

Effects of Nature Sounds and Traditional Teaching Style on Students' Performance in an English

Language Arts Classroom

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Spring 2017

### Abstract

The purpose of this study was to investigate the effects of background nature sounds with traditional teaching style on student performance. This study also determined if the use of these sounds effected males and females differently. The sample consisted of 35 students in a 7<sup>th</sup> grade English Language Arts class. Half a unit was taught without nature sounds and students were tested over this half unit. The second half was taught using nature sounds and students were tested over this unit. Data were analyzed using a paired t-test and an independent t-test. The results indicated a significant difference between scores of students when taught using background nature sounds and traditional teaching method [ $t(34)=2.237$ ,  $P=.03$ ]. However, no significant results were found between gender and the use of nature sounds. The results suggest that further research is needed to determine if different results can be realized.

*Keywords:* Nature Sounds, Background Nature Sounds, English Language Arts

JOHNSON CITY SCHOOLS  
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TITLE OF RESEARCH PROPOSAL Effects of Background Nature Sounds on Test Scores

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## CHAPTER 1

## Introduction

It could be said that sounds made in nature were the beginnings of music. Cruz indicated that “the earth has music for those who listen.” Music reaches a plethora of cultures, languages, and age groups. Some groups prefer different styles of music, but all in all, almost every person is exposed to music in their day to day life. If nature is seen as the first music, it could prove an effective learning tool. Throughout history, music has helped people tell stories, explore the world around them, heal through therapy, and increase their learning. Music can be used for more than influencing or expressing moods.

Sound therapy is a way to go beyond simply influencing and expressing moods. Listening to music or sounds can affect the mind and body. There are positive and negative sounds. Some negative sounds can include traffic, industrial noises, and construction sites. Positive sounds, on the other hand, include nature sounds and soothing music. Why else would professional spas and recreational therapists use these sounds, but to bring about positive results and healing for the body and mind?

When people seek to reduce the stress levels in life and refocus the mind, they often think of meditating somewhere out in nature’s beauty. Humankind began living outside among the music of nature. There is something truly therapeutic about nature and how it sounds. There is also a connection between living a healthy lifestyle, reducing stress, and being in nature. A concern in today’s society is that people continue to spend increasing time indoors.

Chronic stress is so prevalent; it affects mood and is linked to inflammatory markers in the body associated with a range of conditions such as heart disease and diabetes. But go

into a green space, and blood pressure and muscle tension drop within two minutes.

(Mason, 2009, p. 20)

Outdoor activities can help people physically as well as mentally. Since outdoors and “green space” involve positive sounds, these sounds can contribute to such positive effects.

As previously stated, these positive effects are not only physical, but mental as well. Music has been proven to use both sides of the brain. When people use the right and left hemispheres of their brain more frequently, they can understand the bigger picture as well as the details. Each side of the brain complements the other. If music uses both hemispheres, wouldn't nature's music do the same? If so, these nature sounds could be a useful learning tool for students.

Students come into contact with music daily. Most enjoy listening as much as possible. Music, as a tool for learning, not only amplifies motivation to learn, but assists the brain in recalling learned information. Sounds can help students focus as they study for tests and could hold good possibilities for test results. A huge factor that can hinder good test scores, as well as cause health problems, is stress. “Psychological stress is one of the most critical problems in modern society; and has become a great risk to human health” (Jiang, Rickson, and Jian, 2016, p. 62).

Because of the increasing test assessments for students in school, much instructional time is spent preparing students for standardized tests. Yoon (2000, p. 2). stated, “With political pressures emphasizing higher standardized test scores, a school's function becomes more the preparing of students for the ‘test’ instead of producing a well-educated child.” Though these assessments are useful, teachers must focus on educating their students as best they can towards

standards based lessons while also helping students apply the information to their lives. In doing so, a practical skill they can equip their students with may be ways of focusing on content and giving tools to cope with stress. The more tools teachers give to students as preparation as well as practical ways to focus will allow students to feel at ease with looming tests while hopefully reducing stress levels at the same time. The better the tools students can use to decrease test stress and increase focus, the better they will do on such assessments. The better they do on the tests, the more confident the students will become in their learning. As students progress in their learning, they will become better educated. "Music and melody have a positive impact in terms of reducing stress and anxiety" (Keskin, 2011, p.378). In the same way, nature sounds may also have such an effect to decrease stress.

Just as the sounds of nature were the beginnings of music, these sounds have tremendous possibility. They are used as therapy and are related to outdoor activities which improve health. Music uses both sides of the brain and can be used as a tool in the learning environment. Soothing music and nature sounds can reduce stress, whether throughout life or in school situations. Nature sounds can prove to be useful and should be explored more.

#### Statement of the Problem

Student testing is increasing. People continue to look for ways to enhance testing skills as well as to increase focus in student learning. There have been many studies based on music, stress, and the outdoors, but very few done with nature sounds. Music can be an effective tool in the classroom as students learn. Nature sounds may prove to be effective as well. Thus, the problem of this study was to determine the effects of nature sounds and traditional teaching style on students' performance in a 7th grade English Language Arts classroom.

### Purpose of the Study

The purpose of this study was to investigate the effects of nature sounds (as background sound combined with the traditional teaching style) on student focus shown through unit test scores in a 7th grade English Language Arts classroom. In other words, this study is to find out if nature sounds can assist students in their abilities to focus better and, thus, affect test scores. This study is to see if there are different effects from background nature sounds when compared between males and females.

