

**Connecting Science Education to Real Life Experiences
Through the Integration of Local Wildlife**

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Abstract

The purpose of this research project is to attempt to connect science with the real lives of my students and to increase student confidence by changing the content of my instruction to include wildlife education. The rationale for the project is that through an increased knowledge of the world around them, i.e. the natural world, the students will gain confidence in both the subject of science and connect learning to their own personal experiences. Teaching practices that were changed include the integration of additional material into the required course of study, the need to identify and research the subject being studied, and by accumulating specimens and resources for both professional and classroom use. Through the completion of this project I believe that I have observed a better way to teach elementary children. From both the common sense and researched perspective, children like animals (nature). We learn best when we like what we do. I have observed children becoming more confident learners when local wildlife is added to the curriculum

Introduction

I have lived in coastal North Carolina for nearly three years, having moved from West Virginia and having always lived in the Appalachian region. On land, and in the air and water the type of organisms in my world changed drastically. Very few of the familiar species I grew up with live in the area, so it was necessary to do many book reviews and wildlife studies over the past year in order to reestablish a familiarity with the natural world.

In the past, I have taught middle and high school science in a private school setting. My only previous public school experience came in the role of long-term substitute prior to acquiring a full-time position. This year is the first year that I have taught in a public elementary school.

I have always held a fascination for the outdoors, but have only recently come to realize the amount of confidence that I had gained being the one who, in my younger days my friends would say, “knew everything about animals.” The following thoughts from a discussion posting reflect my beliefs.

“What bugged me so much that I wanted to change my teaching to build student confidence? I was tired of teaching students who were turned off from science and felt that they just couldn't "do it." Most of the ones who felt this way seem to feel this way about science/math and not about reading, social studies, driving, or whatever else. Overall there seemed to be a tendency to have a low self-esteem. So I began thinking, reflecting and doing the basic AR questions and realized that the reason that I was confident in science (although I made B's and C's all through high school and college) was because of what I did when I was younger, 8-12 years old. Reading wildlife books, watching documentaries and catching and observing every critter I could get my hands on was what I did a lot. Every time I could ID something that my parents or friends

couldn't, I was pumped. Most kids want to explore at 8 yrs. of age. Now that I teach 24 eight-year-olds, I've decided to add to what I've done to include daily lessons on wildlife, making my own local home-made documentaries, filling my classroom with books, posters, magazines, and LIVING SPECIMINS in order to bring about a love for science and increased confidence.” (EDCI 509 discussion posting October 3, 2004)

By changing my teaching practices and integrating wildlife curriculum into my third grade classroom, I believe students will readily absorb the knowledge and apply what is learned by continuing their exploration from home and will share their new found knowledge with those who are lacking it. This will further reinforce the cycle of confidence building and curiosity that is necessary for a lifetime of success in science education.

From the beginning of this project, my objectives have been as follows:

“I want to be an effective teacher by integrating wildlife education into all areas of the curriculum. Integration and supplementary activities will connect students learning with their own world. In addition, through my guidance, I hope to instill in my students a love for science and a self-confidence that they have the ability to grasp and master science curricula and processes in the future.” (Teacher Journal, October 25, 2004)

Focus Question

How can I increase my ability to connect science with the real lives of my students?

Conceptual Framework

Action Research is a process of self-reflection that has been occurring since teachers with a critical eye have evaluated themselves and decided to change their practices in order to become more effective. “*Action research is done by teachers for themselves*” (Mills, 2003, p.5). Only recently has the idea of formalizing and naming the process become a part of educational practice.

Action research is of such a nature that the researchers are their own subjects, while also being aware of the effect the changes have on the learner. In addition to self-reflection, it is the data gathered regarding changes on the learner that the action researcher may use for the analysis of his changes. Teachers are “*professional problem solvers*” (Mills, 2003, p.10), and when self-acknowledged as such can have an empowering impact on learning outcomes.

A foundation for this project was Howard Gardner’s Multiple Intelligence (MI) Theory (1983). Gardner sought to develop a model that was more accurate than the standard IQ score. He identified seven (now eight) areas or methods through which the normally developing individual learns. These areas of intelligence include the linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal and the most recently identified, naturalist. (Armstrong, 2000.)

