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Music Integration and Self-Efficacy Among Middle School Teachers

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MUSIC INTEGRATION AND SELF-EFFICACY AMONG MIDDLE SCHOOL
TEACHERS

by

Cassandra L. Weiss

A Dissertation
Submitted to the Graduate School,
the College of Education and Human Sciences
and the School of Education
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

Middle school teachers have a difficult task of finding new and creative ways to help their students achieve academic success. Research has shown that integrating music into regular academic classes has tremendous results. Music has the ability to help students relax, memorize, and engage, using their whole brains. Self-efficacy is an individuals' belief in their ability. One's level of self-efficacy can play a major role in one's motivation to carry out certain tasks.

Despite that music has many benefits in the classroom, it if is not being used, the students will not benefit from it. Low musical self-efficacy could be the reason teachers are choosing not to integrate music in their classrooms. Musical self-efficacy can be changed with the help of musical training and the encouragement from school administrators

The study sought to analyze the relationship between music integration and musical self-efficacy among middle school teachers across the United States. An electronic survey was distributed electronically via social media websites. Among the 150 participants, a positive correlation was shown between the two variables.

School administrators are encouraged to find ways to train middle school teachers on using music so that they may have a higher level of confidence in their abilities to use music in their academic instruction. Middle school teachers are encouraged to seek out new and fun ways that music can be used to help their students.

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DEDICATION

Self-efficacy is formed during childhood when a person is told they are valued and capable. I would like to dedicate this dissertation to my grandparents, Lawrence and Gerline Lee and my parents, James and Ruth Walley, for constantly building self-efficacy in all of your children. Without their guidance, I would not have overcome many obstacles in my life. My mother is also responsible for being my first music teacher and providing to me a passion for music. I would also like to thank my children Cody, Kyle, Kara, and Landon for being my inspiration and motivation. I am so very thankful to my husband, Steven Weiss, for supporting me through this process.

Most importantly, I would like to dedicate every breath of my existence to my Heavenly Father, who is ultimately responsible for making every good thing happen. “Praise God from whom all blessings flow.”

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CHAPTER I - INTRODUCTION

In order to achieve success in today's diverse classrooms, a teacher should employ many different instructional strategies (Gambrell, 2014). The incorporation of music in the regular classroom has been found to be an effective teaching strategy (Tillman, 2013). In this study, the researcher examined if and how academic teachers of middle school use music in their classrooms in order to improve teaching and learning and if there is a relationship between this and their musical self-efficacy.

Music and Learning

Throughout American schools, teachers are encouraged to implement best practices (Gambrell, 2014) to meet the needs of various learners' intelligences. Since the publication of *Frames of Mind: Theory of Multiple Intelligences* (2011), emphasis has been placed on the need for teachers to use various forms of intelligence in their instruction in order to increase student engagement in the classroom. One of those types of intelligences is musical intelligence. Gardner defines musical intelligence as the intellectual capacity to perform, create, or appreciate music, including an understanding of pitch, rhythm, and timbre. According to Gardner's definition of intelligences, music may be a way of acquiring new information or even solving problems (Gardner, 2011).

Research from the National Science Foundation (2015) has shown positive correlations between the use of music and other cognitive skills. Listening to music, singing, playing an instrument, and other rhythmic activities have had positive influences on the human brain such as improved visual/special abilities as well as hemispheric connections in the brain (Jenson, 2005). There has been information to show that

correlations exist between specific subject content and music. For instance, song lyrics aid with the retention of information (Tillman, 2013).

Research indicates that music improves student performance in many areas such as reading suggesting that there is a correlation between a child's ability to read and the ability to discriminate pitches accurately (Groff, 2016). Music also has a positive impact on mathematics (Jensen, 2005). Schaerf (2018) found that music helps to stabilize mental and physical well being which can facilitate an increase in attention span and help students attain a deeper state of concentration. In this way, the use of music intensifies a learning experience creating a firmer bond between the information and one's memory, which can make learning more relevant and interesting. Because music in the regular classroom helps regulate the brain's response system, it enhances the learning process (Gazzaniga, 2008).

Teacher Self-Efficacy

The study focused on the musical self-efficacy of the teacher in the academic classroom. According to Bandura's *Self-Efficacy: The Exercise of Control* (1997), self-efficacy is the belief that one can carry out the actions necessary to perform a certain task. Bandura states that self-efficacy plays a role in one's behavior and motivation. People who doubt their abilities are more likely to avoid particular tasks requiring those abilities, regardless of whether or not they are actually lacking the particular skills necessary. According to this theory, a person's belief in their ability is a better predictor of one's behavior than their actual capability (Bandura, 1997).

Cherry (2017) wrote that teachers might spend more time teaching in subject areas or objectives in which their self-efficacy is higher. The opposite is also true. In the

subjects where his or her self- efficacy is not high, a teacher may actually avoid instruction. Cherry indicated that teachers who perceive themselves as lacking in ability to teach in certain styles would avoid that style (Cherry, 2017).

Self-Efficacy in Middle School

Self-efficacy may change depending on the circumstances surrounding an individual. Previous experience, a stressful environment, or self-esteem issues can cause an individual to feel less secure (Bandura, 1997). Furthermore, the grade level in which a teacher is assigned could create a more relaxing or stressful environment because of the developmental needs of the students (Houff, 2008).

Music that is integrated into a middle school curriculum should be grade level appropriate (Jenson, 2005). In middle school instruction, students develop skills and ask questions at a higher academic level than elementary students. Therefore, the level of instruction should also be more challenging than at the elementary level in order to be effective. A teacher that possesses a high level of self-efficacy teaching elementary level songs, such as nursery rhymes or call and response method songs, could feel differently about teaching music to middle school students (Houff, 2013).

The learning process of a middle school student is also different than that of elementary students because of the growth of the brain. The maturation in the brain changes the learning process. The brain of a middle school aged adolescent has increased from the brainstem to the top level of the prefrontal cortex, affecting both memory and motivation. The chemical responses in the brain of a middle school student due to environmental and hormonal changes may increase stress during certain activities. Healy (2012) states that the attention span of a child begins developing at infancy and increases

beyond the preschool and school age years. Therefore, maintaining the focus of a middle school student would require an increase in rigor of musical instruction in order to make it meaningful and engaging. These differences in students would influence the self-efficacy of a teacher who is attempting to incorporate music into a lesson because the particular music would need to be interesting and relevant to a middle school student in order to maintain engagement (Healy, 2012).

Statement of Problem

Despite the preponderance of research that shows the benefits of music in the classroom, music is not always being used. If the self-evaluated efficacy of a teacher's musical intelligence is the reason for the lack of musical instruction, the students are being indirectly influenced and the instructional ability of a teacher is affected. While some information exists regarding the self-efficacy of elementary school teachers and the degree to which they administer musical instruction in their classrooms, there is currently a lack of information regarding the relationship among middle school teachers.

In a study of the use of music instruction in elementary classrooms, Lee-Holmes (2008) observed that teachers who valued the importance of music in the classrooms used music more frequently. It was also noted that some teachers reported that if they had more adequate musical knowledge and training they would be more likely to use music more often. Lee-Holmes also identified that this is a topic for further research. While research exists to help understand the relationship between self-efficacy and the integration of musical instruction in elementary schools, there is currently a lack of information about in regards to middle schools (Lee-Holmes, 2008).

Purpose of the Study

The primary purpose of the study was to examine the relationship between teacher self-efficacy regarding music instruction and the degree to which music is integrated in the classroom. The study allowed middle school teachers to rate their own musical self-efficacy and their use of music in order for the relationship to be examined. Chan (2010) states that teachers need to identify their own strengths and under developed intelligences in order to achieve success. By recognizing their own personal strengths and weaknesses, teachers may enhance classroom practices (Chan, 2010).

When school administrators understand the rationale behind the importance of music being integrated into the curriculum, necessary changes could be made. Professional development sessions in schools districts could be improved by providing musical training to teachers that applies to their subject area. School administrators could also increase their incentives to teachers who utilize music integration and verbally encourage them to do so more frequently.

Research Question and Hypothesis

The primary research question for the study is: What relationship exists between the middle school teachers' musical self-efficacy and the degree to which music is integrated in academic instruction. In other words, does the cognizance of middle school teacher's possession of musical intelligence indicate implementation of musical instruction in the curriculum more often than those teachers without belief in personal musical ability?

Procedures

The study analyzed the relationship between two variables: middle school teachers' musical self-efficacy and the degree of music integration in the academic classroom. Data was collected through a three-part instrument that was distributed electronically to middle school teachers across the United States via social media. A link to the questionnaire was posted on multiple websites designed for middle school teachers such as "We Are Teachers" and "Middle School Teachers Unite." The instrument was administered to 150 teachers who reported to have taught sixth, seventh, or eighth grade non-music classes such as science, reading, math, art, and special education.