### Significance of Study

Music can affect elements of the classroom. People go into nature to focus or calm their minds. Test scores are constantly looming over students as well as their teachers (for evaluation purposes). If humankind first began with such natural kinds of music as nature itself, more studies should be considered for this topic.

This study will help to provide more understanding of this specific population as well as whether this subject of nature sounds should be further investigated by others with hopes of encouraging students to be the best they can be. Should nature sounds be taken into more consideration as a tool to be used in the classroom or even taken further by those willing to explore the various possibilities?

As students find ways of reducing stress, increasing focus, and succeeding in the copious tests given today, they will not only have a tool to use in the classroom, but in their everyday lives. By using nature sounds as background resonance, it is likely that students will gain increased focus and higher test scores.



### Limitations

1. The sample for this study was not randomly selected, and therefore, results cannot be generalized to other populations.
2. The instruments used for this study were created by the researcher and were not tested for validity and reliability.

### Definition of Terms

1. Nature Sounds: Natural sounds are sounds produced by natural sources in their normal soundscape. Examples include: wind through trees, birds chirping, ocean waves, rain, etc. These sounds will be played through an audio device.
2. Focus: the state or quality of having or producing clear attention to one's learning or assessment.
3. Test Stress: pressure or tension exerted on a test; a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances.
4. Traditional Teaching Style: Lessons are usually taught by the teacher introducing skills using a visual presentation accompanied by a verbal explanation or lecture. In this classroom and study, the teacher gradually turns instruction over to the student (usually by the "I do," "we do," "you do" method).
5. Student Performance: Students are actively involved in their learning and progress in their skills or knowledge levels.

### Overview of Study

This study consists of five chapters. Chapter 1 is the introduction, including the statement of the problem, purpose of the study, significance of the study, limitations, definition of terms, and overview of the study. Next, Chapter 2 explores the review of related literature. Methodology and procedures; descriptions of the populations and sample; data collection instruments; procedures; the research question and related hypothesis may be found in Chapter 3. Chapter 4 includes, collection of data, the research question, and related hypotheses are included. Ultimately, Chapter 5 consists of a summary of findings, conclusions, recommendations and implications of the study.

## CHAPTER 2

## Literature Review

## Introduction of Literature Review

This chapter presents findings of related material to the subject of nature sounds as they relate to student performance as well as other linked topics like nature as music, neuroscience (or how the brain works with nature and music), test stress or anxiety, healing possibilities, atmosphere (or classroom environment), and classroom applications. Some studies and articles focused on aspects outside of the classroom, but most references concentrated on academic applications. Those studies not conducted on educational use are mentioned here because they have applicable possibilities for the classroom. Much research has yet to be conducted on the subject of nature sounds; therefore, much of the collected research within this thesis considers the possibilities that can fill in the gaps for such a lack of direct research on the subject of nature sounds.

## Nature Sounds as Music

Since the beginning, nature has been a part of this world as humans interact with it in different ways. Plato once said, “Music gives a soul to the universe, wings to the mind, flight to the imagination... and life to everything” (Davies, 2000, p. 1). Music has also been a part of this world from very early on as archeologists find evidence in forms of music dating back to the earliest societies (Davies, 2000; Popescu, 2016). The songs of nature have been compared with the earth’s own music (Hodges, & Wilkins, 2015), so music and the sounds of nature could easily be linked together in how they affect humanity.

In a project called BioMusic, which is an interdisciplinary investigation of musical sounds in all species and the evolutionary basis for musicality, an exhibit named Wild Music: Sounds and Songs of Life focused on the “nature of music and the music of nature” (Hodges, 2009, p. 4). Nature and music go hand in hand. There is music in nature within the sounds of the wind, trees, birds, frogs, storms, owls, streams, and rain. There is also a nature of music that has yet to be pinned down and simply defined. Music and nature are linked.

It is good to know that studies have focused more on music recently. Unfortunately, however, nature sounds has not had as extensive research done, especially in respects to education, and therefore music has more research accessibility at the present time. This is evident in the lack of research not found on nature sounds. Because of this, as well as the link between music and nature sounds, the research on music will be explored here.

What is Music?

Music is a way to remember, to pass on stories, and to better understand this world in which we live (Davies, 2000). Popescu, (2016) stated, “It is noticed that, since ancient times, all populations, regardless of beliefs and geographical position, have included music in their lives, giving it a complex communication, healing, purification role” (p. 96).

Music is a way to express stories and emotions. People can listen to different music to relate to others and feel understood at the same time. An artist can weave a message throughout a piece’s tone and flow, whether or not there are lyrics. Someone listening can infer what the composer may have intended, but can also give personal meaning and interpretation too. With music, people connect with others as well as their own self (Hodges, & Wilkins, 2015).

Music can be diverse. It reaches through time to people of all ages, religions, regions, and eras. It can unite or divide people. Because it is such a big term that spans over all genres and sounds - at least those not classified as “noise” - music has limitless possibilities. Researchers have barely begun to scratch the surface (Hodges, 2000; et. al. Ohlhaber, 1998).