The naturalist intelligence involves being able to recognize, appreciate and understand the natural environment. The child who possesses this intelligence to a high degree will have a love for the outdoors, will want to investigate almost any natural object and are fascinated by changing leaves and weather patterns. The child may have a collection of natural items which may include sticks, leaves, rocks, bones and feathers. The naturalistic child is very attuned to animals and may have high interaction with family pets or spend a good deal of time finding new animals to raise.

It is important to realize that each child possesses all eight intelligences while acknowledging that there is a range of strengths and weaknesses. Educationally speaking it has been determined that children learn best when being taught through their strengths, while attempting to develop the lower needs. By following MI theory, one would understand that not all students can be taught using the traditional linguistic/logical approach, but a combination of teaching to the specific strengths would yield the best result. With this in mind, an educator would have to identify the makeup of his or her students.

There is no specific test that can paint a flawless picture of a student or class. It has been suggested that the best method is through teacher observation and by the self-evaluation of the student. Through age-appropriate questioning students are readily able to identify their own learning styles and rank both strengths and weaknesses. For both teacher and student this process can be an eye-opening revelation and if acted upon can alleviate a good deal of frustration that arises from ineffective instruction.

Through an understanding of local wildlife, students will gain confidence in the subject of science and also gain confidence in themselves as learners. I hope to bring about this confidence by helping them to feel like experts in the world around them. Educational researcher Elaine McEwean (2005) works to help teachers and parents to help students become confident and independent learners. In regards to knowledge in general she says, "Knowledge is power. Knowledge also creates independence and confidence. Teach your children as many facts and as much information as they're willing to soak up."

A person who has the self-perception of expertise on any given subject is one who is both familiar with the subject as far as common knowledge and also knows information that others do not. By teaching students to identify, handle and care for local specimens in such a way that goes beyond the common knowledge of peers or family, they will perceive themselves as being an authority on the subject and will then be confident in themselves. There is no better time to build this foundation than when the students are young and have a desire to know. Edward Youmans said, "When curiosity is freshest, and the perceptions keenest, and memory most impressible, before the maturity of the reflective powers, the opening mind should be led to the art of noticing the aspects, properties, and simple relations of the surrounding objects of nature," (1876, p.26). What better place for a child's confidence to originate than from a part of his life from which he is already curious.

In a successful study of students tracking eastern box turtles, Somers and Mathews (2003) cite Bouilli's research involving children's own experiences saying, "The task before us is to help children...feel that the practice and knowledge of schools can have an impact on the world they live in and care about.... At least part of that task will be accomplished when science curricula are connected directly to expertise and lived

experience...building bridges to communities beyond school.” Clearly, the natural world with which a child comes in contact can have a significant influence on his education and personal development.

By bringing local wildlife into the classroom and by taking the class outside to engage wildlife, the experiences can lay the groundwork for future confidence in any discipline with the label of “Science.” It is important for the activities to be real to the students. George DeBoer (1991) noted that an early problem in science education throughout this century was that the science lab was often detached from real life and was “only a substitute for the out-of-doors” (p. 77). Meaningful field studies and observations must be a part of any study of local wildlife, both inside the classroom and outside of the building walls.

Another mindset that is often present with confidence and also necessary for effective learning is that of optimism. The confident learner who believes he has the ability to be successful and is optimistic regarding his future education will have an advantage over the insecure, pessimistic student. Optimism and a positive attitude can be learned (Seligman, 1991) and takes the place of helplessness, giving the student yet another advantage as a growing learner.. Regarding Learned Optimism Theory, Dr. Kagan (2002) states, “Once learned, optimism predicts not only academic success but success across many life endeavors. Because the structures scaffold for success and in fact, produce a greater rate of success, they dramatically decrease the probability of helplessness among students. Students see that what they do makes a difference, becoming more optimistic and resilient,” (p. 4).

The students will no doubt feel successful as their knowledge and confidence grows. Regarding interesting science lessons and student perceptions, Charles Eliot (1898) said, “The main characteristic of the instruction, as developed through those books, unless lightened by the personality of the teacher, is dullness, a complete lack of human interest, and a consequent lack in the child of the sense of increasing power....Make the work interesting, and give the children the sense of success, and the stress which is now felt by them will be greatly diminished.” It is part of the responsibility of the educator to impart to the student an interest and a sense of wonder about the subject being studied. If the teacher is bored and discouraged by the subject that is to be taught and the teacher express a lack of genuine interest then often times the seed of awe dies before it has hardly sprouted. A teacher bears the responsibility for not only what is taught, but also with the level of enthusiasm with which it is conveyed.

