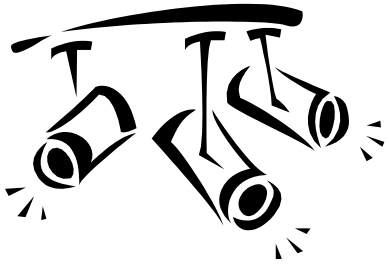
What happens when I integrate Performing Arts into my 6th Grade Science curriculum?



A Research Paper

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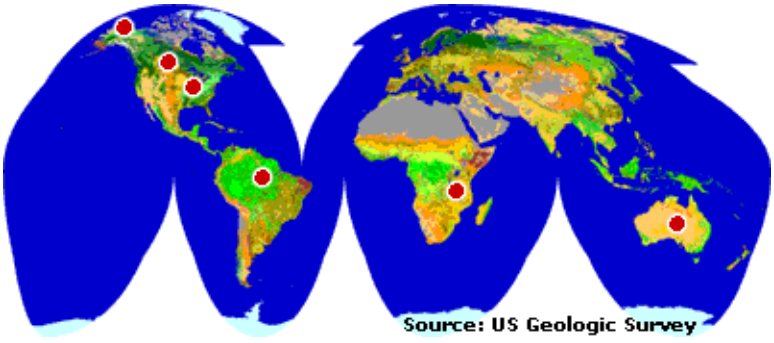
EDUC 602/700 Inquiry in Practice



"I looked forward to coming to school that day. Learning about biomes was fun. It was like a trip to a different place."
Sam, Grade 6

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Introduction

Standard 5.10 "All students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena"
New Jersey Core Curriculum Content Standards
State of New Jersey, Department of Education

"All right class, take out your 'Ecosystems' textbooks and turn to page 49, you'll see a picture of a polar bear fighting for survival in the cold, cold tundra. Boy, doesn't it look lonely and, well, cold…"

"Next, you'll see a toucan resting on a branch in the rain forest. You'd have to go pretty far from here to get inside a rain forest, but it looks like fun!"

"Lastly for today, look at the picture of the lizard on page 51. He lives in the desert, probably in somewhere like Africa or the Middle East. Deserts are brutally hot; the climate is very different from our own."

I find myself bored teaching it, and yet I can't imagine myself as a fidgety 11-year-old actually pretending to listen to it! It is my admittedly forgettable lesson on the biomes of the world, embedded in our "Ecosystems" unit. Upon first look, it should and could be a very fun and engaging lesson to teach. But dig a little deeper in my lesson plan book and you don't find much. I have asked myself many times, "Is it going to be the same every year?" This dissatisfaction with my own teaching leads me to my research question.

Green Brook, New Jersey is an upper-middle class town with a close knit community that values education. It has a reputable school district, and many families move into Green Brook seeking out a solid education for their child. Parental support is good, and the students achieve high academically on state-wide standardized tests. Many

students are quite busy after school with sports, music, drama, and other activities. Green Brook Middle School houses the 4th – 8th Grades and I am the sole teacher of 6th Grade Science. This is my 5th year in this school, and I intend to stay for a while. While the curriculum is set, the scope, sequence, and methodology of how things are actually taught to the students is well under my jurisdiction. I am in a fortunate position to have the well-earned trust of both parents and administration.

Much of our Science curriculum focuses on labs and hands-on activities. I have an amazing classroom space with 6 lab tables, which I take full advantage of. If there is an appropriate lab or group activity, I inject it into the curriculum at every chance I get. I realize that "teaching from the textbook" just doesn't cut it anymore. In 6th Grade Science, we study "Introduction to Science and Technology," "Sound and Light," "Electricity and Magnetism," "Matter and Change," and "Ecosystems." I have a lab kit ready to go for all of the units except for "Ecosystems." I have been following this model for my tenure here, and am looking for something different.

My 6th Graders are energetic and seem to have boundless energy. They are creative, curious, and work hard. In many ways I feel that I am doing them a disservice in teaching Ecosystems the way that I am. When I thought of creating and implementing a research plan, I wondered which sector of my curriculum could use a jump-start. That part was easy. But how do I teach about the savannahs of Africa, or the deserts of Australia, and make them "come alive" for these kids? It seems like a daunting task, and while I am reluctant to give up control, I actually plan to have the kids do a majority of the work! My hope is that they will not view the project as "work," but rather it becomes

a topic they never forgot. I have decided to teach the section of our Ecosystems unit that includes the biomes of the world while integrating the Performing Arts.