### Music and the Brain

Quite a few different studies have discussed how music (and especially being an active participant in music) makes changes to the brain (Hodges, & Wilkins, 2015; Boyce, Mishra, Halverson, & Thomas, 2014; Jones, 2005; Bugos, 2015; et. al. Hodges, 2009). These physical changes happen in the person’s brain structure and brain function. When people study music, play an instrument, sing, compose, and truly are engaged in music, this change takes place.

As previously touched upon, music brings people together and helps them understand their own self better. It has been found that two people playing music together have the same areas of the brain stimulated at the same time (Jones, 2005). It has also been found that the brain is more active when thinking introspectively rather than outwardly (Hodges, & Wilkins, 2015). Music does not necessarily become rewired simply by listening to music, but by being an active participant in it (Hodges, & Wilkins, 2015; Curtis, & Fallin, 2014).

Contrasting types of music can stimulate the brain in diverse ways, with different wave types, increasing or decreasing brain activity (Alawad, 2012; Jones, 2005). For example, slow, calm music can help the brain to focus on another task or put a person at ease, while fast-paced music may increase the heart-rate and encourage movement, which allows the brain to make better connections (Freeman, & Wash, 2013). People also react to diverse types of music depending on their preference (Jones, 2005; Lilley, Oberle, & Thompson, 2014). Extroverts may

prefer a stimulating environment with people and background noise, whereas introverts may prefer an environment that is calm and quiet (Ohlhaaver, 1998). Could nature sounds be a happy medium for different personality types? Another question that should be considered is, “could nature sounds be generic enough to cause similar reactions in people’s brains or can different nature sounds be as diverse as genres are in music?”

Many may think that music only happens in one area of the brain, but our brains are more complex. Like in language, music engages the brain bilaterally, or in both the right and left hemispheres (Curtis, & Fallin, 2014; et. al. Bugos, 2015). The brain does not function in detached segments, as some thought or at the very least hinted at in previous years. Rather, the brain is “interconnected,” using varying parts in harmony with one another (Hodges, & Wilkins, 2015). Bugos (2015) discusses neuroplasticity, which is how the brain uses learning in music to reshape itself with new connections and where these changes take place:

Neuroplastic changes in areas such as the corpus callosum (c-shaped structure that connects the right and left hemispheres), cerebellum (an area that assists with motor control), primary motor area (area associated with planning and executing movements), somatosensory areas (sensory areas), and superior and inferior temporal gyrus (areas associated with visual and auditory processing in the temporal lobe), bilaterally (both hemispheres), have been linked to musical training. (p. 2)

Though it may not be surprising that the parts of the brain that process sound are used when music is involved, it is interesting that movement areas of the brain and both hemispheres of the brain are stimulated with music (Bugos, 2015; Freeman, & Wash, 2013). From these different areas, the brain is shown to be a connected and integrated organ, not separate parts.

Furthermore, music can affect many areas of the brain which is paramount in the uses it could produce for students in the classroom or even in regards for those outside the classroom.

#### Music and Minds in the Classroom

Each brain is unique, like a fingerprint (Bugos, 2015). Genetics as well as experience increase the brain's plasticity - or the way the brain changes either in function or structure (Curtis, & Fallin, 2014). Students enter the classroom as unique human beings, having various experiences that shape them into who they are (Bugos, 2015). How do they learn then; or rather, what are some ways that music and brains have been found to affect how people learn?

Music can affect how students learn on many levels and many ways. While listening to favorite music, the brain can be processing at higher-order thinking levels along with evaluation, understanding, creative analysis, and using abstract thought (Hodges, & Wilkins, 2015); music can also assist spatially, temporally, formally, in recall, attention, and retention (Curtis, & Fallin, 2014; Jones, 2005). "Making-music is one of the best workouts a brain can get" (Jones, 2005, p. 42).

When the brain learns something new, it looks for structure, patterns, and possibilities to connect the new information to old information. The more applicable the knowledge or piece of information to the students, the more they will value it and be motivated to learn (Curtis, & Fallin, 2014). When people learn music, their neuroplasticity (or ways of making new connections) is increased. "The highest degree of neuroplasticity occurs in the first 6 months of new skill acquisition" (Bugos, 2015, p. 2). Because of this, teachers must continuously challenge students with new concepts and learning.

Motivating students can be difficult, but using different resources, like music, nature sounds, or even nature in general can motivate and hook students' attention in the classroom. Music helps others to anticipate events and hold their attention. Even differences in learning between genders (since males and females both cognitively process contrarily) can be addressed with music to help motivate different genders and assist in their learning (Curtis, & Fallin, 2014). "The hemispheres of the brain work together when emotions are stimulated, attention focused, and motivation heightened. Rhythm acts as a hook for capturing attention and stimulating interest. Once a person is motivated and actively involved, learning is optimized." (Davies, 2000, p. 1)

Like a child learning a second language, children gain the knowledge of their own culture's music, finding it more difficult to recognize what is unfamiliar in another culture. Children can also become "fluent" in many different types of music if they are introduced to them in their youth. Their brains process the sounds they hear in music over time and with "repeated exposure" through listening (Jones, 2005). Ohlhaver (1998) found a Bulgarian doctor and educator who played baroque music in the background while students studied a foreign language. The students were able to learn more vocabulary words than they could in a silent room. Music may be a language of its own.