Context of the Study

The research for this study is being conducted in one of five 3rd grade classrooms in a public school in eastern North Carolina. The class size is moderate with twenty-one students, and is made up of eleven girls and ten boys, with the school size being 590 students. Due to large class sizes, a transition took place in the middle of the year with the addition of another full time teacher. Three or four students were pulled out of the existing classes to create the fifth class. A full time teacher’s assistant is provided and works in both clerical and educational areas. The school rotates among the top three in

the county and the county ranks 12th out of 115 in the state based upon current reading and math test scores.

The school is located approximately twenty miles from Camp Lejeune Marine base, but does not contain a large enrollment from military families, currently being 11%, however the military mindset and transient lifestyle do influence the nature of the school. Another significant factor of the makeup of the student population are the number of parents of the class who have relocated to the area. Most of the students have strong out of state ties and it is the exception for the child who has both sets of grandparents living locally. This has a direct influence on the project since most parents do not themselves have a knowledge of local wildlife.

The local area is rich in wildlife diversity. The school, being located two miles from the Atlantic Ocean, has students who live on one of the islands that make up North Carolina's Outer Banks. The outer banks are a series of barrier islands that separate mainland North Carolina from the ocean. The nearest island is heavily populated and is one mile wide and twenty miles long. Other smaller uninhabited islands that can be accessed by ferry are also in the area.

To the north, in the opposite direction, lies the Croatan National Forest predominantly made up of longleaf pine. These forests have provided an important resource during the history of the state and continue to satisfy both commercial and aesthetic needs. A popular local claim to fame is that it is only in the longleaf pine tree where the red cockaded woodpecker, an endangered species, will nest.

Although these two ecosystems dominate the students' world and were the focus of the project, others are well known and play an important role in both the environment and education. The swampland though not heavily populated is well known throughout the state, mostly by those who hunt the high concentrations of black bear. Also, unique to the area are regions of land called, poccasins which means "swamp on a hill." These exist in the middle of the pine forests.

Methods

Collection and research

The purpose of this project has been to focus on the natural world of the student. Exposure to local wildlife through direct lessons, field studies, observed specimens, teacher made videos, posters and books were provided in stand-alone lessons and also integrated into the required curriculum. There were three ways my teaching changed: preparation to teach heavily the subject of local wildlife, the volume of local wildlife covered, and integrating local wildlife into the North Carolina Standard Course of Study.

There were many different preparation strategies that were employed throughout this project. A significant amount of the preparation took the form of the collection and research of specimens. Following the collections, research was done on any unknown species and if necessary, care instructions were compiled. Most living specimens were brought into the classroom for short-term observation. (See appendix 1 for list of subjects studied.)

Collection equipment that was utilized was often as simple as a day pack filled with a couple of pillow cases and some sandwich bags for storage and a small shovel for

digging through decaying trees. A camera was usually taken into the field along with a few snack items. Occasionally, I would bring a field guide for identification, but most of the time simply waited until the collections were complete.

Other methods that were used in preparation for student instruction were many. A wildlife documentary was made of a local national forest. I spent the day filming both the species marked on the trail guide and plants and animals that I thought would be of interest. Of heavy emphasis in the video was the importance of fire to the longleaf pine ecosystem.

Several digital pictures were taken of wildlife in preparation of the lessons. In addition to numerous plant species, pictures were taken of animals that were either too dangerous or too difficult to manage for classroom observation. These would include a copperhead, broad head skink, and a gray tree frog. Appropriate links with both pictures and information were added to the class website. Field guides and age appropriate books were reviewed prior to classroom use. I used many of these resources throughout my lessons and for personal field identification. (See appendix 2 for book list.)

The topics were chosen because of easy accessibility and familiarity for both student and teacher. Specimens were brought into the room that could be collected by all, and other were discussed that were either too dangerous to be brought in, such as North Carolina's five species of poisonous snakes or were impractical such as a raccoon. Primarily, the focus was on the small items that a child would come into contact with and could readily manipulate.

At the state, county and school levels the belief that the standard course of study be strictly adhered to dominates the teaching process. Within that expectation, however, is the flexibility that is needed in order to integrate local wildlife into the required material. Lessons that were not direct instruction were integrated into our reading, writing, spelling and math lessons.

