding sounds being related to both music and literacy development.

Prosody was also discussed as a factor that connected music and language. Jourdain (1997) refers to this as “the singsong of language” (pp. 272-273). One researcher interviewed spoke of melodic contouring as children develop vocally. Another mentioned vocal exploration in which children inflect their voices as a way to incorporate musical activities to enhance literacy development.

As one can see, information gathered from the literature review coincided with information from the interviews. It was found that music could be used both as a tool for learning (musicogenciceupadia) as well as a motivator for other types of learning. Brain studies showed a correlation between music and language centers in the brain, and music was found to be helpful for the language development of exceptional learners. Finally, both the literature review and interviews identified skills that overlap the fields of music and literacy.
Conclusions and Recommendations

This thesis proposed to answer a series of questions. Having assessed the data, I now attempt to respond to the questions originally proposed.

*Is there a connection between music and literacy development?*

There does indeed seem to be a connection between music and literacy development. However, the nature of this connection appears to be broad, and still somewhat elusive.

*What is this connection?*

Specific connections have been found by research, and many have been noted by classroom teachers. These specific connections include rhythm, pitch, phonological and phonemic awareness, speech, vocabulary, and prosody. However, more research is needed to substantiate these findings.

*Does the study of, or exposure to, music have a positive impact on children’s literacy development?*

Research does indeed demonstrate positive effects on children’s literacy development as a result of music study (or activities). Nevertheless, the degree to which music impacts literacy development is up for debate. As the controversy section demonstrated, there are arguments that may downplay the effect of music on literacy development. Therefore, additional research is needed to more affirmatively determine the type and strength of the connections mentioned here. One may draw conclusions about using music as a tool. In fact, common sense indicates this
connection. However, additional research is needed to validate the findings from the above-mentioned research. In spite of evidence in favor of this viewpoint, I do not propose that it would take the place of literacy instruction. Rather, using musical activities in the classroom is a valid way to strengthen children’s development. I suggest that further research may prove to strengthen the arguments in favor of a music-literacy connection, and may eventually prove the concerns or “controversies” less imposing.

How can elementary classroom teachers and music teachers use music to augment their students’ literacy development?

Ironically, the notion that music should be taught only in the domain of the music classroom is “rather unique, at least in degree, to the United States” (Cornett, 2003, p. 335). Though “music and movement can’t substitute for direct instruction in reading and writing […] they play an important role in developing literacy” (Van Gunten, 2006, p. 14). Thus, both are necessary, but what type of music is useful in developing literacy? An article by John M. Feierabend, PhD (1995), from the Hartt School, University of Hartford, explains that the type of music instruction children receive is critical to their development of musical intelligence. He says:

In schools where children learn ‘about’ music instead of ‘doing’ music, average scores declined as if they had had no music at all. Learning ‘about’ music uses logical/mathematical and/or linguistic intelligences, while singing and moving with music use and develop music intelligence” (“Nurturing the musical intelligence,” ¶ 11).

One teacher whom I interviewed, made the following suggestions in response to what teachers could do in the classroom:

After teaching [a class on integrating the arts into the classroom], I am convinced more than ever that music should be an integral part of every child’s daily routines. In
addition, I think that music can help children make vital connections to many other academic skills from singing the States Song to learn the states, to singing and dancing spelling words, to hearing the soulful voice of Marian Anderson and her journey for civil rights even in the field of the arts and music. The opportunities are endless if teachers have the courage and commitment to develop their lessons so that they provide strong links to all the arts including music and other academic areas. Many of the students in [the class] were amazed at how we used simple instruments to retell the story of the Animals and the Birds. They spoke of how they could remember each and every part of that story because they had to listen so carefully to know when to play their instrument. This was such a simple accommodation, yet a powerful one. It was just one instance where music could be brought into the curriculum in a very concrete way. I can attest to the fact that most teachers don’t know of these simple techniques. In today’s climate of testing and accountability, many teachers find it difficult to fit in these types of extras. Yet, I contend that the arts are fundamental to providing joyful places in which to learn. I include a clear and abiding reference to music in this statement. (P.C. Patrick, 2007)

Resource Suggestions

Appendix E contains a list of resources, which general classroom and music teachers may find useful for implementing with their students. These further suggestions may provide a starting point for implementing music and literacy in an effort to make the most of the music-literacy connection.
Bibliography


http://www.menc.org/networks/genmus/litarticles.html


Newman, A.M. (2006). *Sing your way to reading success*. Retrieved August 6, 2007, from http://www2.scholastic.com/browse/article.jsp?id=1508&FullBreadCrumb=%3Ca+href%3D%22%2Fbrowse%2Fsearch.jsp%3Fquery%3DSing+your+way+to+reading+success%26c%3D0%26c2%3Dfalse%22%3EAll+Results+%3C%2Fa%3E


*Nebraska Music Educator*, February 1996.