Teachers should strive to help their students become lifelong learners, and music is a tool to work towards that goal (Bugos, 2015; Curtis, & Fallin, 2014; Hodges, 2000). A practical way for teachers to help their students is to have the students become aware of their strengths and weaknesses as they carry some responsibility to acquire new skills and knowledge during instruction. A study looked into structural and behavioral changes in the brain with six-year-old



students. The students had instrumental music lessons for thirty minutes a day for a duration of fifteen months. These changes were evident in the areas of sensorimotor skills and auditory processing skills which can strengthen the basic skills of reading, writing, listening, and speaking and enhance ways of accessing and expressing information. From this study, music can transform the brain in students who are actively participating; who have teachers willing to work on areas of strength and areas in need of improvement; and who are encouraged to make learning a lifelong goal (Curtis, & Fallin, 2014). These experiences can help establish and create meaning (Bugos, 2015).

Though simply listening to music does not guarantee people will become smarter, there seems to be a connection of music students scoring higher grades and test scores than those who are not actively involved in music (Bugos, 2015; Hodges, & Wilkins, 2015). “However, research is still ongoing to understand what is transpiring in the brain that might influence academic performance.” (Hodges, & Wilkins, 2015, p. 5)

#### Weight from Testing for Academic Performance

Testing is one way that schools can show students’ academic achievement. However, the importance placed on these tests can have certain effects on students. Increased emphasis on standardized testing in the U. S. educational system has resulted in a growing concern about the test-related anxiety that many students experience (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles, 2010). Since testing is a way schools show their progress, it is also important to understand the link between testing and students’ reactions to those tests. Test anxiety has to do with test performance whether students are taking intelligence tests, school exams, or scholastic-achievement tests (Lang, & Lang, 2010).

Students' test-taking skills can be negatively impacted from test anxiety. Test anxiety is very much associated with lower performance in tests and examinations (Putwain, Chamberlain, Daly, & Sadreddini, 2014). "Stress reduces the flow of blood and oxygen to the brain, results in mental blanks, a reduced willingness to take intellectual risks, difficulty engaging in higher level thinking, and often a sense of helplessness" (Davies, 2000, p. 3). In a survey, as many as one-quarter of students reported that they were almost always afflicted with test anxiety in testing situations (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles, 2010). Students in secondary education often exclaim that exams, tests, and other assessments are extremely worrisome and provoke anxiety during their school experience. The importance of better understanding test anxiety and how school systems can reduce or eliminate it should not be understated (Putwain, Chamberlain, Daly, & Sadreddini, 2014).

What is it, then, that causes test anxiety?

"Test anxiety is defined as a situation-specific for the of trait anxiety; that is, individual differences in the general tendency to appraise performance-evaluative situations (for example, examinations) as threatening" (Putwain, Chamberlain, Daly, & Sadreddini, 2014, p. 421). There is a cognitive component which interferes with memory and other resources that allow students to respond effectively to exam questions. Test anxiety may pose a risk to student well-being in the area of student engagement and motivation.

Connections have been found (from recent advances in neuroscience) between social functioning, emotion, and decision-making that affect education and testing. Emotion can overshadow cognitive skills (such as knowing what to do before, during, and after a test) that students need for test-taking (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles,

2010; Dodeen, Abdelfattah, & Alshumrani, 2014). When students with high levels of test anxiety enter a testing situation, their “inner noise” can produce an emotional flux and impair their cognitive resources needed for attention, memory, and effective academic performance; an example would be when someone starts a test and their memory goes blank (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles, 2010). More is involved than emotion.

There are cognitive, behavioral and affective components involved in test anxiety as well. Cognitive elements are worries, thoughts surrounding failure, and consequences of such failure. Behavioral elements are study habits and actions during exams. Affective elements are the perceptions of autonomic reactions, like headaches, increased heart rate, and so on. There is also a social component having to do with judgment from others which can result in threats to self-worth (Putwain, Chamberlain, Daly, & Sadreddini, 2014). Current theories of test anxiety suggest that individual differences in cognitive test anxiety ultimately come from differences in how someone perceives their own competence (Lang, & Lang, 2010). Student attitudes about tests, attitudes about their ability to take tests, and their motivations towards certain subjects can affect academic achievement in test scores. These are classified as psychological, cognitive, and personal factors (Dodeen, Abdelfattah, & Alshumrani, 2014; Dodeen, Abdelfattah, & Alshumrani, 2014).

The huge challenge that educators face is how best to prepare students to test effectively so what is shown on the test accurately reflects what they actually know. Without this accuracy, data will not be shown correctly to provide those in leadership (like administrators) with numbers to base their decisions (Bradley, McCraty, Atkinson, Tomasino, Daugherty, &

Arguelles, 2010). What are some ways that test anxiety can be eliminated or at the very least reduced?

Students need skills such as academic buoyancy and resilience. Academic buoyancy is a student's ability to overcome routine setbacks, challenges and pressures in a school setting. Resilience refers to students who put forth a positive response to major challenges or setbacks not typical for the majority of students (Putwain, Chamberlain, Daly, & Sadreddini, 2014). These skills depend on each student's attitude, but can also be focused on in classroom instruction and preparation in order for students to reduce test anxiety.