Classroom Instruction

An example of math integration occurred within the topic of local seashells. Fifteen different types of shells were collected from a local beach. The first day the shells were introduced, students were to sort and classify the shells based on the observed characteristics. Once the shells were sorted (about two ten gallon buckets worth) students were encouraged to check the shells in a field guide and if necessary sort them further. This process usually took place during time when students were finished with other work.

When the sorting process was complete, a price was assigned to each type of shell based upon scarcity. The students were then allotted a ten dollar credit to "purchase" the shells. The requirements for purchase were correct identification and being accurate when adding the prices. Several attempts were made by some students since as the "storekeeper" I would not allow for inaccurate totals or misidentification.

The reading and writing components were much more easily integrated. One particularly successful idea came from using pictures from the magazine, "North Carolina Wildlife" as aids to begin writing descriptive paragraphs. Before I chose a picture to cut out to become part of the assignment, I made sure that it contained local wildlife and that it involved some kind of an action. Students were then to write about what they believed was taking place while using as much description as possible. Some examples used

included a picture showing the release of red wolves and of a field researcher catching snapping turtles for measurement and study.

Students also looked to this particular magazine as an example of how to begin an article or story using a “main idea sentence.” This was accomplished by me orally reading the first sentence of wildlife oriented articles and students then attempting to identify what the article was about. The next step of the process was for me to give the class a topic such as “groundhog” and then for them to write a topic sentence to see if the rest of the class could positively identify the selected topic. Students also read from the materials provided in both the classroom and on the class web page.

During a creative writing lesson in April, the students went outside and sat in a field on the edge of the woods and were instructed to write an adventure story using the literary element of personification. Their characters were to be a dragonfly, a bee, and an ant. As I walked around one boy said, “Mr. Dougherty, I like this. I think. I look around behind me. Then, well, I can write. It’s so cool.” (Teacher Journal, 4/08/05.) The enthusiasm for the location outside the classroom was obvious.

In addition to the core subjects, we also were able to integrate wildlife topics into our physical education program. The school is involved a fitness program called, “Take 10.” The purpose is to engage students in ten minutes of aerobic activity while working on some type of skill. This activity is to be done three or four times per week. The publisher provides many materials, but we are also encouraged to design our own. On a particularly warm day we completed our Take 10 by running around the soccer field. The activity the students were involved in was that they were to “high five” the tree leaves while saying the common name of each species. There were ten different types of leaves that we had previously identified on location for this activity.

Some lessons did not go as planned, such as trying to integrate a study of pinecones into numerical patterns. In the past I have been able to impress high school students by relating the Fibonacci sequence to flower petals and pine cones. The problem the third graders had was in being able to count while remaining on the same row. Also, the idea of patterns was a fairly new topic and they were more impressed with the “poky things” than any mathematical revelation.

Field Studies and Observations

Regarding the lessons that could be considered field studies and observations, there was some overlapping between the lessons that would be considered integration and those that stood alone. One of these dealt with the social studies objective of comparing people of past and present. We conducted two observations that were loosely tied to this goal. In the first I had collected and brought in sassafras root and discussed the uses of the past and the modern findings of toxicity. The students were permitted to see and smell the “tea” from the boiling root, but were not permitted to taste.

The second boiling project involved the students in the collection process. After spending a portion of time one day walking around and identifying the species of trees on school property we focused on oak trees. The oaks are the second most dominant type of tree following the local pines. Students collected a number of acorns from the trees and the acorns were cracked open with the inner nut being placed in a pan of water. As the water was brought to a boil we discussed the past uses of acorns, specifically in Native American culture. Myths of poison were dispelled and the students shared their personal

knowledge. Students were not permitted to sample either the boiled nut or the liquid, but were allowed to smell them. The study was connected to the students' personal, modern world as we discussed the tannin present in acorns being the same substance that makes coffee and tea bitter.

A favorite of students was a mini-lesson on the concepts of "compare and contrast." A glass lizard was brought into the classroom, and observed. The students discussed how much it looked like a snake. Some had even heard their parents refer to the species as a "glass snake." We then went on to notice the four primary ways that it was different from a snake, the first being that the glass lizard has the ability to lose its tail if threatened. The second, that glass lizards can blink their eyes, while snakes cannot. Glass lizards, however cannot dislocate their jaws as snakes do which does not allow for them to swallow prey larger than their mouths. And finally, the glass lizard has ear holes that are absent in snakes. Students charted these differences and similarities in what is called "a double bubble map." This is a thinking map that is required by the county to be taught and relates objects similarly to a Venn diagram.