The first and second parts of the instrument were derived from a previous study used with elementary school teachers (McCullough, 2009). The focus in the first section of the instrument was to gather general information from the participants such as length of teaching experience, education level, and subject/grade level. The second portion of the questionnaire consisted of Likert-type questions that sought to measure the degree of music integration in the teacher's academic instruction

The third portion of the instrument was intended to measure the teachers' musical self-efficacy. The Music Performance Self-Efficacy Scale (MPSE) was created by Zelenak (2011) using Bandura's theory on constructing self-efficacy scales and was tested by Zelenak to determine validity and reliability. The author of this portion of the instrument believed that music educators should include building the self-efficacy of musicians. Zelenak designed this scale for the use of music educators to get a true measurement of a person's musical self-efficacy. In addition, the scale measures the sources of self-efficacy so that the researcher can determine areas of necessary growth.

For instance, administrators in a school district may use this to determine a possible professional development seminar for their staff members that targets areas reported as low self-efficacy (Zelenak, 2011).

Although the study was primarily quantitative, the data was enriched with an open-ended question at the conclusion of the survey. This portion provided participants the opportunity to freely describe how they used music in their classrooms and any other comments about their musical self-efficacy that they chose to provide. This allows educators to gain knowledge of classroom strategies currently being used and better understand the motives behind the lack of musical integration that exists.

Definition of Terms

Cognitive Processes- Thinking processes involved in the acquisition, organization and use of information (Bandura, 2007).

Curriculum- The subjects comprising a course of study in a school.

Engagement- The action of participating in the academic instruction.

Integrated Instruction- The application of skill from more than one academic discipline simultaneously through a central theme.

Music Integration- The active use of songs, dance, or rhythmic activities to teach concepts pertaining to a particular subject matter (Jensen, 2005).

Motivation- The intensity and persistence of effort (Bandura, 1994).

Self-efficacy- People's beliefs about their own capabilities to produce effects.

Multiple Intelligences- Eight categories of intellectual ability conceived by Howard Gardner. These include visual/spatial, verbal/linguistic, logical/mathematical,

bodily/kinesthetic, interpersonal, intrapersonal, naturalistic, and musical/rhythmic (Gardner, 2011).

Musical Intelligence- Having the ability the use musical abilities (Gardner, 1993).

Value- The worth or importance placed on a concept, relationship, or object.

Delimitations

The researcher established the following delimitations for this study: The survey used to gather information for the study was administered to teachers electronically on a voluntary basis. The instructional grade levels for the middle school teacher participants were grades six, seven, or eight.

Assumptions

The researcher assumed that the participants answered honestly regarding their self-efficacy of musical talent and degree of music integration. The researcher also assumed that the participants were aware that the music associated with movement exists as an instructional tool.

Significance of the Study

By determining if there is a relationship between musical self-efficacy and music integration, the study allows teachers to evaluate their own strengths and weaknesses in the classroom and find new ways present core subject to students. School administrators can use this information to justify new professional development training and to help their teachers find new ways to differentiate instruction. According to Schmidt (2008), if academic teachers do not use music during instruction, the educational experience of the student may be incomplete.

Summary

The researcher will attempt to determine the relationship between middle school teachers' musical self-efficacy and the degree to which they use music in their academic curriculum. The results will contribute to the body of literature related to musical self-efficacy and the use of music instruction in the non-music classroom as well as encourage administrators to provide musical training for faculty members who would like to utilize music more often.

CHAPTER II – REVIEW OF THE LITERATURE

“Music is a more potent instrument than any other for education.” - *Plato*

In order to achieve academic success, educators may try to better understand the way the human brain works. Although there are multiple theories that exist about the learning process, this particular study focuses on the Multiple Intelligences Theory (2011) developed by Dr. Howard Gardner, which includes the idea of musical intelligence. Physiological processes in the brain of an adolescent human, the effect of music on the brain, why a middle school teacher is different from other teachers, and how educators can improve the middle school educational process will be the focus of the current study.

The Adolescent Neurological Learning Process

Adolescence is considered to be the period of time between childhood and adulthood, loosely defined as the years between 11 and 19. This stage of life is typically includes increased cognitive abilities, social sensitivity, increasing independence and is considered a critical time of development. Adults are sometimes perplexed, struggling to make sense of the stereotypical adolescent behaviors such as increased peer allegiance and general risk taking. At the end of the 20th century, it was common to associate adolescent behavior with “raging hormones” or classify such behaviors as that which exists in the teenage brain. Neuroscience has determined that the brain does change dramatically during adolescence (Blakemore, 2008).

Johnson (2012) indicates the brain continues to change throughout life, but there are huge leaps in development during adolescence and just because a teenager appears as large in appearance as an adult they are still in the development period that will affect

the rest of their life. New cognitive skills and competencies will develop in abundance as a teen goes through growth spurts (Johnson, 2012).

In humans of all ages, the exterior structures of the brain may appear to look like wrinkles. Although there are differences in the minor wrinkles of each brain, the larger folds are the same. The individual parts are known as the frontal, temporal, occipital, and parietal lobes, collectively called the cerebrum. “Cerebrum” is Latin for brain. Each lobe is responsible for performing different functions. The exterior portion of the brain also includes the motor cortex, which is responsible for voluntary body movements, and the cerebellum, which coordinates involuntary movements (Gazzinga, 2008).

While monitoring higher-order thinking, problem solving, and regulating the emotional system, the frontal lobe is the executive control system of the cerebrum. The frontal lobe also contains the self-will area that can change depending on one’s emotional state. Trauma to the frontal lobe can cause permanent personality and behavior changes. Teachers in the educational system often focus on the frontal lobe because this is where memory is located. MRI studies of adolescents and post adolescents show that the frontal lobe continues to mature into early adulthood. These studies also reveal that the frontal lobe of an adolescent is not fully operational because of the inability to self-regulate emotions (Sowell, Thompson, Homes, Jernigan, & Toga, 1999).

Although adolescents and adults use the same brain area in social situations, adolescents tend to use more of the pre-frontal cortex than do adults. When one attempts to understand the intentions or feelings of other people, one uses the pre-frontal cortex of the brain, sometimes referred to as the “social brain.” The social brain is an overly active area for adolescents, which is particularly sensitive to complex social signals. Johnson

(2012) states that due to the increase in brain matter, the teenage brain becomes more interconnected and gains processing power. Adolescents begin to have the decision-making skills of an adult as they mature. Until maturation, their decision-making skills are influenced by their emotions because their limbic system is more active than their more rational prefrontal cortex (Blakemore, 2008).

The interior structures of the brain include the brain stem, and the limbic area. The central core of the brain regulates attention and emotional response. Educators pay most attention to the structures located in the limbic area, the thalamus, hippocampus, and amygdala because of the critical roles in the processing of information and long-term memory (Gazziniga, 2008). The development of the amygdala along with hormonal changes may also increase feelings of rage, fear, aggression, excitement, and sexual attraction (Blakemore, 2008).

In addition, trillions of brain cells control other functions and activities in the brain. The brain cells are divided into two types: neurons and support cells, called glial (Greek for glue). The majority of the brain and the entire nervous system are comprised of these neurons. Although they are different sizes, approximately 30, 000 neurons could fit onto the head of a pin. Each of the neurons also has tens of thousands of dendrites (Greek for branches) coming out of the center. The axon (Greek for axis) transmits impulses from one neuron to another and can move from one end of a human body to another in two-tenths of a second (Posner & Sheese, 2008).

Between each dendrite and axon is a small gap called a synapse ,Greek for joined together. The neuron sends out impulses through the axon to the synapse where

chemicals are released called neurotransmitters. Examples of neurotransmitters are acetylcholine, epinephrine, serotonin, and dopamine (Posner & Sheese, 2008).

In one study (Blakemore, 2008), the number of dendritic spines in the prefrontal cortex was numerically monitored. As humans enter the second and third decades of their life, the number of dendrites tends to decrease indicated the brain is still undergoing changes during adolescence. Humans have an excess of brain connections as children yet almost half of them are lost during adolescence. Experiences in one's life can influence which connections are kept and which are strengthened, which indicates the adolescent years are very important to the formation of the brain.

While infants appear to have an over-abundance of neuronal connections, scientists have discovered that there is a second burst of neuronal sprouting that happens right before puberty at about age 11 for girls and age 12 for boys. In 2005, *The Nature Neuroscience* published brain images that indicated the brain is structurally reorganizing from a human's adolescent years until the age of 25, with smaller changes still continuing throughout the remainder of one's life. Adolescent experiences, from reading novels to learning to drive, shape new brain formation (Jenson, 2005).

Adolescence is intellectually, physically, socially, and hormonally the most developmental stage full of drastic transformations (Wahlstrom, 2010). Heredity, environment and hormones such as estrogen, progesterone, and testosterone influence the maturing of the adolescent brain. Because the limbic system and prefrontal cortex is not yet fully developed, adolescents are more likely to become involved with offensive crimes and other irresponsible behavior. More morphological and functional changes occur in the adolescent brain than any other time in a human's lifespan.

