READING WITH NATURE

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I. Introduction……1

II. Literature Review ……...9

III. Methodology……36

IV. Results……..44

V. Conclusion……76

VI. Appendix……..81

VII. Bibliography……...103

Introduction

Planting the Seeds for Teaching

Growing up on a small family farm nestled in the countryside near Green Bay, Wisconsin; I was constantly learning where I fit in and how I could help out. Most of my free time was spent exploring the outdoors, whether in the garden or in the woods. As a young girl my grandparents were the first to plant the seeds of education in me. My grandma taught me many household skills from quilting to canning. I think of her often as I am making raspberry jelly and picking beans from my garden. Grandpa showed me the ways of gardening and farming. Today, I hope he would be proud of my garden, especially the potatoes. The most important lesson I learned from my grandpa comes in the form of courage, hope, and faith. This he taught me through his death as he never gave up the hope for a cure and the strength to live. My grandparents were teaching me values and traditions I have grown to love and am now planting in my own young children.

It wasn't until 8th grade that I discovered I was destined to be a teacher. This important discovery was made during a careers unit. At the end of the unit, we chose professions for our fellow classmates, and I was voted most likely to become a teacher. Once again, the seed for teaching was planted within me. The perception of being a teacher by my fellow classmates sent a strong message to me, and pointed the way for me to follow. Thus, I made my class choices in high school based upon the idea that I was to become a teacher.

A final seed for teaching came when I had my first opportunity to work with children. During my senior year in high school, I was able to tutor in an elementary classroom. Once a day, I worked with preschool children diagnosed with many cognitive disabilities. I loved helping them acquire new skills. The turning point was when a little boy who had difficulties sensing his surroundings made a break through. One day I came to their class feeling very upset. When Nick looked up at me with his big brown eyes and asked me what hurts, the final seed was sewn. This experience inspired me to work with elementary children.

Watering

With a strong desire to become a teacher, I left home to attend the University of Wisconsin- Stevens Point. The college had a reputation for a fine education program, and I was going to change the world. I took my first education course and then reality set in. There were over 100 students in a lecture hall all having the same dream as me and only 50 of us would be accepted into the school of education per year. From there I realized that I needed to water the seeds that my grandparents and fellow classmates had planted. I became involved with the college's education association and a volunteering organization on campus. Through these organizations, I was able to learn more about the education profession and volunteer in classrooms. The time had come to declare my major; it was easy…elementary education. Yet before I could be accepted into the school of education I needed a certifiable minor. My love for being outdoors motivated me to choose environmental education. At the time I had no idea what adventure I had just signed up for, but it was the closest thing

to science that was certifiable. With that I realized I needed to water this newly planted seed. I joined the college's environmental organization. I experienced the outdoors through new eyes, developing a sense of astonishment. Before this, I loved to be outdoors and enjoy nature's beauty. Now, through this organization I learned about the frailty of nature.

I spent the next five years at the UWSP developing my educational philosophy as well as discovering where I stood on environmental issues. Along this journey, several people nourished my seeds and left their mark on me both professionally and personally. Allow me to introduce a few…

Lee Schmile: My 7th grade science teacher opened my eyes to the world of birds. This was my first real science class. The walls of his classroom are painted with trees and birds. He took us on many trips to the "woods." Each time I saw a different side of my teacher that I wanted to emulate. His influences are what started my thinking of teaching science. He continued to mentor me through athletics while I was in high school. I have a deep respect for him. He taught me not to fear the unknown and to work hard to achieve my goals.

Sharon Rogness: Sharon Rogness was my mentor teacher when I student taught sixth grade. Although she didn't have a huge impact on my environmental values, she made a large impact as a teacher. She taught me how to make my lessons real for my students. The most important lesson I learned from her was that everything I teach can not always be fun. I thought all my lessons needed to be hands-on and fun for my students. From her I gained self confidence in my teaching abilities.

Renee Askins: Renee Askins founded the Wolf Fund in 1986. The sole purpose of this organization was to reintroduce the wolf back into Yellowstone. Her ambition to bring the wolf back to Yellowstone was no easy task. She spent several years negotiating with bureaucrats, getting through red tape, and listening to emotionally charged ranchers. A plan to reintroduce the wolf was set in motion in 1995. Her hard work, passion, and desire to reintroduce the wolf in Yellowstone were and still are inspiring. She published, SHADOW MOUNTAIN: a Memoir of Wolves, a Woman, and the Wild. The book chronicles her quest to restore wolves to Yellowstone. From her I learned about passion.

Dorothy Molter: "Rugged" is the best word I can use to describe the "root beer lady" even though I never had the opportunity to meet her. I wish I had. The stories I hear of her lifestyle are amazing. She lived alone in a small cabin in the BWCA. She valued life and everything it had to offer. She made use of everything. Her phrase for "Quit your Belly Aching" hangs in my classroom as a constant reminder of her values and work ethic.

I left college with a sound educational philosophy. I was going to make my lessons real for my students while incorporating a hands-on - mind-on approach. I felt that I needed to teach by example. So in order to teach my students to respect the environment, I needed to show them how I respect the environment. I had big plans and many dreams for my future classroom.

Flowering

With the seeds planted, just the right amount of watering provided, it was now time for this teacher and environmental educator to flower. My first teaching job found me in 7th grade language arts and 8th grade earth science, with little opportunities to blossom into the flower that I knew I could become. I struggled with the non teaching aspects of my job. I learned a lot about teaching in that first year. My mind had a vision of a teacher who would inspire her students to become the best they can be and who all wanted to save the Earth. With that, and some extra motivation from my husband, I left Wisconsin and moved to Minnesota. I found my next teaching position in a 6th grade classroom in Virginia, MN. Teaching in Northern Minnesota has allowed my dreams to come to full bloom. Living in Northern Minnesota has brought me much personal happiness too. I currently teach fifth grade and am known as the "crazy science teacher" by my colleagues. As a teacher I incorporate a hands-on- minds-on philosophy into my lessons. I also use the word "conserve" on a daily basis, especially when it comes to paper. I lead my students by example. When we go out to our school forest, I encourage my students to look at the things they see everyday with new eyes. I try to instill a sense of marvel and amazement. Although I am not the flower that I dreamed I would be, I feel I am unique in my own way. My teaching style has been influenced by my surroundings as well as the students I teach. I came to realize what I need to teach depends on the students I teach. For many of my students their backyards are the outdoors, therefore I monitor the amount of background information provided. One student's bus even had to stop because there was a moose in the middle of the road. I

love it! On the other hand I want to take my students to the woods on a regular basis, but am limited because our school is located in the downtown area of the city. The front of our school is a blacktop playground and the back is a street. I needed to adapt my philosophy to whatever was available –limited yet "doable." My approach to teaching is one that is not carved out of stone. It is more like something carved in clay - adaptable to my students and surroundings. On a final note I would like to believe that I have become a teacher who has blossomed into a beautiful flower.

Pollinating with Reading

Reading never came easy for me, and I admire avid readers. As a child I did not enjoy reading, and I often found myself in the low reading groups during school. I avoided reading, but longed to be an avid reader. One summer, I found myself reading the same book over and over in hopes to become that avid reader. The book was Charlie and the Chocolate Factory by Roald Dahl. This longing to be an avid reader is a source of inspiration for my interest in reading development. I want to motivate my students to become the avid reader I long to be. My approach to teaching reading is based on the idea of developing life long readers.

My interest in reading really began to bloom while student teaching. I was amazed with my cooperating teacher's classroom library, and now pride myself in the development of my own classroom library. While student teaching, I saw first hand how a good reading program works. She really did inspire her students to become lifelong readers though the utilization of "cutting edge" teaching strategies. Our students loved to read and couldn't wait to talk about what they were reading. I still

use some of the ideas that I practiced while student teaching. One thing that remained with me is to stay on top of all the new strategies for developing reading comprehension and skills. With that, I have attended many professional workshops focusing on reading. Each time I learn something new about how students learn to read.

A final interest in reading development stems from the state performance tests my students undergo (Minnesota Comprehensive Assessments – MCA) In today's elementary classroom, reading is a major focus across the curriculum. As a matter of fact it really doesn't end at the elementary level. The bottom line is that reading ability has a lot to do with the success of a student. The state of Minnesota has shown its support of this concept through two mandates. The first involves standardized testing in reading. Currently third, fifth, eighth, and tenth grade students are administered some form of reading assessment. Each year more grade levels are being added to this list. The second mandate is for teachers. Every five years, teachers must renew their teaching license. The state now requires all teachers to receive training in reading as part of the renewal process. The bar has been set and continues to rise. My challenge is to rise up to that standard. This leads me to ask myself, "How I can help my fifth grade students to become better readers?"

I've attended many workshops highlighting traditional ways to promote reading in the classroom. I am ready to explore other options. As I pondered ideas, I came across an article about students reading outside. In the article it states, "Reading is a multi-sensory experience filled with opportunities to use sight, sound,

and touch." My wheels began to turn. What would happen to my students reading comprehension if I integrated nature?

When I am in need of calming, energizing, and refocusing, nature is my tool. Could that be true for my students as well? This is where my idea began to take shape. Since my school is in a downtown setting, sounds include cars, trucks, church bells, and sirens. All of these are not very outdoors-nature like. These were not the sounds I had envisioned. So I began to explore other ways to bring the sounds of nature to my students. Since I cannot bring my students to the sounds of nature I wanted then why not bring the sounds to them in the form of a CD. Now my idea began to grow. Can I raise my students reading ability with the help of nature sounds?

Literature Review

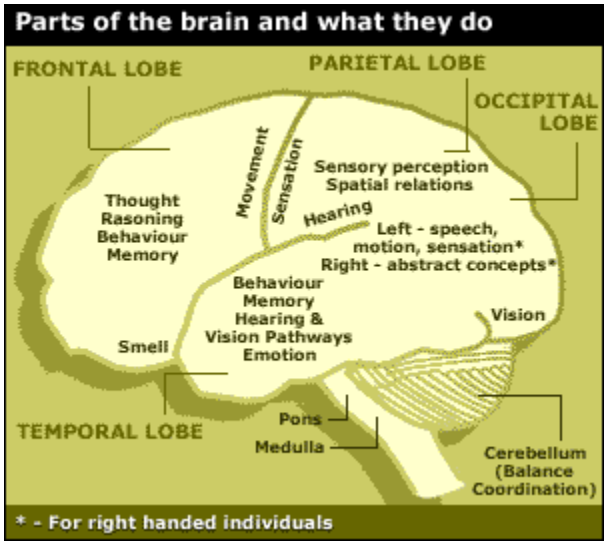
What are the effects on reading comprehension, skills, and attitudes when nature sounds are played in the background? This question led me to research, beginning with the brain and how it functions.

The Brain

The adult human brain weighs in at three pounds, relatively large when compared to our body weight. It consumes almost 20 percent of our calories even though our brain is only 2 percent of our body weight. The brain works ceaselessly according to Dr. David A. Sousa (1995). It is divided into two main hemispheres with many other areas dedicated to specific functions. The cerebrum, the largest of the three main areas, is over 80 percent of the brain by weight. This is the area that makes up the left and right hemispheres. Thinking, memory, speech, and muscular movement are controlled by the areas in the cerebrum. The cerebrum is also involved with emotional responses. At the base of the cerebrum is the hippocampus. Another major role in consolidating learning and in converting information is found in the hippocampus. The amygdale, attached to the hippocampus, also plays an important role in emotions. Another part of the brain, the cerebellum, is located in the rear part of the cerebrum. The cerebellum coordinates every movement. Finally, the last major part of the brain, the brain stem, is the center of sensory reception and the control for vital body functions such as heartbeat, respiration, body temperature, and digestion (Sousa, 1995).

"*With our new knowledge of the brain, we are just dimly beginning to realize that we can now understand humans, including ourselves, as never before, and that this is the greatest advance of the century and quite possibly the most significant in all human history.*"

- Leslie A. Hart,
Human Brain and Human Learning
(Sousa, 1995 p. 1)



"There are probably more differences in human brains that in any other animal partly because the human brain does most of its developing in the outside world."

- Robert Ornstein and Richard Thompson,
The Amazing Brain
(Sousa, 1995 p.7)

Brain Research

While the brain remains largely a mystery, we have learned more about the brain in the last five years than in the last 100 years. The 1990's will be known as the "decade of the brain" (Wolfe& Brandt, 1998 p.8). Using MRI and PET scans,

researchers can display in vivid color the activity in different parts of the brain (Wolfe& Brandt 1998). One concept about the brain is clear: the brain calls selected areas into play depending on what the individual is doing at the moment. With this knowledge researchers have been able to construct models to explain how the brain functions (Sousa, 1995).

There are several different models explaining how the brain behaves. The following is taken from How the Brain Learns by Dr. David A. Sousa (Sousa, 1995 p. 11).