Later in the year, a student brought in another glass lizard. We set up an observation tank with different types of soil and included several different types of plants. Since glass lizards are so secretive, we added anoles to tank. The students could then watch how the anoles relate to each other and then to what could be a potential predator. I believed though according to the research that this particular species of glass lizard only ate invertebrates. Two days later though the smallest anole was eaten by the glass lizard.

Our main science unit during the first part of the year was on soil. Soil is one of the four areas of our NC science course of study, the other three being muscles, the sun and moon, and plants. We created a small-scale worm bin and began observing the process of worms helping to break down plant matter into soil. The problem that developed was that the room was soon infested with fruit flies. We brainstormed possible solutions and finally settled on introducing a predator. The animal that was selected was a ground skink, which is a small three-inch lizard that is just the right size for eating fruit flies. Observations of its behavior were noted.

Most students felt the highlight of their year in wildlife was the springtime addition of two snakes. The redbelly snake was of a nature that it could be easily handled. All but two students chose to do this. This was the first time that most of the students had touched any kind of snake. The second type that was kept for observation was a young rat snake. Due to its aggressive behavior, it was not able to be handled by students. They did observe it eating baby mice and constricting and eating small lizards. Students were fascinated by its movement and hunting abilities. This snake displayed rapid growth and grew several inches in a month's time.

Methods of Data Collection

The method of data collection that I chose to examine my focus question is described below.

. Action research, being based on the teacher, needs teacher-based information to support the claims of personal change. This took the form of a journal. I recorded both outside collections and student instruction. Following the lessons I was able to evaluate the effectiveness within the classroom and then to reflect upon the lesson noting any change that should take place. Direct student quotes were placed within the journal.

Parents became involved through a beginning and end of year survey that was designed to measure student interest in school and science. This particular survey was done in order to measure before and after 3rd grade attitudes toward science and wildlife. I analyzed this piece of data through direct comparison of the parents who filled out both surveys.

An attempt was also made to measure confidence by means of a six-week observation form that a parent group volunteered to undertake. Parents were to record every time their child began a conversation involving local wildlife. They also were to note the mood/attitude that the student had at the time and then the activity or conversation immediately after. Parents were very supportive with this and gathered much information. This survey took place early in the school year and an analysis of the frequency of wildlife conversation and confidence followed.

Students were directly involved in the data collection process by participating in a video interview and by completing a self-analysis of their own learning styles. The interview questions were designed to see what information on local wildlife was retained and to see if a connection was being made between home and school. I chose the video interview so that it could be reviewed and because students tend to be more reflective and introspective when they are on camera.

Data and Analysis

Each piece of data served its own function, with some being self-reflective and looking at the changes that I was bringing to the classroom, others measured changes in the student. Both statistical and anecdotal evidence was evaluated in order to address the focus of the project.

As described earlier, the goals of my action research project were well documented in my journal. At the beginning of the project, I recorded the following thoughts:

“I believe that I can increase confidence the students have in themselves overall, generally as learners and specifically in the area of science education. Everyone wants to be good at something, some can’t play sports or instruments-but all can learn. The idea is to help the student master (feel like an expert about) the world around them. What kid doesn’t feel a little superior when they correct an erring grandparent who calls a “lion” a “tiger?” Through direct instruction, saturating my room with information on local wildlife, filling my aquariums with local specimens, hands on nature studies and guided projects, I plan on giving my students a foundation of knowledge that will build confidence in their own world while at the same time ingrain in them at an early age that, “Science is cool” and “I love science.” What I wouldn’t have given as a high school teacher to have even a third of my students curious and wanting to explore the world around them. I want my student’s to be riding down the road with their parents and for them to say, “Mom, that’s a loblolly pine,” for mom to then be amazed, and the child to take pride in that amazement.” (Teacher Journal 9/13/04)

The changes were made and the questions to address are, “Have students made a connection between the science we studied in the classroom and to the science that occurs throughout the rest of their day? “Are student now more confident than they were before?” Personal observations, student dialogue and work samples would indicate that students are more knowledgeable. Once the project began, students continually pointed out the objects, which were studied every time we were outside together. Probably due to our boiling the root, sassafras became the most talked about tree and anoles the most discussed lizard. Students were always searching for specimens in order to point out their newfound knowledge. These events took place both at school and home. Many creatures, from lizards to insects, were brought to class and the students were excited that they were encouraged to do so.