Educators are especially interested in understanding the physical and chemical reactions that take place when the neurons send impulses to each other leading to the formation of memory. Sousa (2016) states “learning is the process by which we acquire new knowledge and skills; memory is the process by which we retain knowledge and skills for the future.” (p. 29). Just as muscles improve with exercise, the brain improves with use. Learning does not increase brain cells, but it does enlarge the size of the brain cells and the ability to form complex networks (Sousa, 2016).

When the brain stores new information, it is physically and chemically altered and strengthened. Every time an individual learns a concept, anatomical changes are made that cause the brain to be individually unique to other brains. Learning and retention may occur in different ways involving the brain, nervous system, and environment (Gazzaniga, 2008).

In order to accomplish long-term retention, an individual must view the new skill as relevant or suitable. Pressuring a student to memorize a skill is a tremendous obstacle in means of retention. To appease the teacher, a student may hold onto required information long enough to pass a test and then it is lost. When a student gives personal meaning to a skill, or is in some way interested or enthusiastic about learning it, a student is more likely to store it in long-term memory. Teachers who want to accomplish this goal must focus on helping the student form a personal relationship with the skill (Gazzaniga, 2008).

Teachers’ attempts to introduce new skills are sometimes hindered by the mental state of their students. For example, as a child becomes an adolescent, their social anxiety increases (Annals of the New York Academy of Sciences, 2004). Teenagers may be more

likely to take risks due to their need for peer approval. Johnson (2004) states that teenagers are very concerned with looking fitting in. Adolescent brains are also more wired to seek rewards, such as money or other prizes for personal accomplishments. However, this also makes teenagers more vulnerable to experimenting with drugs, getting into fights, or other types of harmful activities.

Hormone changes at puberty cause an increase in oxytocin, a bonding hormone that affects the limbic systems and is linked to a feeling of self-consciousness. These feelings can change the experience that a student undergoes in a classroom setting or the response to a teacher's instruction. Not only does the brain change during adolescence, the human brain evolves over time (Nixon & Britt, 2016).

As educators are designing curriculum for the 21st century student, it is important to keep in mind that students today come with a different set of expectations about learning than students did even one decade ago. Schools are also being required to provide different services than in the past. Some of the required services include things that used to be taught in the home by the family that now are not. For example, teachers may be required to teach students tactics for dealing with stress, making friends, peer pressure, etc. With the ever increasing amount of technology, educators often notice that students have shorter attention spans and become bored more easily. Today children have been exposed to rapid sensory experiences, such as advanced video games, and may balk at the traditional paper-and-pencil type worksheet in the classroom. Sleep deprivation, over-extended extracurricular schedules, and the modern diet also account for changes in today's student (Houff, 2013).

“Educational leaders are in the unique position of making the appropriate adjustments to schools and classrooms that can accommodate the changing brains” (Sousa, 2016 p. 12). As we learn more about the modern brain, we must change how we teach. Schools should become more exciting and dynamic places in the eyes of the students. According to Gardner (2011), the use of music is one way that new skills can be introduced in the learning procedures.

Music and the Brain

Before discussing the influence of music on the brain, it is important to have a working definition of the term “music.” The most basic definition of music is that it is “organized sound.” Although there are other definitions that may also apply, for the sake of the study, we will begin by defining music with the definition used by Daniel J. Levitin in his book, *This is Your Brain on Music: The Science of a Human Obsession* (2006). Levitin writes that some people consider only classical music from the great masters to be valid. Examples are music by Beethoven, Debussy, and Mozart. However, this study will include many different genres of music as long as it contains the basic fundamental elements of loudness, pitch, contour, rhythm, tempo, timbre, and reverberation. From a neuropsychological perspective, Levitin believes that any type of music, from traditional jazz to Bob Dylan, can affect our brains, minds, and spirits (Levitin, 2006).

Research has shown that music not only effects the mood of an individual, helping to reduce stress and calm him or her during an intense experience but that it actually increases the brain’s cognitive abilities (Deutsch, 2012). Listening to certain types of music can help someone learn by helping that person focus. As a student listens

to music, their attention to details in their environment increased. Listening to music also helps a person retain learned information and increase attention span. Not only can music create a highly focused learning environment, but also when put to rhythm and rhyme, musical elements can help with recalling information. Unique raps and melodies can offer a way to learn new information in an exciting way. (Deutsch, 2012).

Music can influence feelings and energy levels. Listening to music can put people in a happy mood, help people relax, and focus. Research provides guidelines for the intentional use of music in the classroom for all ages. Specifically, music helps people learn because it creates a positive state of mind, sets a positive atmosphere and builds anticipation. Music also facilitates multi-sensory experiences that are conducive to learning and enhances imagination.

Levitin (2012) states that the brain responds positively to music as they undergo surgery. In a study, patients were randomly assigned to either take anti-anxiety medicine or listen to music. The patient tracked the level of their own anxiety as well as levels of the stress hormone cortisol. The results showed that the patients who listened to music had less anxiety and lower cortisol levels than people who took drugs. Levitin cautioned that this conclusion was based in only one study and that more research needs to be conducted, but also indicated that music is less expensive than drugs and doesn't have dangerous side effects. Leviton's research also mentioned that another study found brain regions involved in attention and memory is consistently more active when listening to music.

One of the reasons music influences our mood is because of an element of music called pitch. From early childhood, humans are trained to interpret certain pitches to

mean different things. For instance, the rise in the pitch of one's voice at the end of a sentence indicates that there was a question being asked. It is a learned behavior in each culture that specific sounds indicate certain moods or feelings. Some sequences of pitch evoke calm feelings while others evoke excitement. Because of this, composers use different instruments to communicate emotion. The high-pitched piccolo may represent flighty, happy moods because of its shrill, birdlike sound. In *Peter and the Wolf*, Prokofiev uses a flute to represent the bird and a French horn to represent the wolf. The lower pitches of a tuba or a double bass would be used to represent solemnity or weight. This is especially true in Wagnerian music drama (Levitin, 2012).

Another element of music that affects our mood is called timbre. The timbre of a sound is something that humans are also trained to decipher from an early age. This is the feature that allows the purr of a kitten to sound different from the roar of a lion. It is also the feature that allows someone to distinguish between voices that we recognize and even tell what mood a person may be in or if they are coming down with a cold. We have learned to recognize the soothing timbre of raindrops as something that relaxes us while the shocking timbre of thunder may be frightening. Neuro-scientific tests have been used to reveal a way to read brain waves and detect whether or not a person is enjoying the music of which they are listening. Although similar patterns of pitch and rhythm are found in Bach's music, some people found the timbre in rock-n-roll music more enjoyable. The difference in timbre was what created the feeling of enjoyment. In the past, Western music has been mainly dominated by pitch. In the last 200 years, the use of different timbre has become more important (Levitin, 2013).

The timbre of an instrument not only helps us to determine what instrument is being played without use seeing that instrument, but it also helps us to determine the implied emotions as the timbre is higher or lower in pitch. Levitin writes that when a singer uses the top of the vocal range it conveys a type of emotion that is vastly different than that in the lower portion of the vocal range (Levitin, 2012).

Other elements of music include rhythm (duration of sounds) and meter. Both of these are found in our everyday speech and can improve memory. The three most common meters in Western music are: 4/4, 2/4, and 3/4. They “tell” the listener how to feel the beat and the underling pulse is felt. There are also notable brain differences when listening to different meters that involve the cerebellum and neural detections that synchronize inside of our bodies. When lyrics are set to rhythm, the rhyming and syllabic stress on certain beats can cause our minds to remember complex phrases more easily than when they are only spoken out of rhythm (Levitin, 2013). The use of call and response lyrics have also been shown to be a useful tool in the classroom as well as rhythmic musical games because our brains respond to the anticipation of the upcoming line or phrase. Likewise, the use of repetition through song is one of the best ways to learn information. Repeating a phrase of information in different ways forces the brain and ear to listen to the piece differently (Gazziniga, 2008).

Human bodies have natural rhythms that exist inside them. Our heartbeats, breaths, and other movements are rhythmic in nature (Campbell, 2009). Likewise, the rhythms and tempo of a song can change those natural patterns. These changes can calm or excite us. For instance, Mozart’s *Rondo-Allegro ma non troppo from Serenade no. 9 in D major* (K. 320) may help to calm the listener. A student may become entranced with

repetitive section of the rondo and settle down easier. On the other hand, a song with a quicker tempo, such as Leopold Mozart's Minuet from *Toy Symphony* gets faster and faster in tempo and will liven things up a bit. A song with a slower tempo can help relax our heart rates and alleviate stress. For example, *Andantino Grazioso* from Mozart's Symphony No. 18 (K. 130) has been shown to relax a younger child and soothe them after the stress of studying or exercising.

Rhythm in music has also been shown to help master reading skills. As a student is learning to read, he is introduced to complex patterns of speech, which require the ability to hear words internally. After years of playing listening games as a child, the student is more ready to develop inner speech abilities. They The teacher could keep a soft aping rhythm going to help the student read out loud of play a soft musical accompaniment (preferably a string instrument rich in overtones) to guide the student's speech patterns. By lowering the lights and playing soft music by Mozart, Vivaldi, or Bach in the background a teacher can add a soothing experience to the student who is learning to read out loud (Campbell, 2009).