Providing students with test-taking skills is one way test anxiety can be eliminated. These skills can be transferable across a plethora of tests and subjects as well as possibly applied in more general terms into life through different settings and conditions. Because of this cross-over of skills to life after K-12 school, it is highly important that students learn how to use test-taking skills during school so they are not held back from job opportunities as well (Lang, & Lang, 2010; Dodeen, Abdelfattah, & Alshumrani, 2014). These test-taking skills can be used to allow test-takers to extinguish tension and anxiety that interrupt their ability to effectively show what they know on tests. These skills are as important as understanding the information for the test itself; however, the test-taking skills cannot replace the knowledge and preparation for the actual test.

A study implementing a strategy called "STEPS" (Strategies to Tackle Exam Pressure and Stress) was found to be effective in reducing test anxiety for secondary students. The findings suggested that STEPS could be a useful intervention in reducing the worry and tension components of test anxiety. This would be only those who are highly test anxious since those

that are mid or low test anxious students wouldn't ultimately have as much need for the strategy (Putwain, Chamberlain, Daly, & Sadreddini, 2014). Another possible option for reducing stress or anxiety could be to give a short test while keeping the rigor the same (Lang, & Lang, 2010).

Emotions and perceptions affect thinking processes. If students' perceptions can be changed about a potentially threatening stimulus, or test, they can better control their emotions of anxiety and better show what they know through their test performance (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles, 2010). In order to better control the fear of consequences of performing poorly on an exam, listening to calm music beforehand may either reverse their fear or lessen its effects. Calm music can encourage relaxation whereas fast music has the potential to increase tension levels; however, individual preference can also affect listener reactions as well (Lilley, Oberle, & Thompson, 2014). "Music in the classroom reduces stress, increases productivity, regulates energy, and creates a relaxed, supportive learning environment. Such an environment aids students in learning" (Davies, 2000, p. 3).

The main reducer of stress that this entire study is based on is nature and its sounds. "This relationship with nature has the powerful ability to decrease stress" (Alawad, 2012). A review found that relaxation, behavioral approaches, cognitive approaches and competence-priming were effective, either together or in isolation to reducing anxiety. Psychological ways of skills practice, music, and nature intervention seem to offer considerable potential for reducing test anxiety (Putwain, Chamberlain, Daly, & Sadreddini, 2014; Alawad, 2012). Nature can provide healing and relaxation for students who experience stress and anxiety.

Healing and Well-being in Environments

Stress happens when demands are greater than resources. When people want to relax or heal from stress, they often think of a soothing environment like a beach with calming sounds. Nature reduces stress by restoring resources necessary to cope with stress. “Physical environments influence health in a myriad of ways through psychological, behavioral, social, and biological pathways” (Largo-Wight, 2011, p. 41). Studies have shown positive effects that nature has on people (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003). Why do people seem to go to places of nature rather than highly populated cities when looking for healing? Environments where crowding, ambient noise at work, and traffic often occur increase psychological demands as well as the likelihood of perceived stress. However, there are connections between healthy places and nature contact opportunities. Nature contact is related to greater physical activity, faster recovery, and lower perceived stress (Largo-Wight, 2011).

A study where people were exposed to pain because of medical procedures introduced nature sights and sounds throughout the procedure as well as before and after. It is called distraction therapy when a patient’s attention is away from stressful or painful stimulus and focused on more pleasurable and calming sights and sounds. Through this study, patient pain was reduced during an invasive procedure, and patients who received more invasive -- and therefore potentially more painful -- procedures reported better pain relief than others undergoing less invasive procedures. Even some burn patients who watched nature videos during dressing changes had less pain and anxiety than the control group (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003). If nature sights and sounds can reduce pain and anxiety in such cases, the possibilities appear positive if applied in the classroom.

Since more communities and especially schools are pushing to be more health conscious,

nature may be a good option to consider. Involvement with the natural world can offer a practical approach for increased mental and physical well-being, including stress management (Largo-Wight, 2011). “Environmental psychology proposes that humans will benefit both physically and psychologically from spending time in nature and the outside environment” (Alawad, 2012, p. 631). Using the outdoors has huge potential and has the most direct connection to health benefits. It has been found that walking in nature has better physiological stress recovery options than in urban settings. This has big implications for children and their health (Largo-Wight, 2011).

In today’s world, there has been increasing accounts of child obesity as well as reduced physical activity, social skills, and concentration. Experiences in natural settings provide benefits to children like increased physical activity, reduced obesity, improved concentration, and enhanced social skills. The greener the neighborhood and the more active in natural settings, the healthier the child (Jacobi-Vessels, 2013). Plants have healing and stress-reducing benefits. Florence Nightingale had “wellness by design” set up in hospitals. Environments that have friendly pet policies also show patients or customers with significant reduction in blood pressure in the presence of their pet compared to human support. Fresh air, natural lighting, and nature sounds may enhance nature contact and thus promote health (Largo-Wight, 2011).

Environments make a difference between health and stress. Brain plasticity makes the brain able to change in structure and function due to experiences from the environment (Curtis, & Fallin, 2014). Such environments promote relaxation through therapeutic sounds and colors. Environments that incorporate natural light, elements of nature, soothing colors, meaningful and varying stimuli, peaceful sounds, and pleasant views tend to have positive effect on those within

the environments, allowing people to enhance awareness of one's self as well as one's connections with people, culture, and nature (Stichler, 2001).