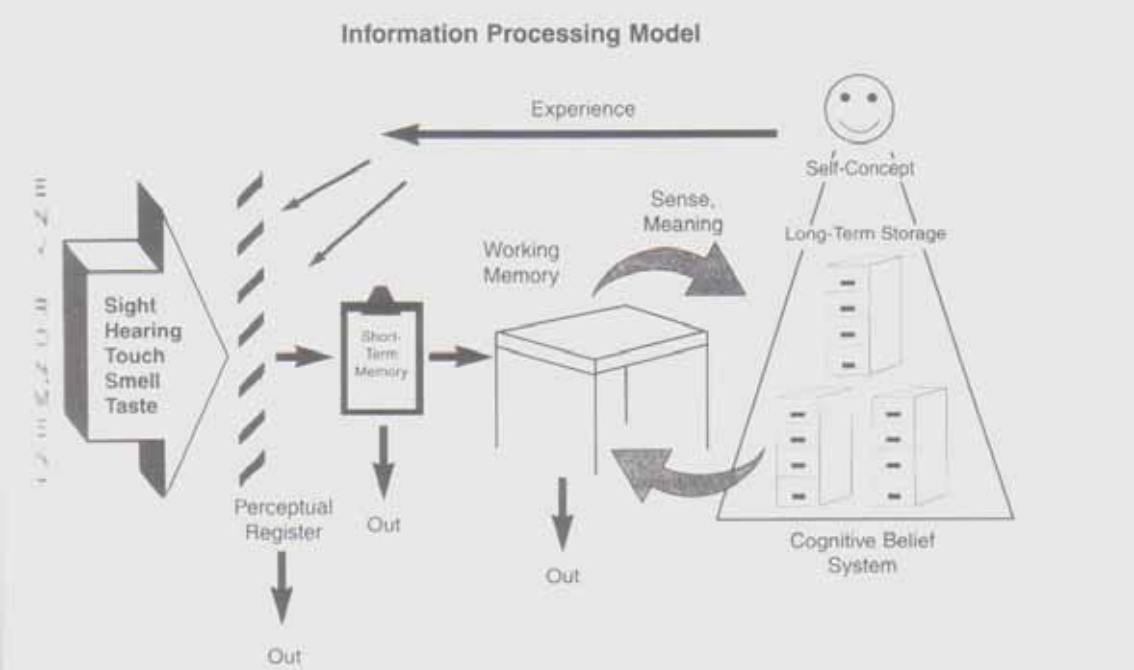


Figure 2.1. The Information Processing Model shows how the brain deals with information from the environment. (Adaptation and enhancement of original model by Robert Stahl.)

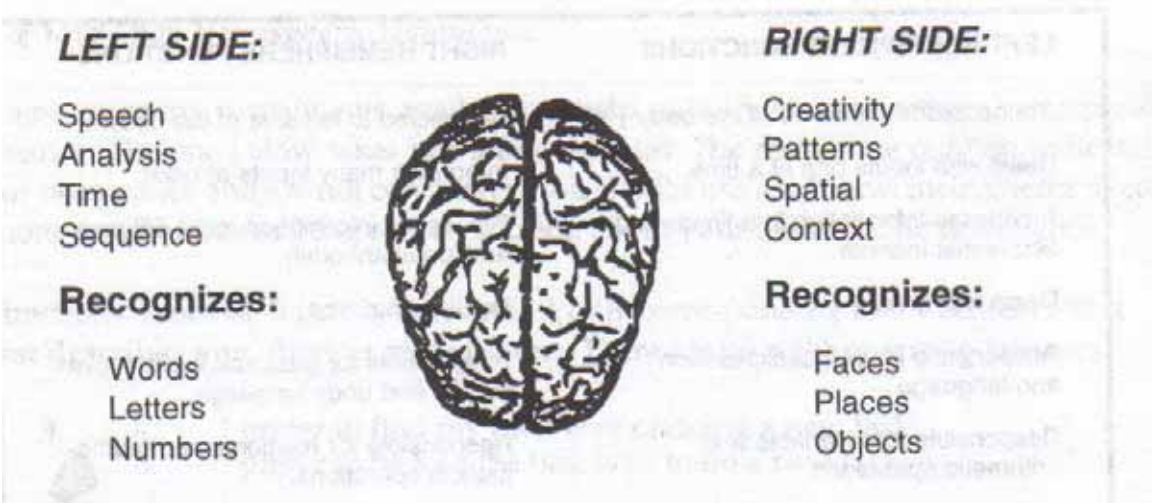
Information processing is the responsibility of the neurons in the brain. Neurons also convert chemical and electrical signals back and forth. Research has

found that healthy adults have the same number of neurons as found in the brain of a two year old. By the age of four much of the brain's infrastructure is in place (Wolfe& Brandt, 1998). So if we know neurons are in charge of the movement of information, and much of our brain is developed by 4 years of age; then what happens when we learn? Why are there differences in learning?

Research has discovered that the left and right hemispheres of the human brain process information differently. Hemisphericity, cerebral specialization, has revealed considerable consistency in the different ways the two halves of the brain store and process information (Sousa, 1995).

The left side of the brain is considered the logical hemisphere while the right side is the intuitive hemisphere.

The following diagram from Dr. Davis Sousa's book, How the Brain Learns, lists the areas each hemisphere is responsible for monitoring (Sousa, 1995 p.87).



"*Normal people have not half a brain nor two brains, but one gloriously differentiated brain, with each hemisphere contributing its specialized abilities.*"

- Jerre Levy
Right Brain, Left Brain: Fact and Fiction

(Sousa, 1995 p.85)

Learning

The process of learning begins with some kind of stimulus to the brain. Then the stimulus is sorted and processed at many different levels. Finally there's the formation of a memory potential. The end result of learning is intelligence (Sousa, 1995). Learning changes the brain because it can rewire itself with each new stimulation, experience, or behavior. Consensus tells us that thirty to sixty percent of the brain's wiring is provided by heredity, and environmental impact contributes to forty to seventy percent of the brain's wiring (E. Jensen, 1998). Learning is strongly

influenced also by emotion. Studies indicate the left hemisphere is more active when we experience positive emotions (Jensen, 1998). The environment affects how genes work, and in turn genes determine how the environment is interpreted (Wolfe& Brandt, 1998). In the mid-1960's Marian Diamond and her colleagues at the University of California at Berkley pioneered research showing that brain structures are modified by the environment. Her research established the brain's amazing ability to constantly change its structure and function in response to external experiences (Wolfe& Brandt, 1998). This leads me to ask, "Can nature influence the brain's learning process?"

Learning Styles

Everyone has his/her own individual way of learning something new. Therefore, we need to understand how children learn before we can determine who will benefit from background nature sounds while reading. Three of your five senses are used in the process of learning, storing, remembering, and recalling information. These senses, your eyes, ears, and sense of touch, are essential roles in your learning process. The different approaches, or ways of learning, are described as your learning style. The three main learning styles, visual, kinesthetic, and auditory, are determined by the amount of each sense you use while learning new information. Each one of us uses a combination of these learning styles; a combination of our senses to learn. Hence, our learning style is a result of our natural preferences and successes.

Visual Learners

Visual learners learn best by seeing. This learner enjoys images and observing. With that in mind, visual learners need to see the teacher's body language and facial expressions to fully understand the information presented. They will project a mental image while reading or listening. The following characteristics are used to summarize individuals with strong visual learning tendencies: ("http://www2.yk.psu.edu/learncenter/acskills/visual.html")

1. Visual learners easily remember information presented in pictures, charts, or diagrams.
2. Visual learners have strong visualizations skills, often creating mental images.
3. Visual learners can make stories or the information they are reading come alive in their minds.
4. Visual learners have strong visual-spatial skills.
5. Visual learners often pay close attention to body language.
6. Visual learners have a keen awareness of the aesthetics.

Visual learners have the tendencies to take very detailed notes and frequently doodle. Often needing more time to complete tasks, visual learners are very interested in the appearance of something. They need a quiet, passive environment to learn at their best. Visual learners like to read.

Auditory Learners

Auditory learners learn best by hearing. They remember the way words sound in their head. Auditory learners often hum or talk to themselves when bored or concentrating. They like to listen, and absorb a lot of information from radio. Auditory learners can interpret the underlying meaning by listening to the tone of voice, its pitch, speed and other nuances. Written information has little meaning until it is heard. Auditory learners typically remember information more accurately when it has been explained to them orally. The following characteristics describe individuals with strong auditory learning tendencies: ("http://www2.yk.psu.edu/learncenter/acskills/visual.html")

1. Auditory learners can remember details from information they have heard in
   conversations and lectures with accurate details.
2. Auditory learners have strong language skills and enjoy a well developed vocabulary.
3. Auditory learners often have strong communication skills.
4. Auditory learners have a tendency to learn foreign languages easily.
5. Auditory learners often have musical talents

Auditory learners often do well in a noisy environment. They can study effectively while listening to music, but can be easily distracted. Auditory learners typically whisper to themselves while reading, and enjoy being read to.

Kinesthetic Learners

Kinesthetic learners learn best while moving. They have a very active learning style with learning through doing. Kinesthetic learners enjoy the actual experience of learning. They need to be involved in body activities and action-oriented situations. Kinesthetic learners are natural experimenters, learning best through a hands-on approach which incorporates actively exploring. They are the "doers" of the classroom. The following characteristics are used to describe learners with strong kinesthetic tendencies:
("http://www2.yk.psu.edu/learncenter/acskills/visual.html")

1. Kinesthetic learners often wiggle, tap their feet, or move their legs while sitting.
2. Kinesthetic learners are often labeled "hyperactive."
3. Kinesthetic learners do well as performers, athletes, or dancers.
4. Kinesthetic learners work well with their hands.
5. Kinesthetic learners are often well coordinated and have a strong sense of timing and body movement.

Kinesthetic learners often struggle with sitting still for long periods of time; therefore they miss some of the instruction. They are in constant motion while reading or listening, and need frequent breaks. Kinesthetic learners use their hands or

gesture while talking. They often study with background music. Reading is not a priority for kinesthetic learners.

Multiple Intelligences

Along with the three learning styles, Howard Gardner in his book, Frames of Mind, conceived multiple intelligence theories to recognize a person's intellect. His theory outlines seven distinct intelligences. Many researchers, including Gardner, believe that our intelligences can be developed and are not fixed (C. Knapp, 1996). Thomas Armstrong, in Multiple Intelligences in the Classroom (Knapp, 1996 p.12-13), describes the intelligences as follows:

Spatial: The ability to perceive the visual-spatial world accurately and to perform transformations upon one's perceptions. This intelligence is highly developed in hunters, scouts, guides, interior designers, architects, artists, and inventors.

Bodily-Kinesthetic: The expertise in using one's whole body to express ideas and feelings, and the facility in using one's hands to produce or transform things. This intelligence is highly developed in actors, mimes, athletes, dancers, crafters, sculptors, mechanics, and surgeons.

Musical: The capacities to perceive, discriminate, transform, and express musical forms. This intelligence is highly developed in musical performers, aficionados, and critics.

Linguistic: The capacity to use words effectively, either orally or in writing. This intelligence is highly developed in storytellers, orators, politicians, poets, playwrights, editors, and journalists.

Logical-Mathematical: The capacity to use numbers effectively and to reason well. This intelligence is highly developed in mathematicians, tax accountants, statisticians, scientists, computer programmers, and logicians.

Interpersonal: The ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people. This intelligence can include sensitivity to facial expressions, voice, and gestures, as well as the ability to respond effectively to such cues – to influence other people, for example.

Intrapersonal: One's self-knowledge and the ability to act adaptively on the basis of that knowledge. This intelligence includes having an accurate picture of one's strengths and limitations, awareness of one's moods and motivations, and the capacity for self-discipline.

Since Gardner's work, researchers have theorized the need for an eighth intelligence. This being the naturalist intelligence. This intellect can be described in the following way: (Knapp, 1996)

Naturalist: The ability to classify and categorize information relative, especially in the natural world, into groups. For example, when learning vocabulary, naturalists would think of grouping new words in ways that make sense to them. This intelligence would include people who enjoy being outside and nature.

By applying the theories of learning styles and multiple intelligences to instruction some educators believe that students will become more well-rounded and motivated to learn.

Learning to Read

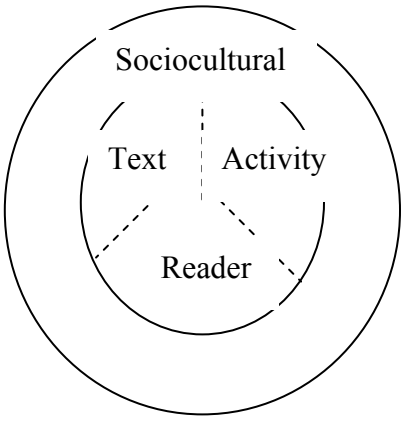
One of the main goals of reading is to comprehend what is read. Comprehension is necessary in all forms of reading. Enjoying great literature walks hand in hand with your ability to comprehend it. The process of reading

comprehension has changed dramatically over the past 25 years (Gough, 1971). Gough (1971) best illustrated the traditional values of reading comprehension. Reading was seen as a linear process, comprehension was a passive process. Reading comprehension is critically dependent on the reader's fluency in identifying printed words, and to read smoothly with appropriate expression (D.R. Reynolds, 2002).

Differences in the way we acquire knowledge has led many researchers to rethink they way we teach, especially reading. Reading enriches our lives. The central and most important process in reading is comprehension, the ability to construct meaning from printed text. The RAND Reading Study Group (RRSG) defines reading comprehension as the process of simultaneously extracting and constructing meaning (A. Sweet & C. Snow, 2003). This group goes on to explain that reading comprehension entails three elements:

1. The reader who is doing the comprehending
2. The test that is being comprehended
3. The activity in which comprehension is a part.

These three elements cannot be considered in isolation. Sociocultural factors, such has how students think of themselves as readers, also plays a role in reading comprehension. RRSG developed a heuristic for thinking about reading comprehension based on their definition, as shown below (Sweet & Snow, 2003).



It is the interaction of the reader and the text that determines whether reading comprehension will be successful or not. Researchers working in the area of reading comprehension have shown repeatedly that meaning does not exist in the text. It is the reader who actively constructs meaning using both their world knowledge and their academic knowledge to interpret print and non-print texts (Sweet & Snow, 2003). Reading comprehension is critically dependent on the reader's fluency in identifying printed words, as reflected by the reader's accuracy and speed in identifying the words in the passages as well as in his or her ability to read smoothly with appropriate expression.

The Reading Classroom

The classroom learning environment is also an important aspect of reading comprehension. It can affect the development of comprehension abilities through its organizational grouping, inclusion of technology and the availability of materials. Creating the perfect reading environment challenges teachers and parents alike. Researchers recommend considering the following when establishing a healthy reading environment: ("Dynamic Living 2004").

Lighting – is it adequate?

Ventilation – do you have enough fresh air?