In neurological scans, human brains process rhythm differently than melodies. Thaut (2016) found that when the brain is processing rhythms and meter "right, or bilateral, areas of frontal, cingulate, parietal, prefrontal, temporal, and cerebellar cortices engaged mechanisms sub serving somatosensory and premotor information (p. 211)." Basically, different types of rhythms cause the body to feel different ways. Some music makes you want to dance, tap our feet, or cause our heart rates and breathing patterns to sync up with the music. Even if we ourselves do not dance or move to the music, we visually imagine someone or ourselves doing so (Levitin, 2013).

The loudness of music is another element that changes the way our brains react. Many people have personal preferences as to the volume level of their music. The louder the music is, the more the brain is “firing” to process it. Some people enjoy their music extremely loud, over 15 decibels because it creates a sense of thrill or excitement, such as being at a concert. Other people may have oppositions to loud sounds such as airports or rifle ranges. When the neurons in their brains are firing at their maximum potential, an unpleasant or alarming feeling may occur (Levitin, 2013). Just as the use of music with varied tempos, music with different dynamic levels in the classroom can be useful when educators are trying to calm down a classroom full of students, or wake them up and energize them (Campbell, 2009).

Adolescents are more distracted by sound than are adults and therefore need quieter environments when they are trying to learn a new concept. Studies have shown that in a typical classroom, students are only able to recognize about 70 percent of one-syllable words because of interfering sounds that are loud enough to distract the student. It is important to use music as a tool that aids the learning process and not as another distraction that contributes to a lack of focus. Soothing music can calm a classroom and prepare the students for a quiet listening time. Background music that is too loud can actually harm a classroom setting (Campbell, 2009).

Although music is made of multiple elements, composers rarely isolate each of the elements individually (Gazzaniga, 2008). In fact, the composer is seeking a combination of pitch, rhythm, melody, volume, and meter, etc. to accomplish a desired result. And although each of these elements affects our brains in some way, the combination of them all together also interacts with our brain activity. From the earliest auditory stage when

music is heard, the cerebellum begins to break down and analyze the music. The cerebellum then communicates with the amygdala, the emotional control center in the frontal lobe, and the music is then processed by the mesolimbic system, which releases neurotransmitters such as dopamine. This rush of dopamine is similar to other types of pleasurable activities that humans experience and is responsible for giving us “chills” when we hear music that we enjoy. In fact, our brains actually start creating an anticipation of this dopamine up to 15 seconds before we actually experience it. The great composers almost seemed aware of the longer the anticipation before an expected feeling, the greater the experience was. Therefore, many songs incorporate the use of varying patterns, modulating tempos, and withholding melodic resolutions. The longer the musician withholds the desired result, the more rewarding the emotional result will be (Gazzaniga, 2008).

One of the biggest ways music affects a human is its effect on memory. Memory is not stored in one centralized location in the brain, but instead spread out through the neurological pathways. When one hears music, a large portion of the brain is activated all at once and this stimulates our memory. Because of its dynamic ability to stimulate memory, music is often used to improve the memory of patients living with Alzheimer’s disease or other types of dementia (Sousa, 2016).

The way music engages all four lobes of the brain and is connected with emotional responses in the brain, it is a powerful tool for developing young minds. “Our auditory systems and our nervous systems are indeed exquisitely tuned for music,” says neurologist Oliver Sacks in his book *Musicophilia*. “Much of this is due to the intrinsic characteristics of music itself and much to special resonances, synchronizations,

oscillations, mutual excitations or feedbacks in the immensely complex, multilevel neural circuitry that underlies musical perception and replay” (Sacks, 2009, p. 201).

Music has the powerful ability of helping the brain to process multiple types of information simultaneously. It has been said that the sum of the brain’s energy (the mind) is greater than its parts. As an adolescent begins to integrate more and more information and emotions, it becomes important for him to be able to parallel process, or multi-task, similar to the way music is processed. Music is therefore a powerful tool to help the brain be able to work on a more complex level (Campbell, 2009).

Using Music to Teach the Adolescent Student

“What the teacher is, is more important than what he teaches.” – Karl A. Menninger.

Leblanc (2009) wrote that good teaching is “as much about passion as it is about reason p. 127”. He stated that teaching is about motivating students to learn, teaching them how to learn, and finding ways to make learning meaningful and relevant. He added that the good teacher would find ways to make the learning experience memorable and that it is very important teachers have passion, a sense of humor, and continue to stay on top of their game (LeBlanc, 2009). Although teachers are often evaluated and measured on their success in the classroom, it is obvious that they may have different styles and personalities (Jenkins, 2011). Jenkins indicated that his experiences have shown him that the most successful teachers are those who feel natural and at ease while teaching. He prefers teachers who make teaching look easy, are creative, and have a sense of confidence in the classroom (Jenkins, 2011).

Scott (2013) thought that adolescents, by their sheer nature, are skeptical and they can see through phoniness in others. A middle school teacher is more successful in reaching their students when they are authentic and genuine to their true personalities. Over time, the students are able to build trust with the teacher and this inspires them to take their own risks. The teacher can accomplish this by sharing background information or personal experiences with the students. Sharing your motivation for teaching, your priorities, and your academic journey is important to building the necessary trust with your students. Scott further stated that teaching middle school students includes many obstacles of which teachers have no control. She tells other teachers, “You can only control YOU and how you react to all those factors (p. 50).

Humans by nature have a need for validation (Scott, 2013). This is true for the students in a classroom and the teacher of that classroom. Although a teacher should not seek to be popular with their students, he or she still seeks a sense of respect. When things in a classroom go wrong, emotions can run high and low, causing a teacher to feel frustrated and angry. Teachers may try to avoid any type of situation that could cause embarrassment or a feeling of inadequacy. Scott says, “I always tried to be cool, calm, and calculated in my dealings with my students. I was always very firm in establishing guidelines and expectations, as well as clarifying my role. But humor, creativity, and compassion were ever present to soften the edges.” She concludes that her greatest revelation is that the success of a classroom all comes down to the individual teacher and their ability to effectively teach (Scott, 2013).

Johnson (2013) wrote that the best middle school teachers are those who can “let their hair down and have fun with the students (p. 94)”. He states that middle school

students thrive on relationships and respond well to praise. While he notes that routine and structure are important in the middle school classroom, so is the element of surprise. He tells of an instance when there were several students in the back of the room talking without permission so he asked them all to stand up and point to random objects in the classroom. The students all did this and it allowed him to gather their focus once more. Similar situations have been used where a teacher may include a song such as “Head, Shoulders, Knees, and Toes,” or other songs that include movement (Campbell, 2009). Johnson (2013) notes that the best classroom discipline plan was to have an adequate lesson plan but it is often necessary to have surprise distractions as well.

Middle school students are different from other ages because of the stage of adolescent brain development and puberty. Sacks (2009) observed that middle school students have a need for movement, unlike high school students who are more content sitting for longer periods of time. Although middle school students are still connected to the memories of their childhood, they are also seeking approval in the process of becoming young adults. She described them as various ranges of emotional and physical development. The successful middle school teachers are those who have more patience with the students and who were more nurturing, or at least tolerant. Middle school students are easier to encourage to take risks and to think “outside of the box.” Johnson (2013) wrote that it is also important for middle school students to have mental breaks throughout their time in the classroom. He suggests using movement or sound, such as chimes, rain sticks, or music. Breathing exercises also aid to gain control of the focus of a classroom (Johnson, 2013). Some types of music can alter breath patterns as well (Campbell, 2009).

Because of the developmental process occurring in the brains of middle school aged students, it is necessary to incorporate non-traditional teaching styles into the classroom. Tillman (2013) wrote that music is an ideal form to be integrated into mathematics instruction. He states that this is a way to change the attitudes of the students towards mathematics and create a positive learning experience that is non-routine. This type of integration was based on Gardner's theory of multiple intelligences. According to Tillman, if a student has trouble understanding basic principles being taught, the teacher should find alternative ways to teach it. Tillman and his associates conducted research with teachers and the integration of music in their mathematics lessons. The results of the study concluded that after a five-week intervention of music-related mathematics lessons, students demonstrated significant improvement in their mathematic skills (Tillman, 2013).

Groff (2016) indicated that reading and music are both perceptual acts and that reading any language requires that one pay close attention to selective details, similar to playing music. To listen to music or to read aloud involves common perceptual abilities. Therefore, it is predictable that music will help some children learn to read. Groff, like Tillman, starts with the idea that music can create a more positive attitude in the learning environment, thus improving the success of the classroom goal. A student's auditory perception is enhanced because of listening to music and this assists in the student's ability to learn to read. Nicholson (2015) found that students who are taught to match pitch with letters of the alphabet scored significantly higher on reading readiness scores than those who had no such instruction. It was once again noted, however, that an educator must be cautious to not allow music to be a distraction, especially to a student

who is easily prone to distraction, such as the adolescent aged student or student with autism.