Certain sounds can calm anxious minds, decrease blood pressure, slow respiratory rates, and reduce pulse rates. Recent studies give an idea of the relationship between the power of sound and its effect on the mind and body (Stichler, 2001). Music can also be combined with nature sounds or even played alone and have a powerful effect on the body and mind (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003).

Abraham Maslow, a psychologist in the 1960s, wrote about peak experiences. He found that "music is one of the most common ways for people to have peak experiences" (Hodges, & Wilkins, 2015, p. 5). Powerful experiences in music or nature can lead to changes in values, perceptions of life, relationships, and personal growth. Music can enhance the quality of life as it can also change the mind through exhilarated experiences and involvement in music (Hodges, & Wilkins, 2015). As music can increase the level of enjoyment in life, so too can nature and the environment increase our focus and state of mind. "Nature and the environment play a crucial role in our health and well-being" (Alawad, 2012, p. 627).

#### Application to the Classroom and this Study

A study was done with 90 art students in order to determine if natural sound could foster creativity in the classroom. The results signified that there was more attention and creativity from students who were exposed to these natural sounds. As the students worked on a project, they were marked (or graded) on their color, value, texture, application, and finishing of the artwork. This was done as a pretest/posttest study. There were no nature sounds during the pretest, but they were played during predetermined intervals. The results were tested during the



posttest segment. Nature sounds affected students in the classroom as they were more open to using new colors and techniques (Alawad, 2012).

Nature sounds and music can be very effective, even in the classroom. They can assist with motivation and grabbing attention (Alawad, 2012). Within classrooms, bringing the outside world inside may appear to be a challenge for some, but there are many ways to do so along with many productive reasons as well. Technology is often used in today's world. There are those who are exploring the possibilities of using that technology along with the natural world (Boyce, Mishra, Halverson, & Thomas, 2014). Even using CDs with nature sounds or playing videos with shots of nature can bring the natural world into the classroom.

In a perfect world, students wouldn't be able to wait to get to class, would remember what had been covered in the curriculum, would constantly reflect on what was learned, and would apply it in their everyday lives (Freeman, & Wash, 2013). Using music, nature sounds, or the outdoors could provide hooks and motivation for students to learn and want to continue learning throughout their lives.

Knowing how the brain works and better understanding how music or nature affects it can be extremely useful as well. Students forget information because that information does not benefit them. Brain-based learning does not focus on memorization, but instead is student-centered, applicable, and looks into how the brain functions with learning. If students have more success with learning environments that are experiential, shouldn't teachers apply that to their instruction? These pedagogical strategies can increase retention as well as make the learning process more enjoyable (Freeman, & Wash, 2013).

Students have different ways that they learn. “Music offers all students, regardless of learning style, the opportunity to explore, communicate, generate ideas, and focus on relationships” (Davies, 2000, p. 2). In 1983, Howard Gardner identified eight multiple intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic. Each intelligence can combine in different combinations within students. Often times, most of these intelligences are incorporated into the classroom, except for kinesthetic, musical, and naturalistic. Movement can allow the brain to make better connections as well as music and nature. These have great potential for the minds of students (Freeman, & Wash, 2013).

Whether in groups, tests, or working independently, playing soft music can help with memory and recall. The area in the brain that forms memories and holds them, the hippocampus, has limits on how much information it can receive and store at a time. If students have lectures spanning longer than 15-minute chunks, they may not be processing the information effectively or able to retain it (Freeman, & Wash, 2013).

If students can learn effectively, but are not able to show that knowledge on assessments, how will those receiving the data be able to process it and make the best decisions? Recent reports suggest that a third to half of all students feel stressed everyday ranging from usually to constantly (Freeman, & Wash, 2013). Reducing stress should be a priority using strategies that implement an environment that is safe, active, enjoyable, relevant, and meeting students’ needs of different intelligences. Music can be used to reduce stress, calm students, and teach concepts (Freeman, G. G., & Wash, P. D., 2013). Music that is played at a lower volume can engage a listener’s mind more because they must actively try to hear it (Jones, 2005).

“Those that encourage music to be played nonstop in classrooms are missing the point and may actually diminish any effects of listening to music” (Jones, 2005, p. 44). Music is a powerful tool and should be used with consideration of learning goals in mind. It can assist with test-taking as can nature sounds and other elements of that natural world. When these combine in a learning environment, they can produce healing, health, focus, stimulation of the mind, and learning possibilities. Why is music, and ultimately nature sounds, so important to humanity? A quote from Hodges & Wilkins (2015) states:

One of the most significant values of music is that it can provide us with insights into the human condition. No matter the differences of age, gender, ethnicity, socioeconomic status, or any other real or perceived variable, at heart, we are united by the fact of being human. Music has the capacity to tap into this central aspect of our humanity to reveal, explore, and share what it is that makes us both corporately the same and yet individually unique (p. 7).

In conclusion, nature sounds can be compared to music (Hodges, & Wilkins, 2015). Music can encompass sound that is not defined as noise that is annoying to the ear. Music can affect the brain’s stimulation, assist people in calming down, and has been studied in the classroom (Hodges, & Wilkins, 2015). Because students have been found to have levels of stress and anxiety while in school, they should be equipped with tools (like music or nature sounds, for example) to handle such stress in their environment (Davies, 2000). Music preferences of individuals and even genders can influence levels of effectiveness on subjects, but nature is a genre that is throughout the world and is a generally soothing sound (Stichler, 2001). Therefore, nature sounds may be more effective in the classroom than music.