Students were often ready to imitate their teacher. I spent one weekend completing a personal leaf collection to show the class. A great deal of excitement followed. Many students could recognize if not identify those they had in their yards. Two days later a student brought in her completed collection.

Several discussions on safety took place. The studied region is home to five species of venomous snakes. This topic was discussed after my capture of a copperhead. This specimen was not brought into the room, but merely photographed. Many myths regarding snakes and snakebites were combated and I did receive verbal feedback from parents that much of the information was relayed at home.

Earlier in the year, science seemed to be viewed as a book and paper subject with the occasional project to break the rhythm. One particular journal entry reflected the insight regarding the positive change in attitude. After reflecting on the changes that had already been implemented I wrote,

“...and it’s working. Last week, as I was putting the schedule on the board, before I got to 10:00 I was asked, “When can we do science?” It was hard not to say, ‘Now!’” (Teacher Journal 10/03/04)

Enthusiasm over science, both in and out of the classroom has increased throughout the duration of the project.

Parental insights were invaluable as a data source. During the six-week student confidence survey, whenever wildlife was discussed words such as curious, confident or excited were used to describe their behavior 89% of the time and words such as “bored, sad, or worried” 11%. In a six-week period, the number of wildlife conversations at home averaged 27 per student.

The volunteer parent group also took part in a survey that was intended to gauge student confidence between the beginning of the year and the end. Attitudes and confidence levels did not change according to parents. The only noticeable difference was that some students lost their fear of spiders and snakes over the course of the past few months.

Following a brainstorming activity regarding subjects studied, students were asked to write the facts they knew about each item. The purpose was to observe the level of retention present at the time. The requirement for this measurement was that it needed

to be a specific fact that we learned such as, “Glass lizards can blink” and not a statement of general knowledge such as, “Some snakes bite” or “Trees grow tall.” Sixteen students wrote four or more facts regarding what they had learned. Fourteen of the sixteen students chose new information that they had been presented with other than a common piece of information.

At the conclusion of the study, students participated in a video interview. The questions were designed to both jog their memory and also measure the focus of this project in order to see if a connection was being made between school and home. When asked if they’ve ever kept a wild animal as a pet, 57% said they had, with the majority mentioning a type of animal that we had studied in class. 48% had kept a wild animal for at least a short period of time during the school year.

Perhaps the most telling question that measured the school-home connection was a question that asked students if they knew the location of the “purchased” shell from the math/seashell activity. 81% of students knew exactly where the purchased shells were, with most of them being in their bedroom, most often on a dresser.

Children, as well as all people, will discuss with others the things that most interest them. In wanting to learn how much naturalistic dialogue took place outside of school, the question was asked, “Who do you tell about our class projects?” 86% said that they regularly discussed the projects we did in class with someone at home or a neighbor.

Multiple Intelligence theory helps establish a rationale for the project being focused on wildlife. Students were guided through a series of questions in order to identify which intelligence they could identify with best. An age appropriate discussion took place, using works such as “people smart” and “nature smart” instead of interpersonal and naturalistic. Following the discussion and questioning, students ranked from greatest to least their eight intelligences. When the list was complete students drew and color coded a picture representing their brain. The class took great pleasure in trying to draw to scale both strength and weakness. Students took the activity seriously.

An analysis of the students’ list provided insight for the integration of wildlife education into the curriculum. Of the eight intelligences, the naturalistic ranked highest with 38% identifying themselves with this strength. When the results were broadened to include the top three strengths the number increased to 71%. As a class the 2nd and 3rd strengths were Bodily/Kinesthetic learners with 27% and Logical with 22%.

Students were also surveyed as to what their favorite class was with the choices being reading, math, spelling, and science. Science was the most enjoyed class. In the choices given, 0% chose Spelling, 14% Reading, 23% Math, and 61% Science. Students naturally seem to love the exploration of the world around them. Also represented within these statistics is the fact that I can now label myself as a logical introspective naturalist. Teacher interest has a great deal to do with student likes and dislikes.

Interpretation and Value

These particular students come from a semi-rural background and have learned from their homes and backyards throughout their life. One can conclude that their formal education should teach by means of the naturalistic strength and include as much of the natural world in both science education and throughout other areas of the curriculum. By teaching through the natural world, with which students are already comfortable they will

continue to grow and increase in confidence. Also beneficial to the student is attaching the term “science” to the observations and integrations of wildlife. Knowing this area is both a strength and a joy will cause a student to continue to develop an affinity for the natural world specifically and science in general.