Self-Efficacy

A strong sense of self-efficacy can motivate and inspire an individual to be successful in many different areas of his or her life. The way someone thinks, feels, or behaves can change their willingness to engage in certain activities. According to Bandura (1997), someone with a strong sense of efficacy is more willing to try new activities because they believe in themselves and their ability to succeed. While attempting these new activities, the person gains valuable skills and experiences that actually help them succeed. The person with a strong sense of self-efficacy believes that even if they fall it was due to a lack of effort; therefore, they attempt the skill again and try even harder (Bandura, 1997).

Self-efficacy and self-confidence is not exactly the same thing (Seifert, 2011). Self-efficacy is a belief in one's ability to perform certain tasks such as passing a test, driving, public speaking, etc. Self- confidence is defined as the combination of one's personal worth and their likelihood of succeeding. For instance, one can believe that he or she has value as a person but not believe that they are capable of accomplishing a specific task. Self-efficacy affects every aspect of one's life, including one's health.

As person with low self-efficacy is someone who doubts their own capabilities and will then shy away from new tasks that they feel may be a personal threat (Bandura, 2015). Or, if they do attempt the activity, they do not give it their all and give up easily. With the first sight of difficulties, the person with low self-efficacy will stop trying to

avoid the risk of embarrassment. Bandura states, “there are countless attractive options for people to not pursue because they judge the lack of capabilities for them (p. 24).

One can also have a very high sense of self-efficacy that is not in proportion with their actual ability to perform a task (Swarzer, 2008). This could lead to job stress and burnout in the work place. The higher this self-efficacy is, the more active the efforts which may not lead to results. This could also be the reason a person does not prepare or train as well for a task.

Extremely low self-efficacy can result in a person believing that he or she has no chance of completing a task and will not even attempt it (Swarzer, 2008). This leads to what he called learned helplessness. In his experiment, animals in a cage were given electric shocks and were not able to escape. They were then moved to another cage that was possible to escape and were again given electrical shocks. Because they were not able to escape the first cage, they didn’t even attempt to escape the second cage. Swarzer wrote that the optimum amount of self-efficacy that is desirable is slightly above ability where people are most encouraged to tackle challenging tasks and gain experience.

A person may have a high sense of self-efficacy due to social encouragement in his life. Having someone believe in you and tell you that you can succeed will raise one’s level of self-efficacy. However, it is easier to cause someone to have low self-efficacy by convincing them that they are not competent than it is to build up someone’s self-efficacy. Bandura (1997) writes, “People who are persuaded verbally that they possess the capabilities to master given activities are likely to mobilize greater effort and sustain it than if they harbor self-doubts and dwell on personal deficiencies when problems arise (p. 90)”.

The person with a high sense of self-efficacy believes that he is capable of enduring stress even when obstacles occur (Bandura, 2016). This person has a more positive outlook on situations and believes that regardless of what situations arise, they are capable of overcoming them. The person with high self-efficacy is physically healthier and less stressed. Bandura continues, “Mood also affects people’s judgment of their personal efficacy. Positive mood enhances perceived self-efficacy, despondent mood diminishes it (p. 27)”.

Self-efficacy can be gained by verbal social encouragement but it can also be gained personally by mastery experiences (Bandura, 2015). It is important to note that Bandura found that for the person who experiences easy successes that come very quickly, his or her self-efficacy can be damaged when they do eventually experience failure. Instead, a series of small failures can encourage someone to work harder and earn their success, thus building confidence in themselves. This success arouses motivation in a driven person and becomes a source of positive reinforcement. Bandura (2016) wrote that this type of self-efficacy controls our motivation to begin difficult tasks and helps one to evaluate the necessary steps needed in order to achieve a goal.

Another source of self-efficacy is a social model. Humans are inspired when they see someone similar to them succeeding and this encourages them to try harder. Bandura (2015) writes, “Seeing people similar to oneself succeed by sustained effort raises observers’ beliefs that they too possess the capabilities to master comparable activities to succeed. (p. 3)”. Even if a person attempts to achieve a task and fails, the emotional state involved with this type of thinking motivates a person to “bounce back”, recover, and try again (Bandura, 2016).

Having a high sense of self-efficacy can cause a person to be more successful even if they do not actually possess the necessary skills (Bandura, 2016). There are circumstances where someone may attempt something because they believe in themselves, but actually make a “gross miscalculation.” But, the person with high self-efficacy has more stamina to endure the activity and learn the necessary skills in order to achieve success.

White (2012) wrote about famous authors including Gertrude Stein and James Joyce who were able to override repeated rejections that occurred early into their work. This early rejection fueled their motivation and because of their self-efficacy, they continued until they reached success. Other successful people such as Vincent Van Gogh and Igor Stravinski were discouraged throughout their lifetimes but continued to believe in themselves and their work.

Self-efficacy in musicians is the most powerful indicator for musical success than any other (Zelenak, 2011). If a musician holds a high level of musical self-efficacy, he or she would be more successful in music regardless of the amount of time spent mastering the skill. He stated that this applies to other areas such as leadership, academia, and athletic ability. Not only did Zelenak conduct research on his participants regarding their musical self-efficacy, but he also found that the same concept was true with their mathematical self-efficacy and their self-esteem self-efficacy.

Other music education researchers have explored the concept of musical self-efficacy. McPherson and McCormick (2003) asked students (N=349) 9-18 years of age to answer questions before participating in a performance exam. They found that self-efficacy had a greater influence on the success of the performance than did intrinsic

value, general self-efficacy, or self-regulation. These researchers reported that this finding recognizes the importance for students to enter a music examination with a positive belief in their own capacity to succeed. They went on to say “students who display high self-efficacy expectations will be more likely to achieve in a difficult performance area, such as formal music examination, than their peers who display the same level of skill, but lower personal expectations (p. 37).”

Self-Efficacy and the Middle School Teacher

The personality of a teacher determines their personal preferences and teaching styles. The individual thinking style determines how they behave, lead, and communicate with others. Adams (2017) states that the personal style has the ability to encourage or discourage desirable behaviors in others. It is important for a teacher to understand his or her strengths so that they can compensate for their weaknesses. For instance, a right-brained teacher may be more apt to lack structure or left-brain thinking may suppress the flow of creativity. Once teachers gain an understanding of their personal thinking styles, they should seek out people whose thinking styles are different from their own in order to improve upon teaching abilities. The feedback that is given from someone opposite us is valuable in order to improve the quality of one’s teaching and creates a more whole-brained approach. Furthermore, a teacher’s self-efficacy can also affect their teaching style (Adams, 2017).

The American Psychological Association defines self-efficacy as an individual’s capacity to execute behavior necessary to produce specific performance attainments (Cherry, 2017). Self-efficacy “reflects confidence in the ability to exert control over one’s own motivation, behavior, and social environment (p. 12)”. Cherry stated that self-

efficacy plays a role in whether or not one accomplishes a goal in his or her life. In other words, self-efficacy is a person's belief in his or her own abilities.

Self-efficacy can impact a person's behavior and motivations. Bandura (2016) explains that most people can list goals that they want to accomplish in life but that they also believe that actually accomplishing these goals are not as simple. This is due largely in fact to that persons' self-efficacy.

Bandura (2015) wrote that people with a strong sense of self-efficacy view challenges as tasks that can be mastered and recover quicker from setbacks and disappointments. People with a weak sense of self-efficacy avoid challenges, focus on personal feelings and lose confidence quickly. Self-efficacy is something that is developed during a person's childhood and continues to develop throughout life as people experience new situations. According to Bandura, there are four sources of self-efficacy: mastery experiences (performing a task successfully), social modeling (watching someone else perform a task successfully), social persuasion (when someone else convinces you that you can perform a task successfully), and psychological responses (when stress or anxiety interfere with performing a task.) Bandura also wrote that self-believe does not always ensure success, but that self-disbelief always ensures failure.

Hoy (2000) introduced the idea of teacher self-efficacy: the confidence that a teacher can make a difference in student learning. This concept explains that a teacher may believe that students are capable of learning and that some teachers may have an impact on those students, but that those individual teachers are not capable of doing it themselves. Over the years, researchers have discovered that teachers with a high sense of self-efficacy are open to new ideas and are more likely to experiment with new

teaching strategies. Hoy adds to this by stating that administrators can contribute to a teacher's self-efficacy by giving pep talks and highlighting effective teaching strategies. Although a person's self-efficacy is generally formed throughout past experiences, it can change depending on the type of environment and the setting in which a teacher is teaching (Hoy, 2000).

In a research experiment (Baker, 2008) involving science students, self-efficacy was found to play a large role in student achievement. Specifically, the encouragement and motivation from the instructors highly influenced a group of students as opposed to a control group that did not have the same instructors. The researcher reported that he believed teacher personality could provide a dramatic swing in student success (Hoy, 2000).