Reading Position – comfortable but not too comfortable

Facial Distance – angled and 18 inches away from your eyes

Distractions – keep them limited

Reading materials – wide variety available?

Role Models – are there any?

Reading is a multi-sensory experience filled with opportunities to use sight, sound and touch. Will the introduction of nature sounds in the background while reading for enjoyment help to create a healthy reading environment? Which types of learners will benefit the most from this setting?

Music, the Brain and Body

Music has an effect on the mind and body. It can affect people in many ways as stated:

> "Music hath charms to sooth the savage beast, to soften rocks, or bend a knotted oak."
>
> - William Congreve (L. Davis, 1997)

It is commonly known that music affects our emotions. Research even supports that music greatly affects and enhances our learning and living. The language of music is understood instinctively by children. "Hearing is our most primitive sense, neurologically. Audition begins before birth and helps shape brain development. Sound affects brain function much more profoundly that people tend to realize," says Robert J. Doman Jr., founder and director of the National Academy for Child Development (NACD) in Ogden, Utah (A.T. Patten, 1999). The renowned French ear surgeon, Dr. Alfred Tomatis, referred to sound as an essential "nutrient" for the ear, nervous system and brain (Patten, 1999).

Through the use of magnetic resonance imaging (MRI), positron emission tomography (PET scan), and electroencephalogram (EEG), researchers have been able to study music's effect on the brain. EEG's have been used to demonstrate the effects of music on the brain and thinking. Research has shown that both the right and left hemispheres are responsive to music even though it is labeled to be a right hemisphere function (Cromie, 2001). It has also been demonstrated that music can change brain waves and make the brain more receptive to learning. Music connects the functions of the right and left hemispheres of the brain so they can work together. This makes learning quick and easy. Brain function also increases when listening to music. Studies have shown that music promotes complex thinking; making connections between emotions, thinking, and learning (L. Davies, 2000). Science provides us with the visible evidence of the fact that music literally changes children's brains. The PET Scan has allowed researchers to see which parts of the brain come alive during particular activities. Researchers can also determine which parts are affected by different types of simulation (Sousa, 1995). Dr. James Bharucha, a psychologist at Dartmouth College, theorizes that the patterns of music simply mirror the organizational structure of the human brain. He arrived at this theory through his research using a computer model of the brain. When his computer model brain was exposed to music, the layers of cells responsible for recognizing individual notes signaled another layer responsible for recognizing chords, which in turn, signaled a third layer of cells. Music has the unique capacity to regulate the brain's rhythm, balancing the very special powers of the left and right hemispheres.

Music excites the inherent brain patterns and enhances their use in complex reasoning tasks (D. Campbell, 2000).

Dr. Alfred Tomatis studied the effects of different frequencies on the brain and body. According to Tomatis, high frequency music actually "charges the brain" and impacts neurological health as a whole. He was treating psychological and learning disabilities through hearing. In his research he discovered that high-frequency stimulation tended to provide the best results. High frequencies increased energy levels and created stronger feelings of calm, while lower-frequencies often proved disorienting (Campbell, 2000). So with the right kind of music, we can observe enlivened neurological function, actually boosting intelligence.

In addition, other brain research has concluded that music has the power to reduce stress, enhance cognitive functioning, and improve productivity and creativity when the tempo is 60 beats per minute (Gunthe, 2000). A tempo of 60 beats per minute is equivalent to a resting heart rate. Sound and music color every aspect of our world. People utilize music in many aspects of their lives, such as enjoyment, intrigue, emotional suffering, relief, boredom, and/or a soothing balm.

In the medical field music has been a source of research as well as a tool used in therapy situations. ("Pagewise" 2002) Music has been utilized in therapy treatments for the treatment of seizures, to lower blood pressure, treat ADD children, mental illness, depression and stress. Researchers have discovered that music can change metabolic rates, increase endorphins, increase or decrease blood pressure, affect energy levels, and affect digestion, either positively or negatively, depending

on the type of music. It is important to understand that both sound and music play an integral role in the way we experience our world (Campbell, 2000).

> "Music is a swift weaver of deep feelings."
>
> - Andres Segovia (Campbell, 2000 p.17)

Music, Learning, and Reading Comprehension

Many educational resources and advocates recommend the use of background instrumental music to increase learning potential and provide a calming affect. Some amount of background music can be helpful in the learning process both in a structured school setting and a non-structured homework setting. Many researchers have studied the effects of music on the learning process including reading comprehension.

The Sound Health Series™

The Sound Health Series™ experts have identified components of music and sound that produce a physical state conducive to specific activities. They encourage listening to The Sound Health Series™ to: ("http://www.incrediblehorizons.com/soundhealth.htm")

- act as a filter to diminish the negative effects of sound pollution
- improve auditory tonal processing

- enhance specific neurological functions such as learning and concentration
- derive the positive neurological effects that can be achieved by listening to classical music
- provide an alternative music that may have a negative impact on the brain
- promote mental, physical, and emotional well-being

Teachers using The Sound Health Series™ CD's have also had positive experiences in the classroom. Sound Health CD's were used in twenty-seven classrooms, grades kindergarten through sixth, with 560 students. A review of the responses of the twenty-seven teachers showed that: ("http://www.incrediblehorizons.com/soundhealth.htm")

- an average of 70.5% reported their students were on task more often
- 68% reported their classrooms were less noisy
- 48.5% reported their students were more attentive
- 50.5% reported their students were more productive when listening

These teachers also indicated they felt the music was most useful when played during periods when their students were engaged in writing, thinking, silent reading, language, and independent study (Jeyes, 2003).

Music Research

Etaugh & Micheals (1975) found that when students frequently studied to music, a specific type of music was less likely to impair their performance on reading comprehension tests (K. Sandberg & S. Harmon, 2003). Miller and Schyb (1989) found that males and females perform differently in the presence of music when performing various types of tasks. The results also indicated that music helped their performance regardless of gender. Tucker and Bushman (1991) found that rock and roll music had a detrimental effect on tasks involving mathematical and verbal skills, but it did not have an effect on reading comprehension tasks (Deems, 2004). A study by Lozanov revealed that music has the power to create a relaxed state of alertness. He also learned that body rhythms adjust to music. Alpha brain waves increased while beta brain waves decreased when music was played (Deems, 2004). Beentjes (1996) concluded that background music was perceived as having a slightly enhanced effect on performance on paper –and pencil assignments. Davidson and Powell (1986) determined a significant increase in on-task performance for males in the classroom, and for the class as a whole, when easy-listening background music was playing (Y. Levy, 1986). Kiger's (1989) study showed participants who read passages in the presence of low information-load music performed slightly better than either those who read in silence or with high information-load background music. He characterized the information-load as the amount of loudness, variety, complexity, and tonal range of the music (Deems, 2004). Hall's (1952) study demonstrated there was a significant improvement on reading comprehension with background music administered during the test (Deems, 2004). Ostrander and Schroeder (2000) found

that Baroque music, containing average tempos of 50-70 beats per minute, alone speeded up learning by twenty-four percent and increased memory retention by twenty-six percent in their study at Iowa State University (Lawrence, 2001). This existing research seems to support the idea that certain types of instrumental music, especially slow- to medium – paced, non-percussive music, is beneficial in several learning situations. Music has a positive affect on reading comprehension.

Music helps us learn to because it will: (C. Brewer 1995)

- establish a positive learning state
- create a desired atmosphere
- build a sense of anticipation
- energize learning activities
- change brain wave states
- focus concentration
- increase attention
- improve memory
- facilitate a multi-sensory learning experience
- enhance imagination
- add an element of fun

The Mozart Effect

The Mozart Effect also supports the idea of background music, specifically Mozart. The Mozart Effect is a term used to convey the use of Mozart's music to

enhance the quality of life in a variety of ways, including health, wellness, education, creativity and emotional expression in both children and adults. Studies of the Mozart Effect have proven that music can: ("http://www.childrensgroup.com")

- increase verbal, emotional and spatial intelligence
- aid memory development and improve concentration
- inspire right-brain creative thinking processes
- improve body movement and coordination
- enhance mood and provide motivation
- regulate natural body rhythms
- enhance auditory and emotional awareness
- improve test scores
- calm hyperactive children and adults
- integrate both sides of the brain for more efficient learning

Music and the Mind

Besides acting as a calming device and increasing attention span, certain types of classical music can be powerful catalysts in the creative process according to Colin Rose and Malcolm J Nicholl, in their book, Accelerated Learning for the 21st Century (Lawrence, 2001). They go on to explain how Albert Einstein and Charles Schultz have used music for inspiration.

Albert Einstein would go to his violin for solutions to his struggles with complicated formulas. He played the violin since the age of six and included the works of Beethoven and Mozart. Albert's son remembered that "Whenever he felt

that he had come to the end of the road or into a difficult situation in his work, he would take refuge in music and that would usually resolve all his difficulties" (Lawrence, 2001).

Charles Schultz, cartoonist, credited music as his inspiration behind many of his insights that came to life through Charlie Brown, Lucy, and Snoopy in one of the world's most famous cartoon strips- Peanuts. Schultz described going to a concert by saying "your mind begins to travel from one thing to another and all of a sudden you're inspired by the emotion and from that I will get some of my very best ideas" (Lawrence, 2001). The research and testimonials support music's effect on the mind, body, and learning.

Nature, the Mind, and Learning

It is not the language of painters but the language of nature which one should listen to…The feeling for the things themselves, for reality, is more important the feeling for pictures.

Vincent VanGogh (R. Louv, 2005)

Each one of us has a special connection with our natural world. Each of us has used the natural world in a variety of ways. What does the natural world mean to us and do for us? Nature has been used at a hospital in Baltimore, MD as part of a distraction therapy study (Diette, 2002). The objective of the study was to determine whether distraction therapy with nature sights and sounds during flexible

bronchoscopy (FB) reduced pain and anxiety. Nature scene murals were placed at the bedside, and patients were provided a tape of nature sounds to listen to before, during, and after the procedure. Researchers discovered the odds of better pain control were greater in the intervention patients, the ones with nature sights and sounds, than in the control patients. They also found that older patients and patients with better health status reported significantly less pain. Distraction therapy with nature sights and sounds significantly reduced pain in patients undergoing flexible bronchoscopy (FB) (Diette, 2002).

Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts.

- Rachel Carson (Louv, 2005)

Nature is a place to use all the senses and learn by doing. Architect Alberto Lau, in Richard Louv's book The Last Child in the Woods: Saving Our Children from Nature Deficit-Disorder, lists what might be learned while building a tree house. It states you learned:

- the most common sizes of lumber and about the size of nails
- that diagonal bracing stiffened the structure
- about hinges
- the difference between screws and nails
- about ladders
- about pulleys

- that framing must strengthen openings such as windows and trap doors
- to slope the roof in imitation of real homes
- to place the framing narrow side up
- how to cut with a handsaw
- about measurement, and three-dimensional geometry
- how the size of your body relates to the world

He ends it with, "You probably learned from your failures more than from success" (Louv, 2005). Children learn more than these academics from nature. Children need nature for the healthy development of their senses, and, therefore, for learning and creativity.

According to a review of literature completed by Andrea Fabes Taylor and Frances Kuo at the Human Environment Research Laboratory (University of Illinois), green space supports healthy child development. Robin Moore has written that natural settings are essential for healthy child development because they stimulate all the senses. Moore also states multi-sensory experiences in nature help to build "the cognitive constructs necessary for sustained intellectual development" (Crain, 2001). Edith Cobb (1977) in her book, The Ecology of Imagination of Childhood, concluded that inventiveness and imagination of nearly all of the creative people she studies were rooted to their early experiences in nature.

Developmental psychologist, William Crain states that children need extensive contact with nature to grow well (W. Crain, 2001). Using Montessori's

research (1909/1964, 1948/1967), Crain formulated three major ways in which nature helps children develop. They include nature as a way to stimulate observation, foster creativity, and instilling a sense of one with the world (Crain, 2001).

Nature stimulates powers of observation. Moore (1972) demonstrated nature's effects on children's perceptions. In her study, she transformed a one and a half acre all blacktop play yard to include a half acre nature area. Students' comments included statements like "the all blacktop yard was boring, and the nature area was a wonderful place to just sit or to go on little trips and look at things." It is obvious the students' comments demonstrate a sensory awaking (Crain, 2001). Roger Hart (1979) was surprised with the patience and care with which the children simply observed nature during his study of outdoor behavior (Crain, 2001). Nature's power to awaken children's senses and observations has also emerged in other research (Titman, 1994).

Nature fosters creativity. David Sobel (1993) has documented the enthusiasm with which 8-to-11-year-olds were building shelters with nature's materials (Crain, 2001). Nature also inspires children's art and poetry. Timothy Rogers (1979) collected 220 spontaneous poems for his anthology, Those First Affections. Eighty-five percent of the poems he collected dealt with the natural world. Nature inspires creativity in a child by demanding visualization and the full use of the senses (Crain, 2001).

Nature instills a sense of peace and being at one with the world. In nature, a child finds freedom, fantasy, and privacy: a place from the adult world, a separate peace. We know that nature experiences can relieve some of the pressures that may

lead to childhood depression. Moore (1986) observed children played together harmoniously in the nature area. In the nature area they commonly joined together in relaxed conversation. There was a striking quieting affect in the nature area. Nature is often overlooked as a healing balm for the emotional hardship in a child's life. (Louv 2005)

Let Nature be your teacher.

- William Wordsworth. (Louv, 2005)

Methodology

The purpose of this study is to answer the question: what are the effects on reading skills with different types of learners when nature sounds are produced in the background? I must first make the following assumptions based on my literature review to answer these questions.

1. All students have a learning style unique to them.
2. There are a variety of effective techniques to teaching reading.
3. Sounds (i.e. music) have a direct effect on brain function and mood.

Before I begin researching and testing these ideas, I need to explain my plan to the families of my students. I will also receive permission from my parents for their students to be involved (Appendix 1).