Based upon the information gathered, the conclusion can be drawn that students are connecting the science of the classroom to their real world experiences. They converse with family and friends about what they learn and also some have attempted to look for and collect or capture specimens to imitate a study of both topic and technique. Students also readily bring in their own collected wildlife and stories back to the classroom, completing the home-school cycle

It is my belief that students did increase in knowledge and in doing so increased in at least the topics that we were able to cover. Based on the parent data sheets, it is clear that sharing the knowledge of local wildlife is a positive experience and experiences are not shared in an exciting, optimistic manner if there is insecurity involved. I believe that the claim can be made that due to the changes in my teaching, students did increase in knowledge, which led to an increase in confidence regarding the specific topics that were covered. I am confident that the changes I have made in my teaching is laying a groundwork for the future success of my students in science education.

After being in the wildlife spotlight as a child, it was enjoyable to once again be viewed as an authority in this particular field. Due to word spreading about my weekend collections for this project many people from the school and my home community, both children and adults, came to view me as the local wildlife expert. This was both humbling and empowering.

I believe many positive changes occurred with both my teaching and personality as a result of this project. It was a great pleasure in teaching about something in which I feel passionate. Also, the reflection process sometimes took me back to my younger days and reminded me why I enjoy wildlife education as much as I do. There were many times that I know I was even more excited than the students. Perhaps a reflection that I made recently can best describe my feelings.

“Enthusiasm! That is the key word for what I have learned. I could use obsession, but enthusiasm sounds better. And that’s about me. Though my project dealt with bringing about a boost in confidence and enthusiasm in my students, I found myself being the one who was just as psyched to share what I’d found on my weekend or evening adventures as the students were to hear.”

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Appendix 1

Topics Collected, Observed or Discussed

Trees

Loblolly Pine
Longleaf Pine
Pond Pine
Live Oak
Turkey Oak
Laurel Oak
Water Oak
Red Oak
Holly
Sassafras
Cypress
Maples (General)
Sycamore

Lizards

Glass (3 species)
Ground Skink
Five-Lined Skink
Broad Head Skink
Anole

Snakes

Copperhead
Cottonmouth
Rattlesnake (3 species)
Corn
Black
Green
Rat
Red-belly

Shells

Scotch Bonnet
Turkey Wing
Whelks

Conchs
Olives
Moon Snails
Sand Dollars
Keyhole Urchins
Augers
Clams
Oysters
Crabs
Cockles
Scallops
Coquina
Knives

Mammals

Red Wolves
Gray Squirrels
Gray Foxes
Black Bears
Opossum
Deer
Bats
Panthers

Birds

Wild turkey
Crows
Owls
Hawks

Amphibians

Gray Tree Frog
Green Tree Frog
Eastern Toad
Slimy Salamander

Appendix 2

Books Available For Student Classroom Use and Personal Field Studies

- Ballantine, Todd (1991). *Tideland Treasure*. U. of South Carolina, Columbia.
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Appendix 4

Beginning/End of the Year Survey

Child's Initials _____

1. How confident is your child regarding school and his or her ability to learn?

Very confident somewhat confident little confident not at all

2. What is your child's favorite subject?

3. What subject is your child most insecure about?

4. How curious is your child about the natural world?

Very curious somewhat curious little curious not at all

5. How often does your child collect natural objects or explore wildlife?

Several times a week once a week rarely never

6. If your child has a question, is he or she more likely to find an answer by:

Reading a book asking you searching the internet

observing or experimenting independently

7. Is there any natural object, such as spiders, with which your child is afraid or uncomfortable?

8. How would you rate your child's confidence in themselves?

Very confident somewhat confident little confident not at all

Appendix 5

Video Interview

1. What was your favorite animal that we studied or observed?
2. Have you tried to catch one before?
3. Have you kept any wild animals as pets?
4. Have you collected any seashells?
5. Where are the shells you bought at the “store?”
6. Who do you tell about our class projects?
How do they react?
7. Can you name any trees that are in your yard at home? School?
8. On a scale of 1-10, how well do you like science and nature?
9. Do you explore or collect things at home?
10. What is your favorite wildlife topic or lesson that we have studied?