Self-efficacy affects musicians as well as teachers. Researchers from the Psychology of Music have found that regardless of the amount of practice that a musician has endured, the self-efficacy of that musician affects the outcome of the performance. In other studies from the same source, self-efficacy was found to be the most important predictor of achievement in musical performances (Deutsch, 2012).

Musical Intelligences

Gardner (2011) identified seven different intelligences of which humans may exhibit. According to his theory, "we are all able to know the world through language, logical-mathematical analysis, special representation, musical thinking, use of the body to solve problems or to make things, and understanding of other individuals, and an understanding of ourselves (p. 92)". Gardner says that these different types of intelligences challenge an educational system by breaking the assumption students all

learn the same way. He states that society, as a whole would be better served if teaching is differentiated and assessments were given in a variety of ways. It is possible for a person to have more than one of these intelligences in any combination. For example, because they have a higher level of musical intelligence does not mean they cannot possess traits from another form of intelligence.

For the purpose of the study, only musical intelligence will be defined. A person who demonstrates musical intelligence is one who shows sensitivity to rhythm and sound, loves music, and is also sensitive to sounds in their environment. People who obtain musical intelligence often seek patterns in their environment, are drawn to sound, easily memorize phrases, and enjoy singing and dancing. They use patterns to remember things and they may be skilled at playing several instruments. The musical intelligent person is zealous about music and has the ability to remember multiple songs. A person with musical intelligence has a high level of understanding of musical structure, notes, tone, and rhythm.

CHAPTER III - METHODOLOGY

The primary purpose of the study was to examine the relationship between teachers' musical self-efficacy and the degree to which music is utilized in academic classrooms. Middle school teachers in the study rated personal self-efficacy based on past and current musical experiences. The same teachers reported the frequency and methods in which music was used to enhance instruction. The researcher analyzed the relationship between these two factors.

Participants

Research for the project surveyed 150 middle school teachers across the United States who have taught core academic subjects such as math, science, history, English, and Spanish. Some of the participants were retired teachers who once taught these traditional subjects. Special Education teachers, Physical Education teachers, and Art teachers were included and encouraged to participate. The participants were NOT music teachers. For the purpose of the study, middle school included 6th, 7th, and 8th grades.

The teachers were contacted via social media (Facebook) pages that are dedicated to educators in the middle school such as "Middle School Science Teachers" and "We Are Teachers", etc. The researcher created a post on the aforementioned sites explaining the survey and inviting volunteers to participate. The participants had access to an internet link directing them to the Qualtrics survey as an explanation of the study.

Instrument

The initial component of the survey instrument included general information questions about the participant. The first question asked the participants to give consent for personal information to be used in the study. The questionnaire then asked

participants to give consent for personal information to be used in the study. The questionnaire then asked the participants to indicate the grade level taught or are currently teaching, education level, subject, and years of experience.

The second component of the instrument was the Musical Self-Efficacy Scale created by Zelenak (2011), designed to measure musical self-efficacy. The author of the instrument suggested that one's musical self-efficacy is built upon previous musical experiences, whether positive or negative. Based on Bandura's method for creating self-efficacy scales, the instrument used a scale of 1-10 for 24 questions, with 1 being the lowest and 10 being the highest, that seek information about various experiences, verbal/social persuasion, and physiological state. The original instrument was correlated with results from Pajares' (2007) Writing Self-Efficacy scale in order to establish validity.

The third component of the instrument consisted of Likert-type scale questions developed by McCullough (2009) to measure the degree to which teachers use music in academic instruction. These questions asked the participants to rate, on a scale of 1 to 5, the way music is used in various ways and situations during classroom instruction.

Although the study was primarily quantitative, the data was enriched with an open-ended question at the conclusion of the study, which allowed participants to explain how music was used to enhance teaching and allowed each of them to describe previous musical training. Those surveyed were not required to answer the last question in order to complete and submit responses.

Cronbach's alpha coefficient was used to determine the internal reliability. A high score indicated greater reliability. An alpha index of $\geq .7$ was considered acceptable.

Procedures

After obtaining IRB permission from the University of Southern Mississippi, the instrument was uploaded into Qualtrics and an Internet link was derived. The researcher created a post on multiple social media websites designated for middle school teachers. Some of these websites required permission to be granted prior to a post being made public, at which point, request was granted. The researcher's message introduced the study and asked middle school teacher teaching core academic subjects within the United States to volunteer as participants. The Internet link to the Qualtrics survey was attached for the participants in order to submit information.

Data Analysis

After the successful completion of 150 responses, the researcher used SPSS software to analyze the data in order to examine the relationship between the two variables: middle school teachers' musical self-efficacy and the degree to which music was integrated in classroom instruction.

A bivariate analysis was sought between the two variables using Pearson's correlations. Other descriptives such as level of education and years of experience were examined. The responses from the open-ended question were recorded in order to formulate conclusions for the purpose of the study. Missing data was handled with a linear trend at point. After looking at a histogram, the decision was made to not to use the mean because the distribution of data was slightly skewed on each item. SPSS was used to determine reliability, means of scores, and subscales.

The instrument consisted of a general information section and two other components. The mean score was computed individually for the second and third

components and then the overall mean was computed again using these two components to determine one score.

CHAPTER IV – RESULTS

The study analyzed the relationship between two main variables: the degree of music integration among middle school teachers and the musical self-efficacy of instructor in a middle school. The data for the study was collected electronically via social media across the United States in October 2018, for approximately 3 weeks (N=150).

Descriptive Data

Frequency distributions were completed with the collected data using SPSS software. The initial portion of the instrument was comprised of questions to gather general information about the teachers such as years of experience, primary teaching assignment, and level of education.

Of the 150 participants, 32.46% primarily taught 6th grade, 31.58% taught 7th grade, and 35.96% taught 8th grade. The largest group, 27.19%, of the participants had been teaching 20 years or more, 18.2% had been teaching less than five years, 15.79% taught 6-10 years, 21.05% 11-15 years, and 17.54% taught 16-20 years. The majority of the participants, 59.65% had earned a Master's degree in their field while 32.45% reported to have a Bachelor's degree, 6.14% held a Specialist degree, and 1.75% held a Doctoral degree.

Questions 6-12 of the instrument were based specifically on music integration among the middle school teachers who participated in the study. When asked to describe previous musical training, 37.72%, the largest portion, indicated participation in instrumental or voice lessons and learning to read music prior to the age of 12. Of the participants, 21.05% reported having been exposed to instrumental or voice lessons after

the age 12. In the study, 28.07% of the participants received no musical training of any type, 13.16% reported minimal singing experiences but did not learn to read music.

The survey asked the participants to evaluate how well previous educational coursework prepared them to use music. An overwhelming number of participants, 64.04%, indicated no music education courses were taken while completing a college degree. Some participants, 18.42%, reported that the music education course did not adequately prepare teaching music. And other participants, 12.28%, felt the music education course was sufficient preparation to include music. Only a small amount of .88% of the participants felt music coursework provided excellent foundations to prepare for music instruction.

The participants were asked to select the least favorite and favorite subjects to teach. The majority of the participants, 20.18%, selected Spelling as the least favorite and 31.38% selected Science as the favorite subject. In regard to music integration, 7.02% indicated that teaching music was the least favorite subject but only 5.25% selected music as the favorite.

In regard to music integration, the survey requested the participants to indicate the value of music as an integral part of instruction. The smallest group of 2.63% gave music a rating of “no importance” and 20.18% reported music as having “little importance.” The participants who felt music was “moderately important” were the largest group at 39.47% while 32.46% selected music integration to be “significantly important.” Finally, 5.25% of the participants rated music integration as being “extremely important.”

When asked how much time was spent on instruction that included music, 46.5% reported that music was not a part of instruction and 35.9% reported to use music “very

little.” Teachers using music “less than other subjects” made up 11.5%, and “about the same as other subjects 3.5%. The only group that reported to use music “more than other subjects” was 2.63%.

The second portion of the instrument was comprised of 10 questions to determine the degree of music integration among the participants. The survey addressed classroom practices related to music using a Likert scale of one to five. One the scale, one represented *Statement does not describe me at all* and a five represented *Statement describes me exactly*. The following table shows the means for each of the questions concerning degree.

Table 1: Music Integration	
<u>Type of Music Integration</u>	<u>Mean of Participants</u>
1. I regularly use music in the classroom to set the tone.	2.65
2. I regularly use songs and/or chants to teach or reinforce information.	2.60
3. I am knowledgeable about the benefits of using music as a part of classroom instruction.	2.39
4. I am very comfortable integrating music, songs, and rhythmic activities into my instruction.	2.35
5. Students in my class are encouraged to create songs about information in subjects other than music.	2.01
6. I regularly use music as a means of providing differentiated instruction for my students.	1.96
7. I am very comfortable integrating musical concepts and terminology into my instruction.	1.84
8. I regularly use music strategies during instruction in subjects other than music.	1.81
9. Students in my class have regular opportunities to create music or rhythms.	1.66
10. I regularly teach concepts in music for transfer.	1.54

As shown in Table 1, a mean of 2.39 conveys that teachers reported having knowledge about the benefits of using music as a part of classroom instruction. The highest mean of 2.65 revealed that teachers regularly use songs or chants in regular instruction. A mean of 2.35 indicated that the teachers are comfortable integrating music, songs, and rhythmic activities in instruction. All means reported were that were less than 2.25 provides evidence that the occurrence of music integration was minimal and translates to “very little.” However, none of the means reported were greater than 3.14, which represent moderate usage.