Once permission is granted, I will need to identify the types of learners that make up my research group. This research group consists of 28 fifth grade students living in Northern Minnesota. Two individual student surveys will be utilized when determining my students' learning preferences (Appendix 2 and Appendix 3). Once my students have responded to the surveys I will tabulate their learning preferences using the following website: http://www.ldpride.net/learningstyles.MI.htm. This web site uses the same questions as my survey and then tabulates the percentage of each learning style based on the responses to the questions. Even with these state of the art industry tools to determine learning style, because of the age of my students, I do

need to consider this a limitation in my study. My students are still in the process of developing and discovering their learning preferences. With the learning preferences identified I am able to group my students according to their learning style tendencies. This allows me to track my visual learners, auditory learners, and kinesthetic learners. Students who have not yet established a strong learning preference will also be tracked as a separate group. Research also has identified eight multiple intelligences that learners have tendencies to demonstrate. Once again I will use a survey of multiple intelligences to evaluate my students' intellectual tendencies (Appendix 4). Even with the best tools of the industries I am still limited with the accuracy. Researchers have theorized that multiple intelligences are not fixed and can be developed. This would most definitely still be occurring in my fifth grade students.

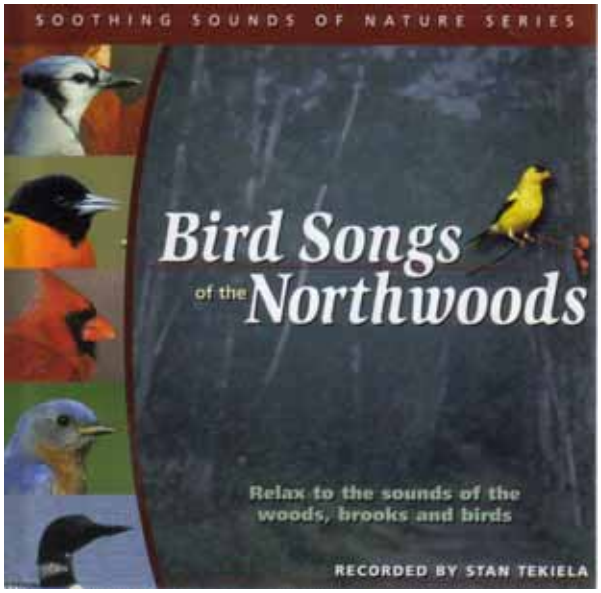
Before we begin reading, I will also survey my student's attitudes towards reading (Appendix 5). This survey will provide the opportunity to explore any additional effects of listening to background nature sounds while reading. While a change in attitude will be difficult to identify, I will be able to learn their thoughts and opinions about reading with nature sounds in the background.

With my learning preferences and reading attitudes determined, I will set up two research studies. The first research study will investigate reading comprehension and growth while reading in a quiet environment. The second research study will also investigate reading comprehension and growth, but the study will include the use of background nature sounds while silent reading. I will track my students' reading achievements and attitudes during each study and then compare the two. This comparison will help me identify who benefits the most from background nature

sounds while reading for enjoyment. My theory is that the auditory learner will gain the most from background music.

Before beginning each research study, I need to determine a base line for reading ability. Star Diagnostic will provide me with each student's reading ability grade equivalent for reading. STAR Diagnostic is a computer program designed by Reading Renaissance for assessing students' reading abilities. This computerized program tests students using a series of vocabulary type questions. As the students are answering the questions the program adjusts to determine a grade equivalent reading score. Once a base line has been established, it is time to let my students read. Each student will choose a novel at his or her individual reading ability and interest. For the next month, he or she will read silently, starting first with a quiet environment, for thirty minutes a day. When finished reading a novel, each student will be required to take a comprehension quiz about the story. Accelerated Reader, also designed by Reading Renaissance, will be used for quiz taking. Accelerated Reader is another computer program that asks ten comprehension questions about the selected novel. Accelerated Reader novels are assigned points according to the number of pages the book contains. The more pages in a book the more points assigned to it. This program allows me to track student progress. I am able to tabulate the information with a diagnostic report (Appendix 6). In this report I am able to view the number of points each students has obtained as well as the average percent correct on the quizzes they have taken. The students will also keep an individual reading log (Appendix 7). On their reading log students will keep track of the number of pages read each day.

After a month of collecting reading data in a quiet environment my students will then repeat the process with nature sounds playing in the background. I have chosen a collection of nature sounds that would be familiar to my students. This will help place them in an environment that is known to them. The CD, Bird Sounds of the North Woods by Stan Teikla, contains numerous bird sounds as well as babbling streams, frogs, thunder, and rain showers. Many of the nature sounds have been recorded in Northern Minnesota.



The birds that you'll hear on this CD include the Red-winged Blackbird, Eastern Bluebird, Northern Cardinal, Black-capped Chickadee, Brown-headed Cowbird, Mourning Dove, Rose-breasted Grosbeak, Common Loon, White-breasted Nuthatch, Baltimore Oriole, Barred Owl, Common Raven, American Robin, Chipping Sparrow, Field Sparrow, White-throated Sparrow, Scarlet Tanager, Hermit Thrush, Whip-poor-will and Hairy Woodpecker. You'll also hear the Eastern Chipmunk, Green Frog, Western Chorus Frog, Spring Peeper, American Toad, Gray Treefrog and crickets.

CREDITS:

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Once all that data has been collected, I am then able to compare the results. I will look specifically at my students' reading comprehension based on the percentage correct on the Accelerated Reader quizzes. This data will uncover which types of learners have improved their comprehension while having background nature sounds playing when reading for enjoyment. I will also investigate their over all reading abilities, including rate, fluency, and speed. With their reading log I am able to compare the number of overall pages read with and without nature sounds as well as the average number of pages read on a daily basis. Accelerated Reader also includes data about the amount of pages read through their point ranking systems on the novels. This could prove to be a factor, since the more you read the better reader you become. Finally, I will survey my students' reading attitudes using the initial reading survey; however, this time I will also include questions regarding how they feel about the nature sounds playing in the background (Appendix 8). Attitudes towards reading play a factor in reading comprehension and achievement as well. When you enjoy a story and are interested in reading, overall comprehension increases. The data from Accelerated Reader and the surveys will provide me with the information needed to base my conclusions on.

Limitations

As I am evaluating the data to my base conclusions I must keep in mind the time frame on my study. It is asking a lot to see dramatic improvement of reading skills after a one month time frame; therefore this is a limitation of my study. The information gathered in this study will allow me to show the possibilities of reading

with nature sounds in the background. As mentioned earlier my students are also in the developmental stage of their learning. This means the accuracy of their identified learning style and multiple intelligences should also be considered a limitation. The surveys administered are given tendencies for the current time frame. As my students mature their tendencies will develop and change.

Research Flow Chart and Timetable

November

Conference with my families

Identify Learning Styles of my students

Identify Multiple Intelligences of my students

Administer Initial Reading Survey

December

Identify reading abilities base line

Reading in a quiet environment

Identify reading achievement

January

Identify reading abilities base line

Reading with nature

Identify reading achievement

February

Administer Post Research Reading Survey

Compare achievement between the quiet environment and nature sounds

Research Flow Chart

Identify Learning Styles

Identify reading abilities base line

Reading in a quiet environment

Identify reading achievement

Identify reading abilities base line

Reading with nature

Identify reading achievement

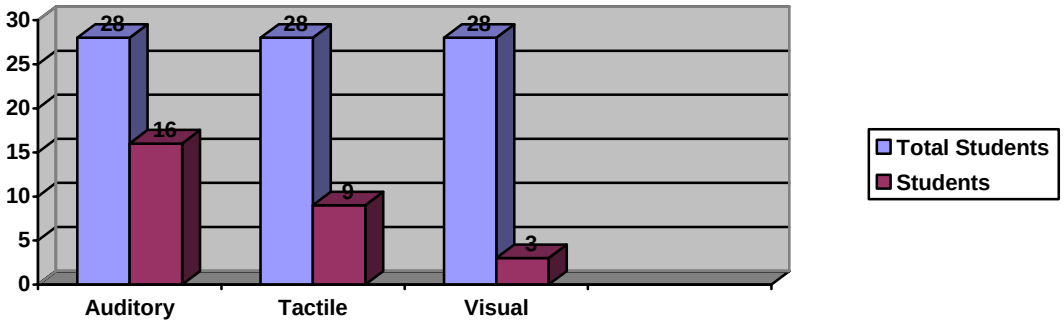
Compare achievement between
the quiet environment and nature sounds

Results

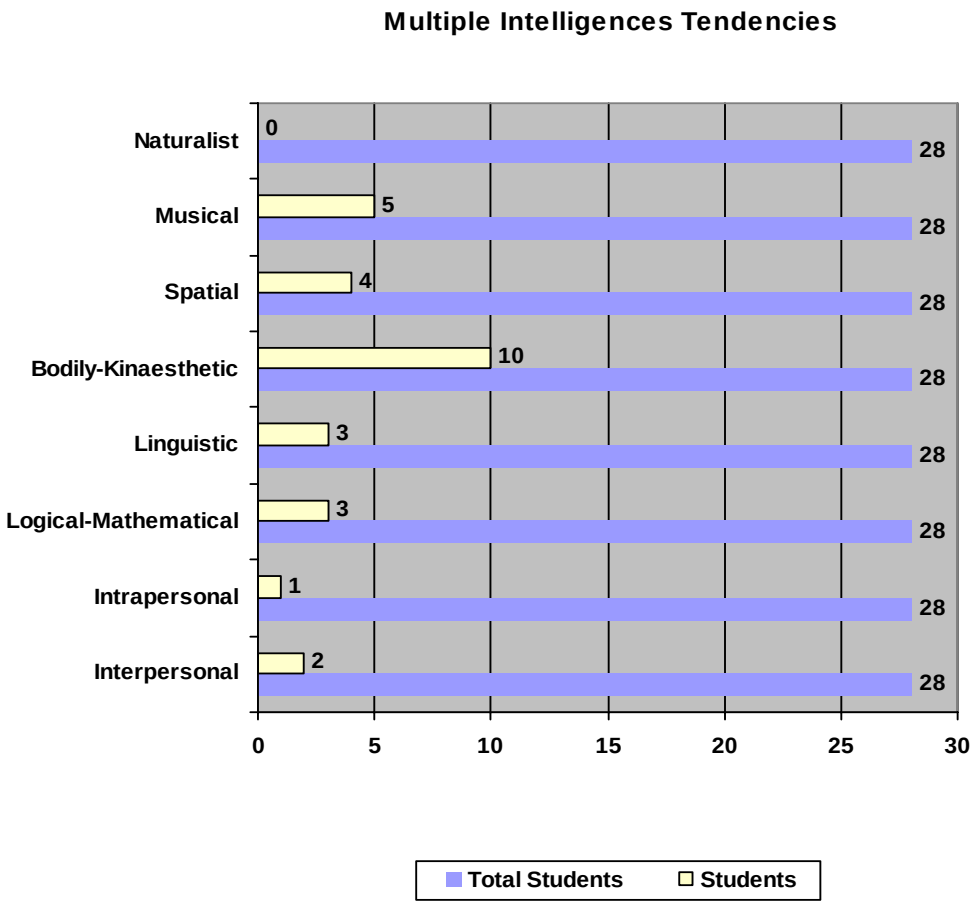
On September 6, 2005, twenty-eight bright eyed children entered my room for a new adventure. Our school year was about to begin, we were all filled with excitement for the year to unfold. We all looked forward to being involved in a research study. Before my study began I met with my students' parents and discussed the project their child would be involved in. I was pleasantly surprised by the overwhelming support and positive reactions from my families. My class, consisting of fifteen boys and thirteen girls, began our study on November 21, 2005. We were all excited about the possibilities the research would produce.

Our first step was to identify our learning style. After I explained learning styles and our preferences of learning to my students we set off to complete our surveys. My students completed two different surveys to accurately identify learning style tendencies. At this level many of my students are in the developmental stage, therefore many of them have a narrow gap between each learning style. For example many students' results were close percentages such as 37%, 30% and 33%. A majority of my students have been identified as auditory learners, with tactile ranking second and visual third.

Learning Style Preferences



Once we identified our learning style, the next step was to determine our type of multiple intelligences. After an explanation of the eight different multiple intelligences my students completed the questionnaire ranking their multiple intelligence preference. As with their learning style my students are still at the age of development and understanding of multiple intelligences. Therefore many of my students had two intelligences they tended to prefer. Overall, many of my students stated a preference for bodily-kinaesthetic intelligence. Musical and spatial respectively followed in the rankings.



The third survey my students completed before we actually began to read gathered information about their reading attitudes and their reading environment preferences. From this survey I was able to learn about the type of readers my students are. The following results were obtained:

* When asked if they like to read, seven of my students stated they like to read, 3

said no, and 18 stated that sometimes they like to read.

* On average, many of my students read approximately 1 hour a week with four

stating they read over three hours a week as well as four stating they read a half hour or less each week.

* Adventure and Mystery novels are the top choice of reading selections with magazines and pictures books close behind.

* Reading at home, especially in their bedrooms, with a quiet atmosphere, is the

place my students prefer to read. One interesting note is that three students responded they like to read outdoors.

With the initially surveys about my students learning styles and reading preferences complete, we then began to assess where we are at with reading. The STAR Reading® test was administered to my students. This test asks a series of vocabulary based questions. As the students are taking the test the program adjusts the level of questions. For example, as the students continue to answer the questions correctly the questions themselves become more difficult. When the students consistently answer incorrectly the questions decrease in difficulty. STAR Reading® scores represent students' performance on the test compared with the performance of a nationally representative sample of students. These scores present a "snapshot" of achievement at a specific point in time. STAR Reading ® has provided the following definitions for terms used in the reporting system used to evaluate my students' progress.