### CHAPTER 3

#### Methods and Procedures

This chapter describes the method of investigating the effects of nature sounds as background sound combined with the traditional teaching style on student focus shown through unit test scores in a 7th grade English Language Arts classroom. This study is to find out if nature sounds can assist students in their abilities to focus better and, thus, affect unit test scores.

#### Population

The population for this study came from a public middle school located in Johnson City, Tennessee which instructs grades 7 and 8. The population of the school was around 1140 students in the entire school.

The Tennessee Department of Education's report card for this school stated that 46 percent of students were eligible for free and reduced lunch. This school was graded at a B. The student body demographics show that there were 11.9 percent African American; 1.9 percent Asian or Pacific Islander; 5.4 percent Hispanic; .2 percent Native American or Alaskan; and 80.6 percent White. There were 49.6 percent female, 50.4 percent male, and 41.6 percent were economically disadvantaged. The attendance rate was 94.6 percent.

#### Sample

The sample for this study was made up of 7th grade English Language Arts students (12-14 years old) numbering 35 from two class blocks with 21 females and 14 males. These 35 students were those who brought back their parental consent form (required by the school system) from 59 students in total. All 59 students were given the two "halfway" tests for the

halves of the unit being covered. Only the 35 approved students were involved in the study. This sample was not randomly selected.

#### Demographic profile

Gender	Frequency	Percent
Males	14	40%
Females	21	60%
Total:	35	100%

#### Data Collection Instruments

Data were collected using teacher made tests. After selecting a unit for this study, the unit was divided into two equivalent halves. The first half of the unit was taught using traditional teaching style without background nature sounds. When this first half of the unit was completed, the students were administered a test over the material covered. The second half of the unit was taught using traditional teaching style with background nature sounds. Once again, when this second half of the unit was completed, the students were administered a test over the material covered. The background nature sounds were played during group work, tests, and independent reading times. When all data were gathered, analysis was done to determine any differences.

#### Procedures

Before the research was conducted, permission was sought from the Milligan IRB and also from the school system (including Curriculum Division Reviewers, Principals, Superintendent of Schools, and the Mentor teacher) where the study was conducted. A permission form was made, sent out, and collected from the guardians of the students who were

## EFFECTS OF BACKGROUND NATURE SOUNDS

willing to participate. After all permission was obtained, a sample was selected and the study implemented.

A unit was selected for this study and was divided into two equivalent halves. The first half of the unit was taught using traditional teaching style without background nature sounds. When this first half of the unit was completed, the students were administered a test over the material covered. The second half of the unit was taught using traditional teaching style with background nature sounds. Once again, when this second half of the unit was completed, the students were administered a test over the material covered. The background nature sounds were played during group work, tests, and independent reading times. When all data were gathered, analysis was done to determine any significance in using nature sounds as well as any difference between scores of males and females.

### Research Questions and Related Hypotheses

Research Question 1: Is there a difference between students' academic achievement when they are taught using background nature sounds and when they are taught without background nature sounds?

Research Hypothesis 1: There is a positive difference between students' academic achievement when they are taught using background nature sounds rather than when they are taught without background nature sounds.

Null Hypothesis 1: There is no positive difference between students' academic achievement when they are taught using background nature sounds and when they are taught without background nature sounds.

Research Question 2: Is there a difference between genders' scores when they are taught using background nature sounds?

Research Hypothesis 2: There is a difference between genders' scores when they are taught using background nature sounds.

Null Hypothesis 2: There is no difference between genders' scores when they are taught using background nature sounds.

## CHAPTER 4

## Data Analysis

This study was conducted to investigate the effects of nature sounds and traditional teaching styles on student performance in a English Language Arts classroom. In other words, this study was to find out if nature sounds could assist students in their abilities to focus better and, thus, affect their test scores. The secondary purpose was to determine if there were differences between males and females when exposed to these background nature sounds.

## Data Collection

Data were collected using teacher-made tests. After selecting a unit for this study, the unit was divided into two equivalent halves. The first half of the unit was taught using traditional teaching style without background nature sounds. When this first half of the unit was completed, the students were administered a test over the material covered. The second half of the unit was taught using traditional teaching style with background nature sounds. Once again, when the second half of the unit was completed, the students were administered a test over the material covered. The background nature sounds were played during group work, tests, and independent reading times. When all data were gathered, analysis was done to determine any differences.

Data were analyzed using the SPSS program. Significance of .05 was considered. A paired sample t-test was conducted for Research Hypothesis 1 and an independent t-test was conducted for Research Hypothesis 2.

## Research Questions and Related Hypotheses

Research Question 1: Is there a difference between students' academic achievement when they are taught using background nature sounds and when they are taught without background



nature sounds?

Research Hypothesis 1: There is a difference between students' academic achievement when they are taught using background nature sounds rather than when they are taught without background nature sounds.

Null Hypothesis 1: There is no difference between students' academic achievement when they are taught using background nature sounds and when they are taught without background nature sounds.