The third portion of the instrument represents the second variable, which determined the musical self-efficacy of the participants. Based on a Likert scale of 0-10, the participants rated their self-evaluated experiences in music. A rating of 0-2 was considered “Low Self-Efficacy”, 3-6 was “Moderate Self-Efficacy”, and 7-10 was “high Self-Efficacy.”

<u>Question</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>
1. I have had positive experiences performing music in the past.	44%	24%	32%
2. I have had positive experiences performing in large ensembles.	48%	20%	32%
3. I have had positive experiences performing solo or in a small ensemble.	58%	15%	27%
4. I have had positive experiences performing simple music.	46%	19%	35%
5. I have had positive experiences performing complicated music.	64%	13%	23%
6. I have overcome musical challenges through hard work and practice.	54%	17%	30%

Table 2 (continued)

7. I have used a practice routine to help me prepare for performances.	48%	19%	33%
8. I have improved my music skills by watching professional musicians who are similar to me.	70%	10%	20%
9. I have used other music students as models to improve my performance skills.	72%	14%	14%
10. I have compared my performance skills with those of other people whose musical abilities are similar to mine.	70%	13%	17%
11. I have watched students of similar ability as me perform a piece of music and then decided whether I could or could not perform the same piece.	77%	13%	10%
12. My friends think I am a good performer.	69%	20%	11%
13. Members of my family believe I perform well.	59%	28%	13%
14. Performing makes me feel good.	56%	19%	24%
15. I enjoy participating in musical performances.	57%	15%	28%
16. I do not worry about small mistakes during a performance.	74%	18%	7%
17. I have positive memories of most, or all, of my past musical performances.	48%	21%	31%

As indicated in Table 2, the participants were consistently classified as having low musical self-efficacy. Zelenak (2011) created this scale based on Bandura's self-efficacy theory that our past experiences, comments from others, and personal worries

create our self-efficacy in any area of our lives, including music. The participants above indicated a lack of positive experiences in musical performances as well as very little to no compliments from friends and family and a feeling of inadequacy with musical ability.

Research Question and Hypothesis

The primary research question in the study sought to analyze the relationship between the music integration and musical self-efficacy among middle school teachers. The hypothesis stated that a positive correlation would exist. The second and third components of the instrument represented the two main variables: (1) the degree of music integration utilized by middle school teachers (2) the musical self-efficacy reported by the participants. The mean score was gathered from each construct and then the mean was computed again to determine one final score. Reliability was checked using Cronbach's Alpha. The following information was determined:

Table 3 Reliability Statistics for Music Integration and Musical Self-Efficacy		
	<u>Cronbach's Alpha</u>	<u>N of Items</u>
Music Integration	.914	10
Musical Self-Efficacy	.980	17

Table 4 Descriptive Statistics					
	<u>N</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>	<u>Standard</u>
<u>Deviation</u>					
Music Integration	150	1.00	5.00	2.06	.77087
Musical Self-Efficacy	150	.00	10.00	4.665	3.00932

A Pearson's correlation was used to analyze the data to determine if a relationship exists between the two main variables. The Pearson's correlation revealed there is a significant correlation between the degree of music integration and the musical self-efficacy of the participants ($p = .442$).

The open-ended question at the end of the instrument was optional and allowed the participants to add comments and personal experiences. Out of 150 participants, 14 offered a response. The remaining 136 were left blank. They were categorized by the researcher into three groups: 1) participants reporting positive musical experiences 2) participants reporting desires to play as well as appreciate music, and 3) participants who were angry to even be asked to comment on their musical abilities.

The first category of responses consisted of 19 participants who responded in a similar fashion and described positive musical experiences. These teachers made comments such as "I have always enjoyed music" and "I have always been a musician." Some of the participants described how many years were spent engaging in piano lessons or performing in vocal/instrumental ensembles and the importance of being a part of them. Several still play music in churches and communities indicating that music is still of great importance. The narratives in this group of responses were the longest and contained positive memories of childhood musical experiences. Some of the participants reported an eagerness to incorporate music in current classrooms and described strong desires to know more of how to integrate arts into the curriculum. Very few of the

responses included specifics as to HOW music was being used to enhance learning. One teacher did report that music was used often to teach Spanish through the use of singing songs in Spanish such as “Head, Shoulders, Knees and Toes.”

The second group of responses to the open-ended question had the fewest amount of comments with 10 participants stated having a love of music and an appreciation of the art form, yet regretting not having the opportunity to pursue it. Some said that music is played in the classrooms to set the tone and that listening to music is enjoyable but that there was no musical talent or ability.

The third category of responses was the largest and consisted of 16 participants who wrote in a very similar manner which seemed both angry and resentful. Many of these participants wrote things similar to “science teachers should not be asked if they have had musical experiences.” Several other participants who responded stated that the research was poorly constructed because it was “obviously targeted towards music teachers” despite that the original survey request clearly stated that it was for non-music teachers. One of the participants commented at length stating there must be a “secret motive” of the survey to force regular-academic teachers to teach music instead of hiring professional music teachers and explained at length how this is unfair to academic teachers because it added to the already demanding list of tasks.

CHAPTER V – SUMMARY

The primary purpose of the study was to examine the relationship between music integration and musical self-efficacy among middle school teachers in the United States. Within the study, the researcher sought to answer the question: Does musical self-efficacy influence the degree to which middle school teachers use music in core academic instruction? The hypothesis for the initial question proved to be correct: there was a positive correlation between the two main variables.

Within the month of October 2018, the survey was administered electronically via social media to middle school teachers throughout the United States. A link to the questionnaire in Qualtrics was posted on various social media websites with a written request for participation seeking middle school teachers teaching 6-8th grade, non-music subjects to participate. The study included 150 middle school teacher volunteers who reported to have taught subjects such as reading, math, special education, science, and foreign languages. At the conclusion of the survey, some of the teachers responded with personal comments.

After analyzing the data, the researcher found several major findings: 1) the middle school teacher participants seldom use music as a part of academic instruction, 2) the middle school teachers participants rated themselves as having very low musical self-efficacy 3) the middle school teachers indicated valuing music as a means of instruction although music was not frequently used.

Discussion

The general information portion of the questionnaire sought to discover how many years the participants had been teaching. The largest group of these participants

indicated a teaching experience of 20 years or more. According to Bandura (1997), self-efficacy is something that is normally developed during a person's childhood. Although self-efficacy can be influenced during the adult years, these teachers reported to have used a minimal degree of music despite their length of time in the classroom. This could indicate that there is currently no music training or staff development in place to change the current level of musical self-efficacy. It also indicates that regardless of the amount of years of experiences in the classroom, the teachers have never sought out training independently in order to advance personal musical skills.

The majority of the participants in the survey reported to hold a master's degree in education or higher. The largest group of participants in the study also reported to have received little or no musical training in college curriculum or did not feel it was adequate in preparation for using music in instruction. The lack of musical training could have contributed to the overall low musical self-efficacy that was reported by the participants. According to Zelenak (2011), individuals must feel confidence in their ability to perform a task before it is attempted.

The results of the second portion of the questionnaire reported the degree to which the participants used music in academic instruction. Although the use of music integration was overall low, the teachers who did report using it mainly reported playing music in the background to set the tone. This type of music integration is typically considered the easiest because it does not require a large amount of skill to be able to play a recording or sing along with a pre-written chant/song. Teachers are more likely to use skills that are comfortable and easy to accomplish (Chan, 2003).

The smallest among of participants reported to have used music concepts for transfer to other subjects or to have used music strategies during instruction in subjects other than music. This type of music integration would require a deeper level of music knowledge and previous musical training. Teachers devote more time to teaching skills when a sense of self-efficacy is higher (Riggs & Enoch, 1990).

A significant portion of the participants reported having knowledge of the benefits of using music as a part of classroom instruction. If a teacher has a negative attitude towards a subject or believes it has little to no value that the teacher will spend little time using it (Morgan, 2008). The results indicate that the teachers are willing and have a positive attitude about using music, but do not have the self-efficacy needed to do so.