GE (Grade Equivalent)

Grade Equivalent scores range from 0.0 to 12.9+. They represent how a student's test performance compares with that of other students nationally. For example, if a 5th-grade student has a GE of 7.6; his or her score is equal to that of a typical 7th grader after the sixth month of the school year. This score does not necessarily mean that the student is capable of reading 7th-grade material. It only means that his or her reading skills are well above average for his or her grade level.

IRL (Instructional Reading Level)

The Instructional Reading Level is the grade level at which a student is at least 80% proficient at recognizing words and comprehending reading material with assistance. IRL scores are Pre-Primer (PP), Primer (P), 1 through 12, Post-High School (PHS). If a 7th-grade student has an IRL of 8, he or she reads 8th grade words and books with 80% accuracy or better.

NCE (Normal Curve Equivalent)

NCE scores are similar to Percentile Ranks, but they are based on an equal interval scale. This means that the difference between any two successive scores on the NCE scale has the same meaning throughout the scale. NCE's range is from 1 to 99. They are useful for making

meaningful comparisons between different achievement tests and for statistical computations, such as determining an average score for a group of students. NCEs are mostly used for research purposes and government program evaluations.

PR (Percentile Rank)

The Percentile Rank score compares a student's test performance with that of other students nationally in the same grade. It ranges from 1 to 99. This score indicates the percentage of other students nationally who obtained scores lower than the score of a particular student. For example, if a student has a PR of 85, the student's reading skills are greater than 85% of other children in the same grade. PRs give the best measure of a student's reading ability relative to that of his or her peers. The PR Range indicates the range of PR scores a student would likely have achieved had he or she taken the test numerous times in a short period of time. It reflects the amount of statistical variability in a student's PR score.

SS (Scaled Score)

The scaled Score is the most fundamental score produced by STAR Reading® tests. It ranges from 0 to 1400 and spans grades 1 through 12. It is calculated based on the difficulty of the questions and the number of correct responses. Scaled Scores are useful for comparing

student performance over time and across grades. In STAR Reading tests, all other norm-referenced scores are derived from the Scaled Score.

ZPD (Zone of Proximal Development)

The Zone of Proximal Development defines the reading level range from which a student should be selecting books for optimal growth in reading without frustration. The ZPD is especially useful for students using the Accelerated Reader® reading management system, which provides readability levels on all books included in the system. The ZPD, however, is approximate. Success at any reading level also depends on the student's interest and prior knowledge of the book's content. Teachers should use their professional judgment to adjust the level of books read to match an individual student's needs and interests.

The results for my class are as follows:

Percentile Rank Distribution Summary

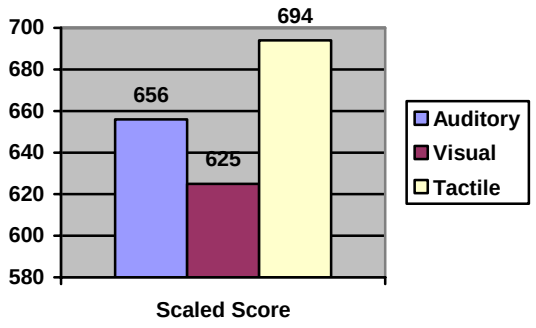
Instructional Reading Level (IRL) Distribution Summary

Grade Equivalent (GE) Distribution Summary

Class Summary Report

Individual Summary Report

The results for the different groups of learners are as follows: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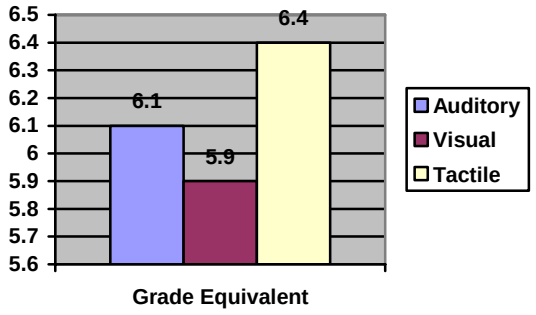
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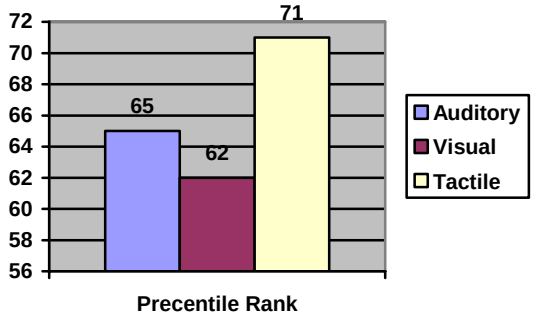
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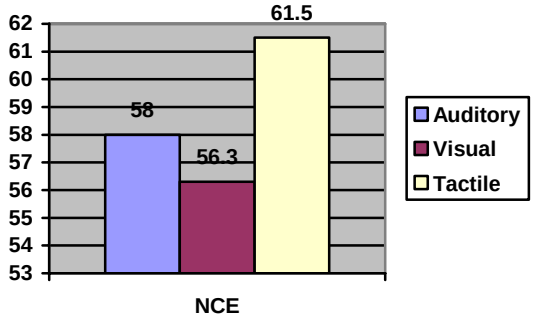
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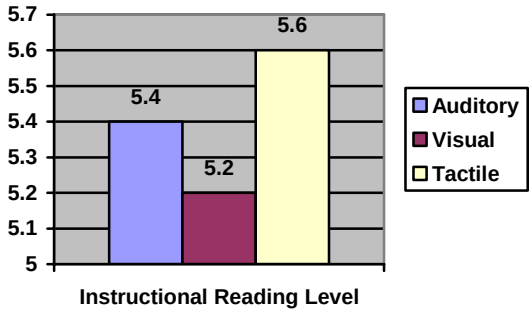


With the base established, it was now time to begin reading. The students read for thirty minutes per day for 20 consecutive school days. The students kept a record of the number of pages they read each day, with the requirement that they could only read novels within their reading level. They also were to read their novel during the allotted research time. I observed my students taking this research very seriously. They kept accurate records and appeared to be intently reading during the time period. Once my students completed reading their novel, they took a reading comprehension quiz on the computer using the Accelerated Reader® program. During this reading time my students read a total of 9572 pages. With the Accelerated Reader® program, books are assigned points based on the number of pages. The more pages the more points. The class took 71 AR quizzes for a total of 165.9 points. They averaged 95.5 percent with an average book level of 4.9

I was also able to chart the progress of the different groups of learners. The results are as follows:

After the reading session without the background of nature sounds the students took the STAR® Reading Diagnostic test for a second time. With this I was able to chart the growth of my class as well as each group of learning styles. The results are an indicator of growth. One month is not enough time to chart accurate tendencies in reading development. The results are as follows:

Percentile Rank Distribution Summary

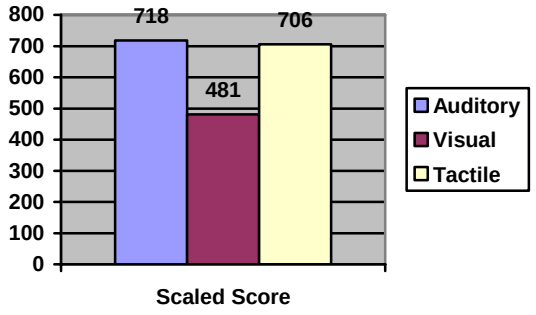
Instructional Reading Level (IRL) Summary

Grade Equivalent (GE) Distribution Summary

Class Summary Report

Individual Summary Report

Summary Reports for Learning Styles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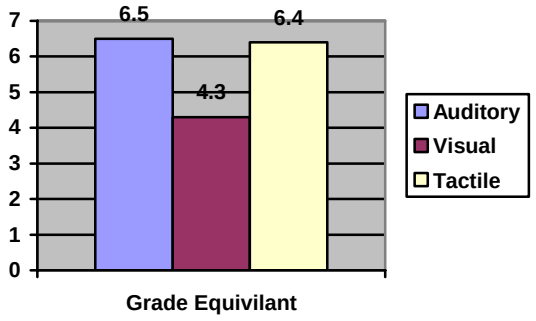
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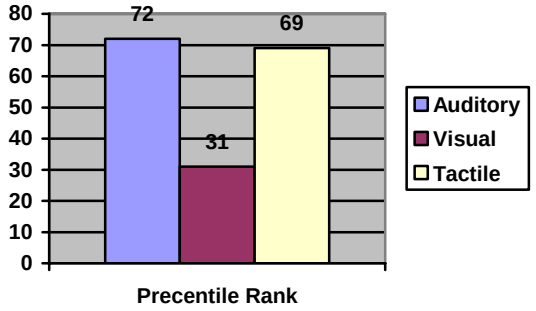
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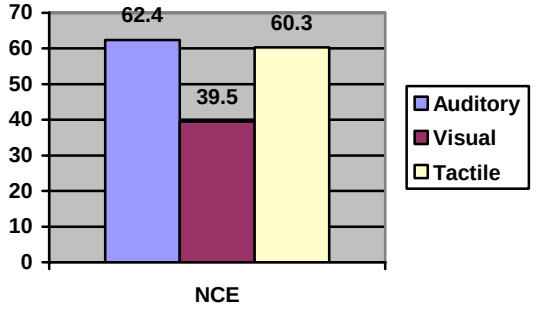
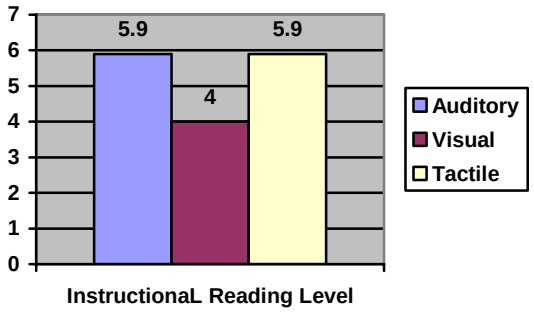
31
69
Auditory
Visual
Tactile
Precentile Rank

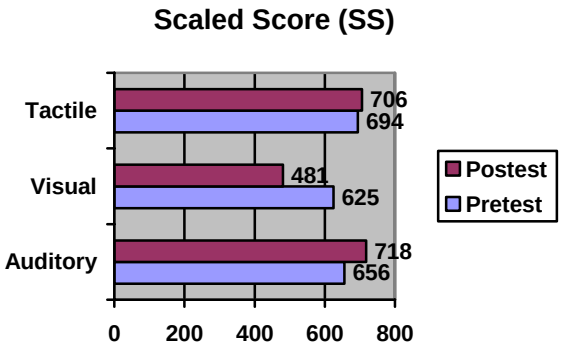

70
60
50
40
30
20
10
0
62.4
39.5
60.3
Auditory
Visual
Tactile
NCE

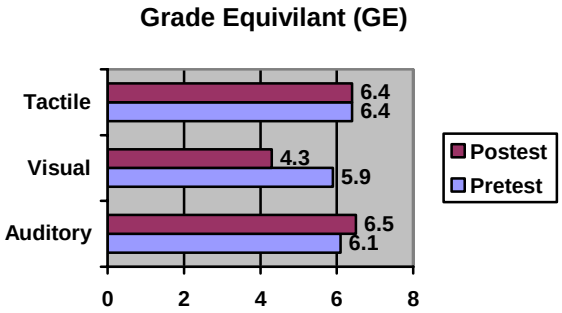


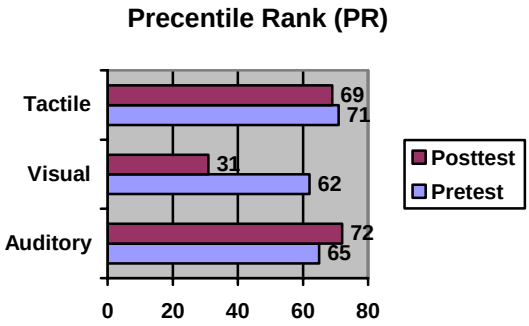
The students' growth during this time was also charted. The results are as follows:

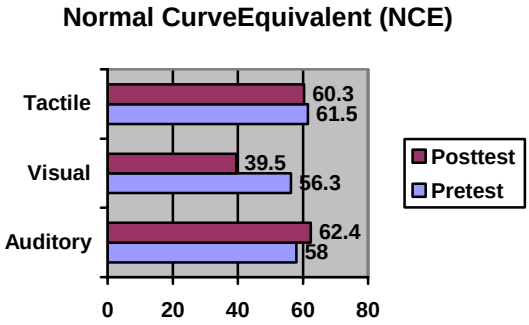
Growth Summary for Entire Class

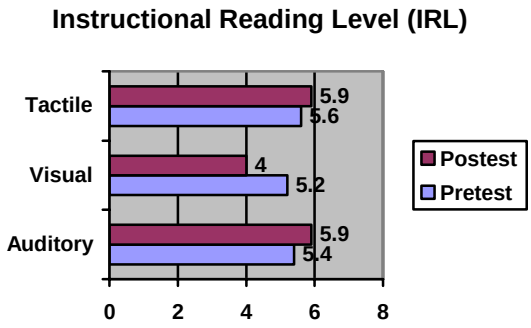
Growth Summaries for Individual Learning Styles


Scaled Score (SS)
Tactile
Visual
Auditory
706
694
481
625
718
656
0
200
400
600
800
Postest
Pretest


Grade Equivilant (GE)
Tactile
Visual
Auditory
6.4
6.4
4.3
5.9
6.5
6.1
0
2
4
6
8
Postest
Pretest


Precentile Rank (PR)
Tactile
Visual
Auditory
69
71
31
62
72
65
0
20
40
60
80
Posttest
Pretest


Normal CurveEquivalent (NCE)
Tactile
Visual
Auditory
60.3
61.5
39.5
56.3
62.4
58
0
20
40
60
80
Posttest
Pretest