Appendix A: Letter to Teachers

Dear [teacher],

I am a senior student at the University of Alabama in Huntsville, pursuing a degree in Elementary Education with a minor in music. I am currently conducting an Honors research project exploring potential or existing connections between music and literacy development. In addition to the research part of my study, I plan to interview elementary school general music teachers to get their ideas about the connections between these two fields from their own teaching experience.

I have attached a copy of the “interview” form that outlines the questions I would like to ask each teacher. I have also attached an abstract, which explains the project in greater detail.

I am requesting your assistance in this study. If you would be willing to participate in a telephone or personal interview using the questions on the attached interview form, please call me (256-653-8549) or email me (parke@email.uah.edu) to schedule a time for the interview. Your participation will enhance this project, which is the culmination of my work to receive the Honors diploma at UAH.

Thank you for considering my request. I look forward to hearing from you soon.

Sincerely,
Emily Park
Appendix B: Letter to Researchers

Dear [researcher],

I am a senior student at the University of Alabama in Huntsville, pursuing a degree in Elementary Education with a minor in music. I am currently conducting an Honors research project exploring potential or existing connections between music and literacy development. In addition to the research part of my study, I plan to interview researchers whose work sheds light on this connection.

I have attached a copy of the “interview” form that outlines the questions I would like to ask each researcher. I have also attached an abstract, which explains the project in greater detail.

I am requesting your assistance in this study. If you would be willing to participate in a telephone or personal interview using the questions on the enclosed interview form, please call me (256-653-8549) or email me (parke@email.uah.edu) to schedule a time for the interview. Your participation will enhance this project, which is the culmination of my work to receive the Honors diploma at UAH.

Thank you for considering my request. I look forward to hearing from you soon.

Sincerely,
Emily Park
Appendix C: Survey of Teachers

Teacher’s Name: __________________________ Date: ______

Demographics:

Gender: Male Female

Ethnicity: ________________________________________________

Where does he/she teach? (state, district) __________________________

Itinerant teacher or one school? If multiple, how many? __________________________

Type of school: Title I, etc. __________________________

Grades taught (K-5/K-6/etc.): __________________________

How long in current position? __________________________

Prior/Additional Teaching Experience: __________________________

Degree(s) and other training: __________________________

Questions: (To be answered on a separate sheet)

1. In your teaching, have you noticed any connections between children’s development of musical skills and literacy development? If so, what are some examples (specific skills, etc.)?

2. Do you have any particular examples from your teaching that demonstrates this—any stories of children who showed dramatic improvements in literacy skills/development as a result of musical activities (training, etc.)?

3. What musical activities do you believe would be most beneficial for a classroom teacher to implement to help with the literacy development of his/her students?

4. Do musical activities seem to enhance development of initial literacy skills or to strengthen existing literacy skills?

5. Can you think of any specific examples from the classroom (yours or another’s) that demonstrates or leads to these conclusions?

6. Do you have any further suggestions or additional comments that you would like to share?
Appendix D: Survey of Researchers

Researcher’s Name: _______________________________ Date: ______

Demographics:

Gender:  Male    Female

Ethnicity: __________________________________________

Teaching Experience:

Degree(s) and other training: _____________________________

____________________________________________________

Research Specialization: _________________________________

____________________________________________________

Any/what previous teaching experience? ______________________

Grades and subject(s) taught: ______________________________

Current job description: _________________________________

How long in current position? ______________________________

Questions: (To be answered on a separate sheet)

1. In your research, have you found a strong correlation between reading or literacy skills and musical concepts or skills? If so, which ones?

2. How strong is this connection? How beneficial is the overlapping of a child’s development of these skills?

3. Does your research suggest that musical experiences, activities, exposure, training, etc. could positively impact a child’s development of literacy skills? To what extent?

4. What musical activities do you believe would be most beneficial for a classroom teacher to implement to help with the literacy development of his/her students?

5. Do musical activities seem to enhance the development of initial literacy skills or strengthen existing literacy skills?