To determine whether there was a significant difference between the two teaching styles, a Paired sample t-Test was conducted comparing the scores of the first test when no background nature sounds were used and when those sounds were used in the background. The results indicated a significant difference between the two styles ( $t(34)=2.237$ ,  $P=.03$ ). The students' mean score without background sounds ( $M=60.17$ ,  $sd=26.46$ ) was significantly higher than their means with background sounds ( $M=46.43$ ,  $sd=27.96$ ). The effect size was .5047. The results are displayed in Table 1.

Table 1:

Paired t-test for scores with background sounds and no background sounds

Background	M	sd	df	t-value	sig.
No Background Sounds	60.17	26.46	34	2.237	.03
With Background Sounds	46.43	27.96			

Research Question 2: Is there a difference between genders' scores when they are taught using background nature sounds?

Research Hypothesis 2: There is a difference between genders' scores when they are

taught using background nature sounds.

Null Hypothesis 2: There is no difference between genders' scores when they are taught using background nature sounds.

To determine whether there was significant difference between gender performance when taught using background nature sounds, an Independent t-Test was conducted. Variances were assumed equal ( $F=.116$ ,  $P>.05$ ). The mean score for the males was 45.71 and the mean score for the females was 46.90. The results indicated no significant difference ( $t(33)=-.122$ ,  $P>.05$ ). Males did not score higher ( $M=45.71$ ,  $sd=32.75$ ) than females ( $M=46.90$ ,  $sd=25.124$ ). Therefore, the null hypothesis was retained. Results are displayed in Table 2.

Table 2:

Independent t-test for gender performance using nature sounds background

Gender	M	sd	df	t-value	sig.
Males	45.71	32.75	33	-.122	.904
Females	46.90	25.12	22.910	-.115	.909

## CHAPTER 5

## Summary of Findings, Recommendations, and Implications

This study's purpose was to determine the effectiveness of nature sounds on student focus shown through unit test scores in a 7th grade English Language Arts classroom. Through this process, the independent variable of nature sounds was analyzed along with the dependent variable of the students' test scores to determine whether they could assist in improving student's abilities for better focus. This study also explored whether there were differences between the scores of males and females when exposed to these background nature sounds.

## Summary of the Findings

Two research questions, hypotheses, and null hypotheses were considered and assessed. Research Question 1: Is there a difference between students' academic achievement when they are taught using background nature sounds and when they are taught without background nature sounds? The results indicated significant difference between the two teaching techniques. This first research question, tested with a paired t-test, was conducted using nature sounds as the independent variable and the test scores as the dependent variable. Results actually show that the students' mean score were higher (60.17) when taking the test without the background nature sounds than their mean score (46.43) when taking the test with background nature sounds. One of the possible reasons why the results turned this way could be that the students were not used to nature sounds being played in the classroom. Nature sounds may have distracted the students when taking tests. Perhaps if students were exposed to nature sounds for a longer period, they would have been better familiarized with the nature sounds. Positively significant results may have been realized with longer time of the study. Still another reason for these results could be

that the lessons that were taught in the first half of the unit were spiraling lessons and had been discussed or taught before. Students would have done better on this test simply because they knew the material more deeply.

Research Question 2: Is there a difference between genders' scores when they are taught using background nature sounds? The results for this research question found no significant difference between genders and thus the null hypothesis was retained. This second research question using an independent t-test to investigate whether there was a difference in scores of males and females when background nature sounds were used produced no significant results. These results may have come about because of several possibilities. One of the possible reasons, as with the first research question, as to why the results were not significant in this test could have been due to the small sample that participated in this study. This sample was not randomly selected and therefore there was no reliability in the sample. Another possible reason as to why these results were not significant, also as previously stated, could have been due to the short time that this study was implemented. Perhaps a longer period could have familiarized the students with the measuring instruments, especially the nature sounds. Significant results may have been realized with longer time of the study. There is also the possibility that nature sounds simply do not have a different effect on males versus females.

### Conclusions

The purpose of this study was to investigate the effects of nature sounds with a traditional teaching style on student performance in an English Language Arts class. The results of the first research question were shown to be significant. There was a difference of student performance when they were taught (and tested) using nature sounds and traditional teaching style. The

second research question that focused on gender differences when they were taught and tested using nature sounds yielded no significant results.

### Recommendations

#### Recommendations for Research Question 1:

The following are the recommendations for this study.

1. For future studies, larger samples should be selected and randomly assigned to experimental and control groups.
2. The nature sounds should be implemented first before handing tests to students instead of after the tests begin.
3. Future research could explore use of other background music, types of nature sounds, or even a combination of the two.
4. The instruments used should be tested for validity or reliability while the entire unit should consist of either completely new learning concepts or all spiraling lessons.
5. It may also benefit the researcher to give a longer time period to use background nature sounds since change can be difficult on anyone while time allows people to adjust to such changes like nature sounds.

### Implications

This study implies that using background nature sounds is still a possibility to explore in the future. Although this study found negative results from the first research question and did not find significant results from the second research question, the evidence from the literature review suggests how background nature sounds and music have the possibility to enhance student focus and learning. The benefits of continuing research (or even using nature sounds more regularly)

can apply to teachers, parents, and especially students. If research continues and more is found, teachers could be calmed during their stressful days as well as promote an inexpensive tool to increase students' focus, increasing a teacher's overall scores. For parents, they could implement nature sounds at home and have a calming environment there, giving more focus into the family unit as well as peace. As for the students, having better test scores, more focus, and a tool to calm down is very beneficial throughout their education and life.

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