The results on the STAR® Reading test were also used to establish a base line for the reading with nature sounds background. With that the students then began the second half of the research. They used the same record keeping format to track the number of pages read during this session. The students once again read for 30 minutes a day for 20 school days. At the beginning of this session, I observed my students listening to and commenting on the nature sounds more than reading. After the first week that novelty of the sounds wore off and they settled into reading. Another interesting observation I noted was students discussing with one another how a certain sound related to a particular event in their story. During the reading with nature session, my students read a total of 11,090 pages. The class took 69 AR quizzes for a total of 206.3 points. They averaged 83.3 percent with an average book level of 4.6. The results of each learning group are as follows:

After our session of reading with nature a third STAR® Reading test was administered. The results are as follows:

Percentile Rank Distribution Summary

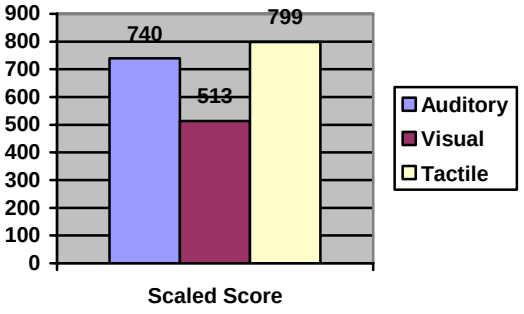
Instructional Reading Level (IRL) Summary

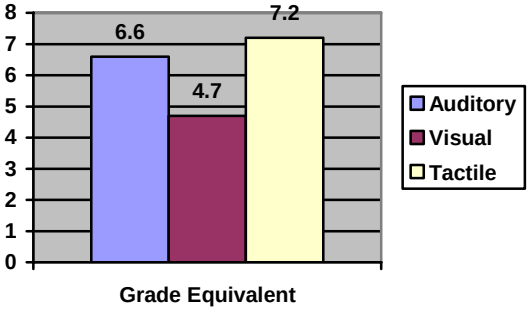
Grade Equivalent (GE) Distribution Summary

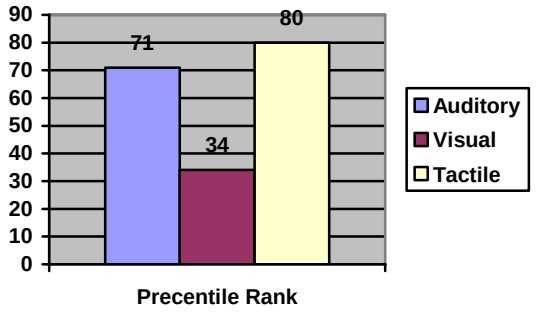
Class Summary Report

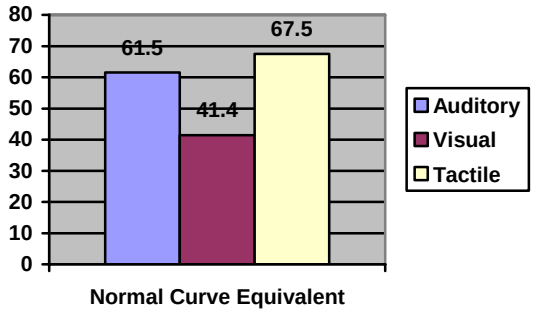
Individual Summary Report

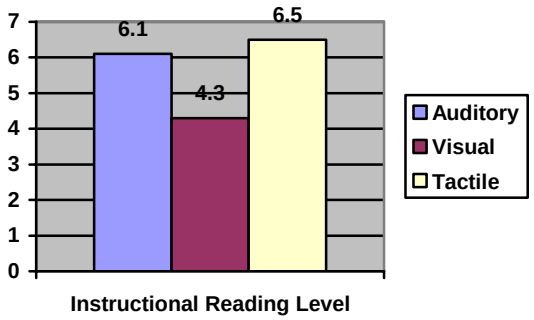
Summary Reports for Learning Styles






90
80
70
60
50
40
30
20
10
0
71
34
80
Auditory
Visual
Tactile
Precentile Rank

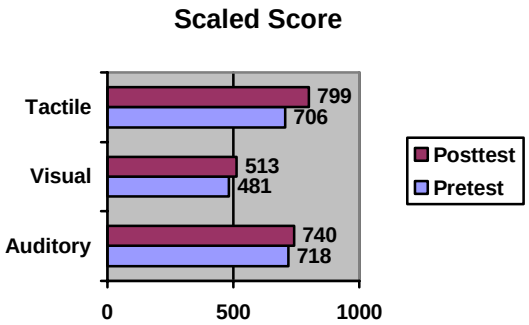

80
70
60
50
40
30
20
10
0
61.5
41.4
67.5
Auditory
Visual
Tactile
Normal Curve Equivalent

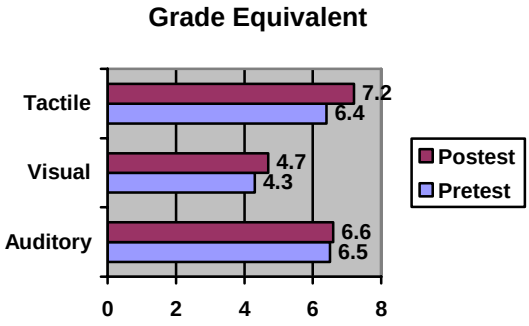

7
6
5
4
3
2
1
0
6.1
4.3
6.5
Auditory
Visual
Tactile
Instructional Reading Level

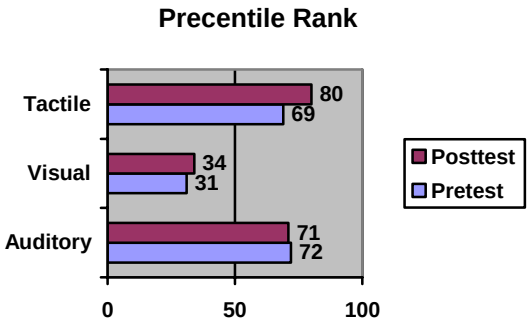
The growth of my students during this time was also collected. The results are as follows:

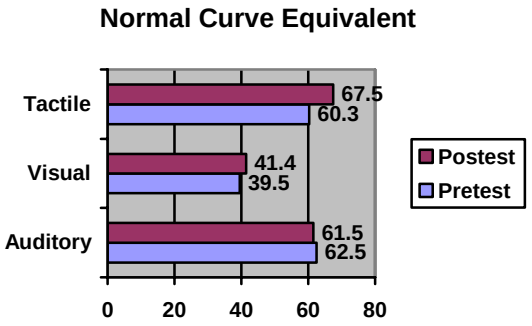
Growth Summary for Entire Class

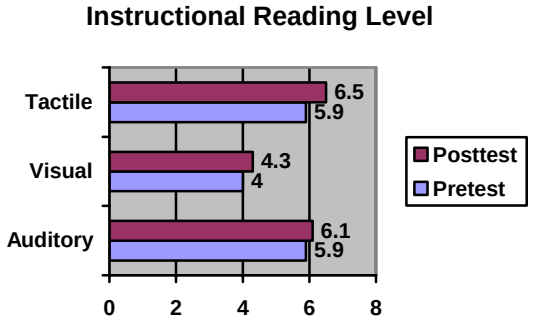
Growth Summaries for Individual Learning Styles











Finally after the reading with nature sounds in the background was complete I surveyed the students. In this survey I wanted students to comment on their experiences with the nature in the background. The comments include the following information:

16 students felt the nature sounds in the background helped them as readers. The nature sounds helped because it:

* made me think

* matched the book

* made me read more

* made me stay focused

9 students felt it was not beneficial to them because it was:

* irritating

* to noisy

* distracting

* difficult to concentrate

* giving me a headache

3 students were unsure of the nature sounds in the background. My students were also asked to comment on how the felt while reading. Once again their comments ranged from positive to negative, with the positive outweighing the negative.

Positive comments included:

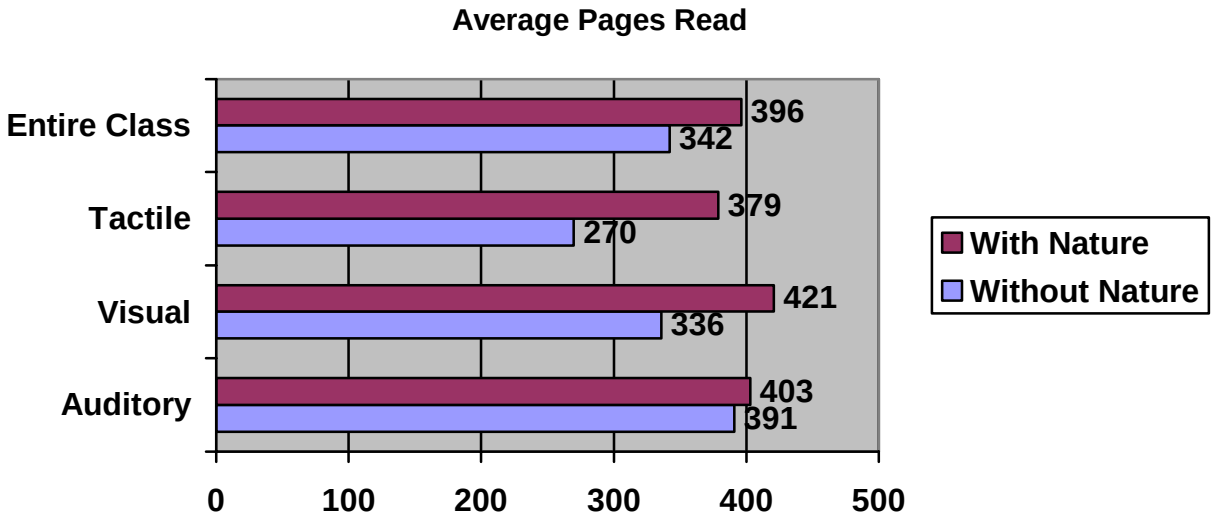
- good
- relaxed
- like I could read more
- like I was in the book
- made me read faster
- like a better reader
- like I was the main character
- felt like I was outside

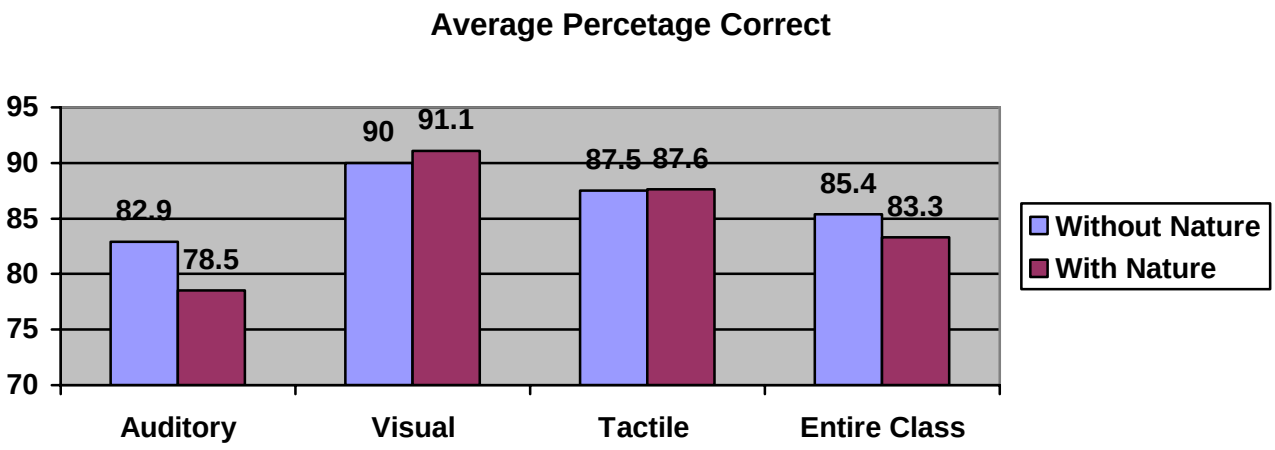
- calm, comforting, soothing
- more fun
- helped me focus

Negative comments included:

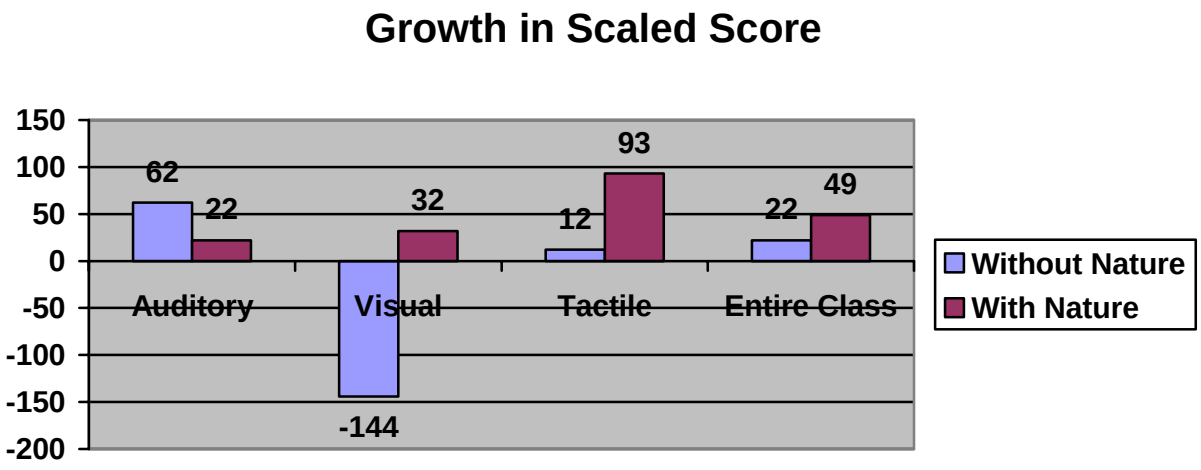
- annoyed
- kind of distracted
- weird
- sleepy