6. Do you know of any specific examples from research or school projects that would demonstrate or lead to these conclusions?

7. Do you have any further suggestions or additional comments that you wish to share?
Appendix E: Resource List

(Note: All websites working as of 9/10/07)

Articles

“How to Kit: Music and Literacy.” Published by NWT Literacy Council. Available at:

http://www.nwt.literacy.ca/~famlit/hwtokit/menu.htm


[Chapter 4 is available for free as a .pdf download from this website.]

Websites

Songs for Teaching: The Definitive Source for Educational Music: www.songsforteaching.com


ArtsEdge by The Kennedy Center: http://artsedge.kennedy-center.org/artsedge.html

Arts Education Ideas: www.aeideas.com

Educational Cyber Play Ground: Music Education

http://www.edu-cyberpg.com/Music/Home_MUSIC.html

Phil Tulga’s Website: Music Activities and Arts Integration Lessons—Connecting music to reading, math, and science. http://www.philtulga.com/resources.html

“Exploring Links Between Musical and Literacy Development” by Linda Neely, PhD

http://www.menc.org/networks/earlyc/naeyc/naeyc.htm
Music & Literacy

Books


The following books are available through www.aeideas.com:

*Total Literacy: The Arts in the Literacy Classroom* (emergent & early readers)

*Interactive Arts for Total Literacy* (grades K-2 and 2-4)

*Birds* (early & emergent readers—six-week thematic unit written by teachers in Alaska)

Music

“Sing a Song of Science”—CD

“The Alphabet Operetta”—alphabet and blends tool

“My Favorite Musical Numbers”—math learning tool

“Water Music” by G.F. Handel—great background music!

Other

Sue Snyder (Arts Education Ideas) conducts workshops on integrating arts and literacy.

See her websites: www.aeideas.com for information.

Database: The following copy of the Table of Contents and Introduction are found on a CD that I developed prior to this thesis. Though the database is by no means “finished,” the CD contains the “complete work-in-progress” from my Honors project. (See the following Table of Contents and Introduction from this project.)
Table of Contents

The CD:

Introduction

Table of Contents

Spreadsheet

Sheet One: Complete Work-in-Progress

Sheet Two: Title, My Notes, Curriculum Connections, Unit, Musical Concepts

Sheet Three: Only the "Completed"

Introduction

From the earliest age, I have loved to read. Having discovered the endless possibilities of adventure available to me through literature, my reading spanned from Nancy Drew mysteries to classics such as A Tale of Two Cities. My passion for reading has often been limited due to time constraints, but it has also grown with me, to now include a variety of non-fiction book genres as well. Likewise, my love for music has grown over the years. From the age of nine, when I first began taking piano lessons, my musical experiences have expanded to include voice lessons, Kindermusik and Orff Schulwerk training, and finally a music minor. I have found such joy in the depth of beauty that can be expressed by music. As a teacher I have an obligation set before me. I must give to my students, expanding their horizons and opening their eyes to Beauty. I must teach and encourage them to strive for excellence, and in so doing I must give them something worth striving for. Though life is not all beautiful music, nor is it etched in gold between fine leather covers, the principles found in good literature speak to us, and music helps to uplift our souls. It is this that draws together these two great Arts—Music and Literature.

The original idea for this project came from my childhood piano teacher and piano pedagogy teacher, Mrs. Peggy F. Baird. Showing me a similar project that she had completed in graduate school, she suggested that I compile an annotated bibliography with a more recent collection of books. I eagerly began the project, but the more I looked, the more books I found. Certainly
this is a blessing, except that it means the project is incomplete. The list contained here is by no means comprehensive. It is a work-in-progress. Though I have annotated over 100 books with musical connections, I have chosen to also include others for which I often have little more than a title and author. As I began my research under the guidance of Dr. Mary Piersma, we decided to include sections for curricular connections for each book as well. This additional aspect excited me even more, as I was able to see more connections for using this list in my own classroom. I hope in future to continue adding to this project, and the inclusion of these many additional books will enable me to do this.

Much research seems to be available concerning the connection between music and math. Nevertheless, in my own research I have come across a fairly large body of evidence that points to a similar connection between music and literacy development. This discovery has increased my interest in conducting this annotation project and has further propelled me to continue pursuing this topic in another research project this summer. In this second study, I plan to investigate claims that music instruction helps to increase children’s literacy development. At present I do not know where it will lead me, but I expect that it may have some connections back to this smaller annotation project.

Emily H. Park
April 2007