In the third portion of the survey, participants were asked to determine their musical self-efficacy by describing previous musical training and musical experiences. According to Bandura (1997), one's personal experiences influence one's self-efficacy level. The majority of the participants consistently reported a lack of positive experiences performing music in the past, alone, or in ensembles. The participants reported few or no experiences performing simple music (indicating no musical experience at all) and that no time was spent overcoming musical challenges, watching professional musicians, or using practice routines to prepare for performances. In the study, 72% participants reported to have had no music models in the past to demonstrate musical abilities nor did was there an opportunity to compare themselves to people who were similar in musical abilities. In the survey, 77% or the participants indicated that they had never watched other musicians and compared their own musical abilities to them. All of these items contribute to one's musical self-efficacy and show evidence that

the participants had little to no prior musical experiences (Zelenak, 2011). In addition, the majority of the participants reported never having been told by friends or family that they are good performers or that they ever felt that they enjoyed performing.

The optimal time for developing musical self-efficacy is during childhood when there is a likelihood of stronger neural connections (Sousa, 2005). Very few of the participants had received musical training prior to the age of 12. The critical period of brain development is during this childhood time (Gordon, 2003). Based on the results of Chan (2003), certain types of differentiated instruction may occur less often if a teacher is not strong in that area.

It is also notable to mention that majority of questionnaires with missing data showed that the participants stopped on the portion which asked questions about musical self-efficacy. This could be a result of a participant having low self-efficacy and the questions may have induced feelings of inadequacy. Some of the participants responded to the researcher in an angry nature stating that they should not be asked questions about their musical background and previous experiences if they are clearly not music teachers. Some participants stated that they completed the study but that they did not appreciate being asked about their musical knowledge. A person who recognizes a weakness within themselves may be more likely to defend that weakness and/or lash out in an emotional way (Walpoole, 2017).

The open ended question at the end of the survey allowed the participants to comment on the survey in a personal manner. Some of the participants commented that they were saddened that they never pursued musical training as a child but that they appreciate musicians. Other participants described in detail their past musical

experiences, specifically piano lesson and singing in choir during high school. These participants showed a fondness to music and commented in a very positive nature. Though they were few, these particular comments showed a strong value for this particular study and encouraged teachers to use music in their academic instruction.

Recomendations for Policy

In order to best meet the needs of individual students, teachers should differentiate their instruction (Tomlinson, 2005). The integration of music has been found to be a successful way to differentiate instruction (Tillman, 2013). In order for a teacher to be willing to use music in their academic instruction, the musical self-efficacy of the teacher must be at a moderate to high level. Self-efficacy can be influenced by additional training at any age or level of experience (Bandura, 2007). Specifically, providing musical training to teachers will increase their levels of musical self-efficacy (Zelenak, 2011).

The results of this study indicated that teachers who have low musical self-efficacy were less likely to use music in their instructions. Administrators in today's schools should employ any means necessary to increase academic success (Gambrell, 2014.) By providing staff-development to teachers involving musical training, administrators can raise musical self-efficacy among their teachers. According to Zelenak (2011) simply watching another musically talented teacher use music in the classroom gives a musically-inexperienced teacher the confidence to try using it themselves. An administrator may bring in musicians to who are capable of integrating music into various subjects to train non-music teachers. Even better, an administrator could incorporate the help of the music teacher already on staff in each individual school to

work with non-music teachers and help them find ways to use music for each specific objective.

In addition, school districts could encourage their teachers to seek out musical forms of CEU's (Continue Education Units) or take college credits that are focused on musical training. Universities should create and offer such opportunities for teachers who are interested in increasing their musical abilities with specific focus on their original subject areas.

Individual teachers who wish to increase the academic success of their students and find new ways to differentiate their instruction may also seek out musical training on their own by consulting a music teacher, a community musician, or by internet searches related to the topic. There is an abundance of "Youtube" tutorials and suggestions for specific subjects that involve the use of music as well as an abundance of books related to this topic such as "The Mozart Effect" and "The Mozart Effect on Children" by Don Campbell (2009) which also has an iTunes playlist available.

Reccomendation for Futher Research

This research focused primarily on music integration among middle school teachers. A similar study was done that focused on music integration among elementary teachers in Mississippi (McCullough, 2009). Further research similar to this could be done that focuses on elementary teachers throughout the United States or on high school teachers throughout the United States.

Further research could also focus on physical education self-efficacy among elementary, middle, or high school teachers because of the benefits of physical activity to

the brain. Research combining physical activity and music could also be beneficial to educators.

Finally, further research to discover the value that is placed on music integration by administrators in school districts could prove to be beneficial and interesting. If teachers are aware whether or not administrators value and encourage music integration it could influence their decision to use it.

Conclusion

This study found that there is a relationship between music integration and musical self-efficacy among middle school teachers in the United States. The study noted that teachers should differentiate their instruction to be successful and that music integration is one way to do so. The data in this research recognized that the 150 participants reported very low degrees of music integration and very low levels of musical self-efficacy. Because self-efficacy can be altered, the researcher recommends that schools motivate their teachers to seek out musical training specific to their subject areas.

APPENDIX A – INSTRUMENT

GENERAL INFORMATION

Instructions: Select the best answer for each question by circling the answer or corresponding number.

1. What is your primary teaching assignment?

6th grade 7th grade 8th grade

2. How many years have you been teaching?

0-5 6-10 11-15 16-20 more than 20

3. Do you teach in a self-contained class?

Yes No

4. What is the highest level of formal education that you have completed?

1 Bachelor's Degree 2 Master's Degree 3 Education Specialist 4 Doctorate

5. Did you receive any music training before 18 years of age?

1 None prior to 18 years of age

2 singing experiences; did not learn to read music

3 instrument or voice lessons; learned to read music after age 12

4 instrument or voice lessons; learned to read music between ages 7-12

5 instrument or voice lessons; learned to read music prior to the age of 7

6. In your degree coursework, how well do you feel your music education course prepared you to teach music?

1 I did not take a music education course

2 My music education course did not prepare me to teach music

3 My music education course barely addressed teaching music

4 My music education course did a good job preparing me to teach music

5 My music education course did an excellent job preparing me to teach music

7. During instruction, what is your least favorite subject to teach or integrate into the curriculum?

Reading Math English Social Studies Art

Music Science Spelling Physical Education

8. During classroom instruction, which subject is your favorite subject to teach or integrate into the curriculum?

Reading Math English Social Studies Art

Music Science Spelling Physical Education

9. What is your perception of the value of music as an integral part of instruction?

1 no importance

2 little importance

3 Moderately important

4 Significant important

5 Extremely important

10. How much time do you spend on instruction related to music?

1 None

2 Very little

3 Less than other subjects

4 About the same as other subjects

5 More than other subjects

MUSIC INTEGRATION- PART 2

Instructions: Read each statement carefully. Choose the number that indicates how well each statement describes you.

1 = Statement does not describe me at all

2= Statement describes me very little

3= Statement describes me moderately well

4= Statement describes me well

5=Statement describes me exactly

1. 1 2 3 4 5 I regularly use music in the class to set the tone.

2. 1 2 3 4 5 I regularly teach concepts in music for transfer to other subjects.

3. 1 2 3 4 5 Students in my class have regular opportunities to create music or rhythms.

4. 1 2 3 4 5 I regularly use music as a means of providing differentiated instruction for my students.

5. 1 2 3 4 5 I am very comfortable integrating musical concepts and terminology into my instruction.

6. 1 2 3 4 5 I am knowledgeable about the benefits of using music as a part of classroom instruction.

7. 1 2 3 4 5 I regularly use songs and/or chants to teach or reinforce information.

8. 1 2 3 4 5 Students in my class are encouraged to create songs about information in subjects other than music.

9. 1 2 3 4 5 I regularly use music strategies during instruction in subjects other than music.

10. 1 2 3 4 5 I am very comfortable integrating music, songs, and rhythmic activities into my instruction.

MUSICAL SELF-EFFICACY - PART THREE

0- Strongly Disagree- 100 Strongly Agree

Mastery Experience

1. ____ I have had positive experiences performing music in the past.
2. ____ I have had positive experiences performing in large ensembles.
3. ____ I have had positive experiences performing solo or in a small ensemble.
4. ____ I have had positive experiences performing simple music.
5. ____ I have had positive experiences performing complicated music.
6. ____ I have overcome musical challenges through hard work and practice.
7. ____ I have used a practice routine to help me prepare for performances.

Vicarious Experiences

8. ____ I have improved my music skills by watching professional musicians, who are similar to me in some way.
9. ____ I have improved my music performance skills by watching other students who are similar to me in some way .
10. ____ I have used other music students as models to improve my performance skills.
11. ____ I have compared my performance skills with those of other people whose are similar in musical ability to me.
12. ____ I have watched other students of similar musical ability as me perform a piece of music, and then decided whet

APPENDIX B – IRB Approval Letter



INSTITUTIONAL REVIEW BOARD

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NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 18092801

PROJECT TITLE: Music Integration and Self-Efficacy Among Middle School Teachers

PROJECT TYPE: Doctoral Dissertation

RESEARCHER(S): Cassandra Weiss

COLLEGE/DIVISION: College of Education and Human Sciences

SCHOOL: Educational Leadership

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 10/11/2018 to 10/11/2019

Edward L. Goshorn, Ph.D.
Institutional Review Board

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