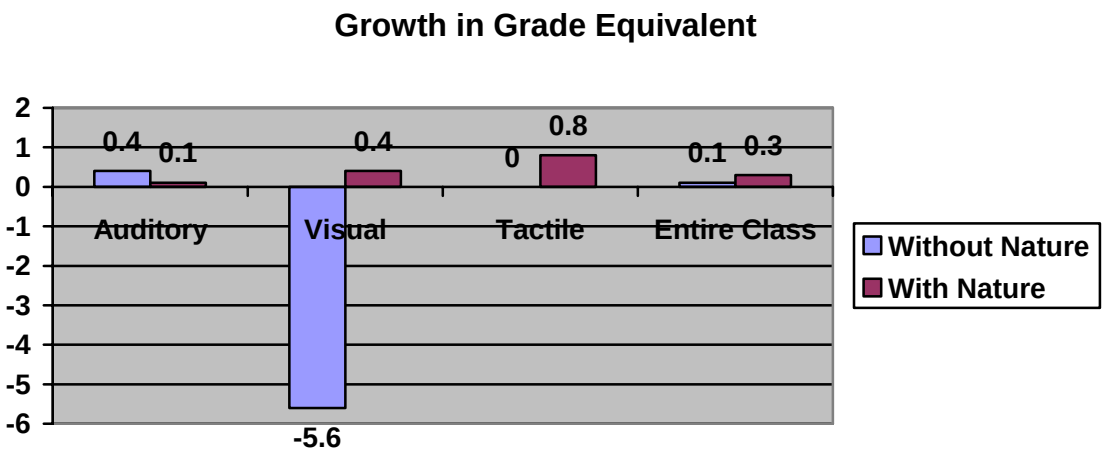
Comparison of reading performance with nature sounds and reading without nature sounds

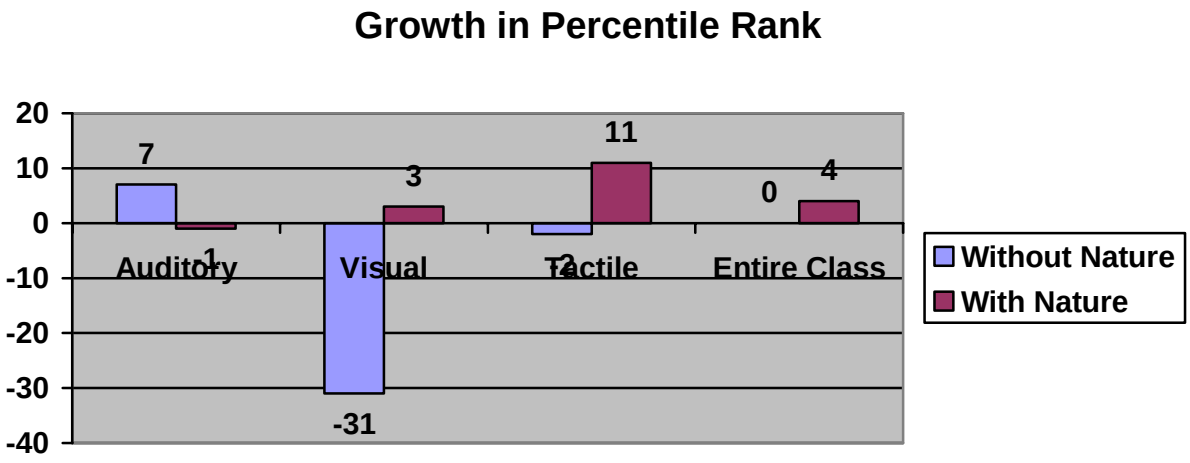


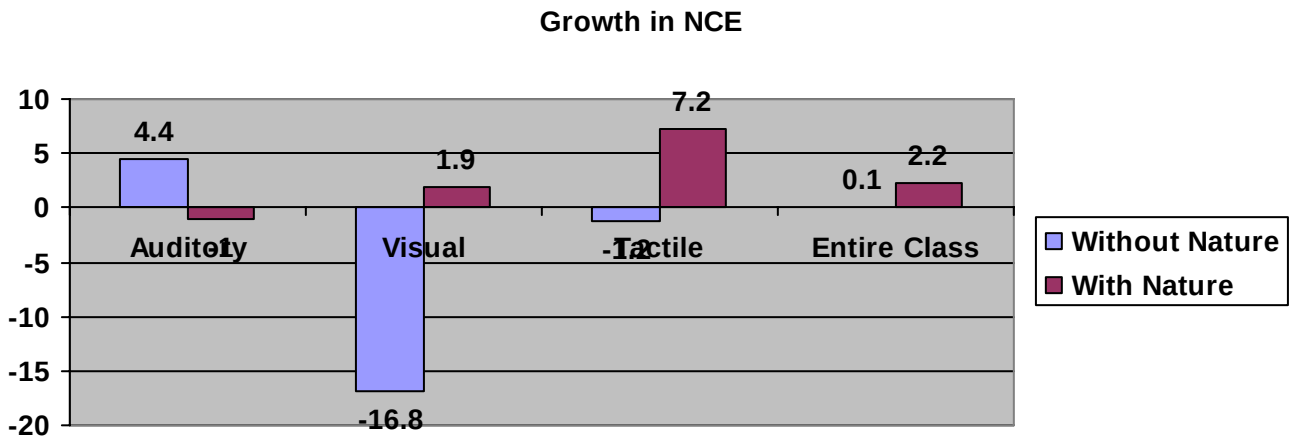


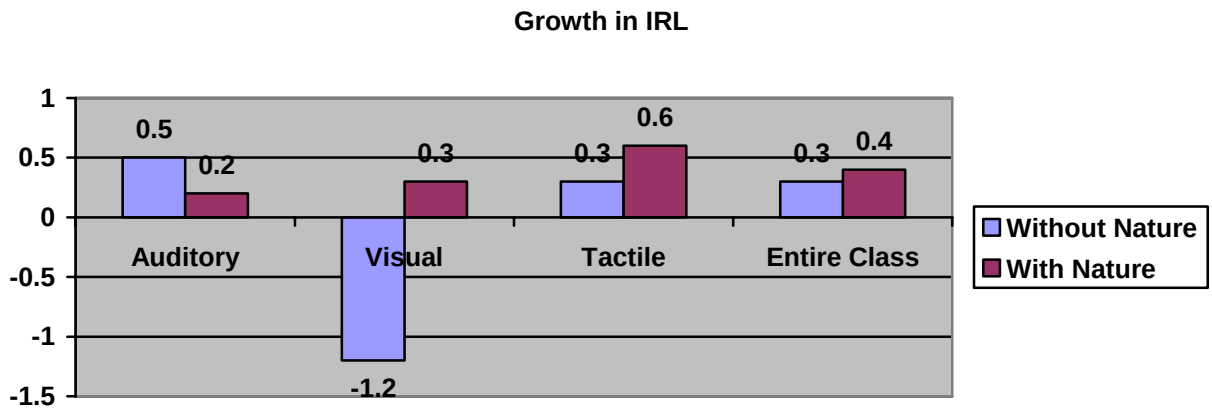
Comparison of reading growth with nature sounds and without nature sounds


Growth in Scaled Score
150
100
50
0
-50
-100
-150
-200
62
22
-144
32
12
93
22
49
Auditory
Visual
Tactile
Entire Class
Without Nature
With Nature


Growth in Grade Equivalent
2
1
0
-1
-2
-3
-4
-5
-6
0.4
0.1
-5.6
0.4
0
0.8
0.1
0.3
Auditory
Visual
Tactile
Entire Class
Without Nature
With Nature


Growth in Percentile Rank
20
10
0
-10
-20
-30
-40
7
1
-31
3
-2
11
0
4
Auditory
Visual
Tactile
Entire Class
Without Nature
With Nature


Growth in NCE
10
5
0
-5
-10
-15
-20
4.4
-1
1.9
-16.8
-1.2
7.2
0.1
2.2
Auditory
Visual
Tactile
Entire Class
Without Nature
With Nature


Growth in IRL
1
0.5
0
-0.5
-1
-1.5
0.5
0.2
0.3
-1.2
0.3
0.6
0.3
0.4
Auditory
Visual
Tactile
Entire Class
Without Nature
With Nature

Conclusion

Personal Reaction

When I first began this study I really did not know what to expect, especially from my students and my parents. Pleasantly surprised by the overwhelming support from my students' families, I thoroughly enjoyed this investigation. My students were excited to be involved in research. I saw a sense of pride and commitment from them to do their best. Attitude is half the battle when it comes to learning; so therefore, my students' attitudes were the most rewarding aspect of my study. Many times throughout the study they asked if "the birds", as the CD became known as, could be put on. My students' excitement for the study contributed to the success of the investigation. Enthusiasm from my students' parents for the study was also a contributing factor to my project's success. I was more confident in the validity of the study. When explaining the project to my students' parents, quite frequently their comments included, "very interesting" and "I would like to see the results." All this excitement and enthusiasm was exciting for me, and I most definitely have grown from this experience.

Reading the latest research on education was also very valuable. I am amazed by the research, especially about the brain and how it functions. The information on how the brain learns provided by Dr. David Sousa (1995) has redirected my teaching style. Another major influence on my teaching has come from the experts at The Sound Health Series™ ("http://www.incredilehorizons.com/soundhealth.htm"). They

demonstrated the positive effects of music's influence on learning. Through the use of music with a tempo of 60 beats per minute students are able improve to their focus and concentration on specific tasks. I also like how they incorporate nature sounds into their music. The research definitely sparked my curiosity concerning my study and the results.

Implication of the Results

On average, positive results were obtained when reading with nature sounds in the background. As a class, my students read more pages with the nature sounds playing in the background. Surprisingly, the auditory learners, even though they still read more pages while listening to nature sounds in the background, did not show the greatest increase in the number of pages read. The characteristics of auditory learners (http://www.2.yk.psu.edu/learncenter/acskills/visual.html) lead me to believe my auditory learners would gain the most from nature sounds in the background. Tactile learners showed the greatest increase in the number of pages read with background nature sounds, while visual learners followed respectively. It is safe to say that nature sounds in the background can slightly improve students reading fluency and speed.

The level of reading comprehension was roughly consistent with nature sounds in the background and without nature sounds in the background. Overall, the class scored 2% higher without the nature sounds in the background than with the nature sounds in the background. I feel this is within an acceptable margin. My visual learners were the only group to show a very slight, one percent, improvement

with the nature sounds playing in the background. These margins are too close to make a conclusion that reading with nature sounds in the background impacts reading comprehension positively or negatively.

Another area I charted was overall reading growth. Students were given a reading ability test from STAR Diagnostic® before and after each reading study session. The results indicate that nature sounds in the background has impacted the reading growth of my students. Overall the class almost doubled their scaled score for the test. My auditory learners once again did not follow the research, as they dropped the growth score when nature sounds were played in the background. Visual learners once again showed the greatest improvement with a negative growth without nature sounds in the background to a positive growth with nature sounds in the background. Tactile learners also improved their growth by 80 points with nature sound in the background. Similar results continued with my class throughout the grade equivalent scores, percentile rank, normal curve equivalent, and instructional reading level. The overall class rankings were better with nature sounds in the background than without nature sounds in the background. Visual learners consistently showed the greatest improvement, tactile learners ranked second, and auditory learners came in third respectively. The general consensus that nature sounds will have a positive impact can be concluded from the results obtained.

The greatest impact nature sounds in the background has made on reading is with student attitudes toward silent reading. The surveys have indicated a majority of my students enjoyed having nature sounds in the background. Many comments included that the nature sounds in the background helped them to focus and

concentrate more on their reading, therefore, reading more pages. I also witnessed a positive attitude about silent reading time (SQUIRT). My student would ask if we were going to read today if I did not put it in on our schedule, as well as when we were going to read. Attitude plays such a major part in learning, that this can not be overlooked as a positive result.

Limitations of the Study

Even though the results are positive, this study has many limitations, the first being the number of participants. Twenty-eight students are not enough to say these results can be repeated again. Visual learners, which showed the greatest improvement with nature sounds in the background, consisted of three students. Also, the study sessions were 20 days in length. Is this enough time to show consistent improvement? In my opinion student growth needs to be measured over a longer length of time, such as an entire school year.

In addition, I noticed when we first began the session with nature sounds in the background, my students overall had a difficult time focusing on their reading. They were more interested in listening to the nature sounds. Once the novelty of the sounds wore off then they faded into the background more effectively.

Recommendations

I am left with more questions than answers from my investigations. The results make me wonder if this can be repeated in a large group over an extended period of time. It is my recommendation that before I conclude that playing nature sounds in the background while silent reading for enjoyment will improve reading comprehension, fluency, and rate, more investigation needs to be completed. My ideal study would be at a research facility with at least 30-50 students in each learning style over the course of one year. In the meantime, I can continue to collect data each year from students. Once I reach larger numbers I can compare the effects of nature sounds in the background on reading more effectively. This study also makes me wonder how actually being outside in a secluded nature setting would affect reading. Does the natural setting improve reading comprehension, fluency and rate? There is more to nature than the sounds.

The Sound Health Series™ has some wonderful suggestions for using music in the classroom ("http://www.incredilehorizons.com/soundhealth.htm"). The combination of music at a 60 beat tempo with embedded nature sounds will help the music fade into the background effectively. I will continue to use nature sounds in my classroom as well as expose my students to an outdoor learning environment more often.

Appendix 1

Dear Families,

As you know, I am your child's 5th grade teacher. I am also a graduate student working on an advanced degree in education at Hamline University. An important part of my degree is a research project. The purpose of this letter is to get your permission for your child to participate in my project.

The purpose of my project is to study the integration of reading with nature sounds. I will be studying which types of learners benefit the most from having nature sounds in the background while reading for enjoyment. My main goal is to improve reading comprehension and reading attitudes.

Your child's participation would consist of the same expectations of silent reading during our daily SQUIRT time. The only difference is that during my research project nature sounds found in our area will be played in the background. No additional homework or activities outside of class will be required for participation. Also during this one month time period AR scores will not affect your child's reading grade.

I will use a reading inventory survey to assess reading attitude before and after the study. I will also use two questionnaires to determine your child's learning preferences. These surveys and questionnaires are attached for you to review. I will report study results either as group statistics or in tables. No real names will be used, and your child's identity will be kept confidential. Your child is free to withdraw

from this project at any time. My study will be described in my final paper, called a capstone. It will be catalogued and shelved at Bush Library, Hamline University.

Please return the attached form to indicate your permission for your child to participate in this study. If you have any questions, please call me at school (749-KIDS ext 1261). Thank you for your cooperation.

Sincerely,

Lori Grabarkewitz

I give permission for my

child_____ to participate in the research project you are conducting as part of your graduate degree.

_____

___

I understand that the purpose of this research is to study student achievement and attitudes in reading following the use of background nature sounds while reading.

The main goal of this project is to determine what type of learner benefits the most from reading with nature sounds.

_____

Parent or Guardian

Date: _____

Appendix 2

Name_____

The purpose of this survey is to help identify your learning style tendencies.

Score each statement in the columns below by giving the appropriate number.

1 > Very Little Like Me

2 > A Little Like Me

3 > Like Me

4 > A Lot Like Me

1. _____ I feel the best way to remember something is to picture it in my head
2. _____ I follow oral directions better than written ones
3. _____ I often would rather listen to a lecture than read the material in a textbook
4. _____ I am constantly fidgeting(e.g. tapping pen)
5. _____ I frequently require explanations of diagrams, graphs, or maps
6. _____ I work skillfully with my hands to make or repair things
7. _____ I often prefer to listen to the radio than read a newspaper

8. _____ I typically prefer information to be presented visually, (e.g. flipcharts or chalkboard)
9. _____ I usually prefer to stand while working
10. _____ I typically follow written instructions better that oral ones
11. _____ I am skillful at designing graphs, charts, and other visual displays
12. _____ I generally talk at a fast pace and use my hands more than the average person to communicate what I want to say
13. _____ I frequently sing, hum or whistle to myself
14. _____ I am excellent at finding my way around even in unfamiliar surroundings
15. _____ I am good at putting jigsaw puzzles together
16. _____ I am always on the move
17. _____ I excel at visual arts
18. _____ I excel at sports
19. _____ I'm an avid collector
20. _____ I tend to take notes during verbal discussions/lectures to review later
21. _____ I am verbally articulate and enjoy participating in discussion or classroom debates
22. _____ I easily understand and follow directions on a map
23. _____ I remember best by writing things down several times or drawing pictures and diagrams
24. _____ I need to watch a speaker's facial expressions and body language to fully understand what they mean

25. _____ I frequently use musical jingles to learn things

26. _____ I often talk to myself when alone

27. _____ I would rather listen to music than view a piece of artwork

28. _____ I need to actively participate in an activity to learn how to do it

29. _____ I frequently tell jokes, stories and make verbal analogies to demonstrate a point

30. _____ I frequently touch others as a show of friendship and camaraderie (e.g. hugging)

Appendix 3

Name_____

The purpose of this inventory is to help identify your personal learning style preferences.

Put a check (X) on the line next to the statements you agree with:

1. _____ I prefer to hear a book on tape rather than reading it.
2. _____ When I put something together, I always read the directions first.
3. _____ I prefer reading to hearing a lecture.
4. _____ When I am alone, I usually have music playing or hum or sing.
5. _____ I like playing sports more than reading books.
6. _____ I can always tell directions like north or south no matter where I am.
7. _____ I love to write letters or in a journal.
8. _____ When I talk, I like to say things like, "I hear ya, that sounds good, or that rings a bell."
9. _____ My room, desk, car or house is usually disorganized.
10. _____ I love working with my hands and building or making things.
11. _____ I know most of the words to the songs I listen to.
12. _____ When others are talking, I usually am creating images in my mind of what they are trying to say.

13. _____ I like sports and think I am a pretty good athlete.

14. _____ It's easy to talk for long periods of time on the phone with my friends.

15. _____ Without music, life isn't any fun.

16. _____ I am very comfortable in social groups and can usually strike up a conversation with most anyone.

17. _____ When looking at objects on paper, I can easily tell whether they are the same no matter which way they are turned.

18. _____ I usually say things like, "I feel, I need to get a handle on it, or get a grip."

19. _____ When I recall an experience, I mostly see a picture of it in my mind

20. _____ When I recall an experience, I mostly hear the sounds and talk to myself about it.

21. _____ When I recall an experience, I mostly remember how I felt about it.

22. _____ I like music more than art.

23. _____ I often doodle when I am on the phone or in a meeting.

24. _____ I prefer to act things out rather than listening to stories.

25. _____ I like reading stories more than listening to stories.

26. _____ I usually speak slowly.

27. _____ I like talking better than writing.

28. _____ My handwriting is not usually neat.

29. _____ I generally use my finger to point when I read.

30. _____ I can multiply and add quickly in my head.

31. _____ I like spelling and think I am a good speller.

32. _____ I get very distracted if someone talks to me when the TV is on.

33. _____ I like to write down instructions that people give to me.

34. _____ I can easily remember what people say.

35. _____ I learn best by doing.

36. _____ It is hard for me to sit still for very long.

Appendix 4

Name_____

A Multiple Intelligence Checklist:

Rank each statement 0, 1, or 2. Write a 0 if you disagree with the statement and write a 2 if you strongly agree. Write a 1 if you are somewhere in between. Then calculate your score for each intelligence type.

Interpersonal Intelligence

_____ I'm often the leader in activities

_____ I enjoy talking to my friends

_____ I often help my friends

_____ My friends often talk to me about their problems

_____ I've got a lot of friends

_____ I'm a member of several clubs and after-school activities

_____ TOTAL FOR INTERPERSONAL INTELLIGENCE

Intrapersonal Intelligence

_____ I go to the movies alone

_____ I go to the library alone to study

_____ I can tell you some things I'm good at doing

_____ I like to spend time alone

_____ My friends find some of my actions strange sometimes

_____ I learn from my mistakes

_____ TOTAL FOR INTRAPERSONAL INTELLIGENCE

Logical – Mathematical Intelligence

_____ I often do calculations in my head

_____ I like to put things into categories

_____ I'm good at chess

_____ I like to play number games

_____ I love to play around computers

_____ I ask lots of questions about how things work

_____ TOTAL FOR LOGICAL-MATHEMATICAL INTELLIGENCE

Linguistic Intelligence

_____ I like to read books, magazines and newspapers

_____ I consider myself a good reader

_____ I like to tell jokes and stories

_____ I can remember people's names easily

_____ I like to recite tongue twisters

_____ I have a good vocabulary

_____ TOTAL FOR LINGUISTIC INTELLIGENCE

Bodily – Kinaesthetic Intelligence

_____ It's hard for me to sit quietly for a long time

_____ It's easy for me to copy exactly what other people do

_____ I'm good at sewing, woodwork, building or mechanics

_____ I'm good at sports

_____ I enjoy working with my hands – working with clay or model making

_____ I enjoy physical exercise

_____ TOTAL FOR BODILY-KINAESTHETIC INTELLIGENCE

Spatial Intelligence

_____ I can read maps easily

_____ I enjoy art activities

_____ I can draw well

_____ Videos and slides really help me to learn new information

_____ I love books with pictures

_____ I enjoy putting puzzles together

_____ TOTAL FOR SPATIAL INTELLIGENCE

Musical Intelligence

_____ I can hum the tunes of lots of songs

_____ I'm a good singer

_____ I play a musical instrument or sing in a choir

_____ I can tell when music sounds off-key

_____ I often tap rhythmically on the table or desk

_____ I often sing songs

_____ TOTAL FOR MUSICAL INTELLIGENCE

Naturalist Intelligence

_____ I spend a lot of time outdoors

_____ I enjoy listening to the sounds created in the natural world, bird songs

_____ I can identify plant life and animal species

_____ I can distinguish between poisonous and non-poisonous snakes and/or between poisonous and edible mushrooms

_____ I enjoy observing plants and/or collecting rocks

_____ I've got green fingers – I keep plants at home and have an interest in gardening, for example

_____ TOTAL FOR NATURALIST INTELLIGENCE

Appendix 5

Reading Survey

Name_____Date_____
___

Do you like to read? (Please check one)

____ Yes
____ No
____ Sometimes

How many hours a week do you spend reading?
_____

What is your favorite book?
_____

Who is your favorite author?
_____

What types of genres do you like to read? (Check all that apply)

____ adventure
____ animals
____ award-winning books
____ biographies
____ comics/jokes
____ fairy tales
____ fantasy stories
____ folk tales
____ historical fiction
____ magazines
____ mystery
____ myth/legend
____ newspapers
____ non-fiction topics
____ picture books
____ plays
____ poetry
____ realistic fiction
____ science fiction
____ sports

Where do you like to read?

What type of environment do you like to read in?

When do you like to read?
What is the hardest thing about reading?

Why do people read? List as many reasons as you can think of.

What does someone have to do in order to be a good reader?

What would you like me to know about you as a reader? This can include strengths and weaknesses.

Appendix 6
Sample Accelerated Reader Diagnostic Report

ALL-NEW AR

Diagnostic Report

Accelerated Reader®: Friday, 10/08/99, 08:57 AM

Report Period: 8/26/99 – 10/7/99 Marking Period One

Washington Elementary School

Class: Fourth Grade **Teacher: Richard Williams**

Student Name	Diag. Codes	Quizzes Pass	Quizzes Taken	Book Level Goal	Book Level Avg.	Avg % Corr.	Points Goal	Points Earned	Points % Read Indep.	Points % Fiction	Certification Level Last Achieved	Certification Level Working Towards
Brandl, Mitch	E	13	13	3.4	4.1	75.4*	16.0	30.8*	70.1	100.0	Adv (2)	Adv (3)
Fox, Emily	BD	5	6	3.4	4.0	71.7*	16.0	10.3*	20.4	100.0	Sup	Adv
Franklin, Cayla		7	7	4.4	4.6	84.3	21.0	18.8	73.4	100.0	Adv (2)	Adv (3)
Hafermann, Samuel	B	12	15	4.1	4.0	70.7*	19.0	25.2	64.3	98.0	Adv	Adv (2)
Jacobs, Eric	CD	4	6	5.1	3.7	66.7*	25.0	9.0*	66.7	100.0	Adv	Sta
Lewis, Derek		13	13	3.4	3.5	86.2	16.0	28.8	84.4	100.0	Adv (4)	Adv (5)
Nelson, Terry		10	10	4.4	4.7	85.0	19.0	26.6	85.0	90.6	Adv (2)	Adv (3)
Nichols, Tonya		8	8	4.4	4.3	91.2	25.0	27.0	85.2	100.0	Adv (2)	Adv (3)
Timmerman, Ellen		9	10	3.9	4.4	84.5	17.0	26.4	83.0	97.3	Adv (2)	Adv (3)
	Totals	81	88	4.1	4.1	79.5	174.0	202.9	70.3	98.4		

Summary

Total number of students:	9
Median of points earned:	26.4
1/2 of median points earned:	13.2
Number of students at risk:	4 (44.4%)

Diagnostic Codes	Number of Students	Description
A	0	No quizzes taken during period
B	2	Low average percent correct (70% to 79%)
C	1	Very low average percent correct (below 70%)
D	2	Low points earned - less than 1/2 of median
E	1	Low percent correct with above median points
F	0	Very low percent correct with above median points

Code	Explanation	Code	Explanation
*	Trouble value	"Ind"	Independent Reader certification
@	Includes quizzes without book levels	"Sup"	Super Reader certification
#	Spanish quizzes included	"Adv"	Advanced Reader certification
--	No data	"Sta"	Star Reader certification
		"Cla"	Classic Reader certification
		"Sta (2)"	indicates this is the second Star Reader certification

66

Appendix 7 Reading Log

Appendix 8

After Reading Survey

Name_____Date_____
___

Do you like to read? (Please check one)

____ Yes
____ No
____ Sometimes

How many hours a week do you spend reading?
_____

What is your favorite book?
_____

Who is your favorite author?
_____

What types of genres do you like to read? (Check all that apply)

____ adventure
____ animals
____ award-winning books
____ biographies
____ comics/jokes
____ fairy tales
____ fantasy stories
____ folk tales
____ historical fiction
____ magazines
____ mystery
____ myth/legend
____ newspapers
____ non-fiction topics
____ picture books
____ plays
____ poetry
____ realistic fiction
____ science fiction
____ sports

Where do you like to read?

What type of environment do you like to read in?

When do you like to read?
What is the hardest thing about reading?

Why do people read? List as many reasons as you can think of.

What does someone have to do in order to be a good reader?

What would you like me to know about you as a reader? This can include strengths and weaknesses.

During our research you had nature sounds playing in the background while you were reading. Do you think that helped you as a reader? Explain why or why not?

What type of students do you think benefit from having background music playing while reading? Explain your thinking.

How did the nature sounds make you feel while you were reading?

Will you play background music while you are reading for enjoyment on your own? Explain why or why not?

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Reading with Nature
Abstract
Lori Grabarkewitz

This capstone was a study of the effects of nature sounds playing in the background while reading for enjoyment. The main objective of the study explored the specific effects on the learners' ability to comprehend reading material, to gauge reading fluency, and to observe the general attitudes towards reading. During the small group study, 5th grade students would read on-level books of their choice without prerecorded nature sounds in the background and then with prerecorded nature sounds in the background. Each reading session lasted thirty minutes a day for one month. The recorded nature sounds included those students living in Northern Minnesota would be familiar with. They included birds, frogs, wind, running water and thunder. The obtained results indicated that students are able to read with a greater fluency while maintaining the same level of comprehension. Students also reported positive effects on their attitudes toward reading.