I am not an actress or performer; I don't even really like going to the theater. But my students are performers, and enjoy seeing plays. The plays that are presented in my school are legendary. Both the lines for tickets and try-outs are long. Many students stay after school for hours to paint scenery, and surprisingly, don't even mind such a seemingly thankless job. Last time I checked, the "Homework Club" was not so well attended, and their "Ecosystems" textbooks get rather dusty over night. My question that developed has to do with allowing the children to both learn through, as be assessed by, a "production" of a given biome. I have a feeling it will be a lot of work, a lot of class time, a lot of energy, but also a lot of authentic learning. I want it to become, literally, a lesson to remember.

My former students often visit my room and I find it funny, they love reminiscing about the things that we did in class. They certainly don't want to talk about the chapter notes or readings, but the labs, projects, and activities. I don't need a research paper to confirm what I already know: students learn by doing, by tasting, smelling, moving, touching… all of the things we teachers tell them are *taboo* in the classroom. I have decided to take the plunge and invite a little organized chaos into my classroom. I will welcome costumes, laughs, noise, and creativity. In the midst of that, I also (hopefully?) welcome authentic learning.

My main question is "What happens when I integrate Performing Arts into my 6th Grade Science curriculum?" My sub-questions are (1) "Do I enjoy teaching Ecosystems while integrating Performing Arts and feel the students are sufficiently learning the

content?" (2) "How does integrating Performing Arts affect students' enjoyment and interest in Science?" and (3) "Are the students learning from each other, or do they learn only the content they are involved with?"

I am excited to see if using Performing Arts in Science completes my objective~ to make learning fun, memorable, and inspiring. Do the students learn the material and actively become in involved in their own learning? Does their teacher go crazy? I can't wait to find out!

Literature Review

"To successfully teach tweens, we have to be willing to transcend convention once in a while."
Differentiating for Tweens

The question I have chosen to research is "What Happens When I Integrate Performing Arts into my 6th Grade Science Curriculum?" One of the experiences that lead me to this topic was in fact, many of the assigned readings from my "Brain Based Learning" class with The Regional Training Center in the summer of 2007. I found the articles and books we read for that class exceptionally interesting. It fascinates me when real, "hard-core" science can prove or disprove an educational hypothesis. For example, I found that many of the things I was already doing in my classroom, "Brain Breaks," and the second-nature differentiation of instruction that so often occur to teachers, in fact have been scientifically proven to *work*, when it comes to learning. The class was a true encouragement to me and my teaching style. So in fact two of my chosen articles for this literature review were assigned readings in that class. I used those articles as a springboard for the remainder of my literature research. The common theme that emerged as I read was how the best of teaching is through differentiation and the Performing Arts is one shining example.

I wanted to begin my literature review with an exploration of the Science teaching standards. In the summer of 2007, most definitely recent enough for me to consider it worthy, the American Educational Research Association published an article entitled *Science Education That Makes Sense*. An easy to read, concise, and well written article, this made many things clear for me. There were a few main points that I found exceptionally useful. The first of which was that Science courses do not have time to

cover every important topic, so they need to instill a desire to learn more. The editors advised teachers to develop instructional practices that focus on key topics and on teaching them in an in-depth manner. This is something that correlates well with my experiences in the past few years. My curriculum contains a broad scope of material spanning the many branches of Science. It can often be overwhelming for myself as the teacher and my students. The article continued to emphasize that fleeting coverage of multiple topics results in instructional materials that emphasize memorization more than coherent understanding of scientific concepts and lead to student's rapidly forgetting the material. That point was dead-on for me, a true reflection of my current thinking. Instead, the article urges teachers that the curricula should include enough connections showing how Science affects student's everyday lives to keep students interested along the way.

Every September I get a new bunch. They are excited, truly excited, to be in the middle school, to have a "real" Science class. For many students, Science is their favorite subject. And then the roller coaster ride begins. We barrel through the information at Mach-10 speed. Many students are left behind, and the "good" students, the ones who can memorize easily and maintain an organized notebook are rewarded for their efforts. I am intrigued by the idea of focusing on a few aspects of the content rather that drifting through it all: diving in as opposed to skimming the surface. The Ecosystems unit in which I am focusing my project will be a wonderful template for my research.

The second article was a wonderful resource used in my "Brain Based Learning" class. Entitled *Brain Compatible Teaching*, the focus was on using the brain to its fullest

potential, using what we know about neuroscience to cement learning and instill motivation. It stated that emotion is a primary catalyst in the learning process and emotional responses have the ability to impede or enhance learning. Our brains are in fact hard-wired to remember those experiences with an emotional component (good *or* bad.) When an experience enters the brain, it is deconstructed and distributed all over the cortex. When you recall information, you have to reconstruct it. Since memories are reconstructed, the more ways the students have the information represented in the brain (through seeing, hearing, being involved with, etc.) the more pathways they have for reconstructing, and the richer the memory.

How often do we teachers discourage the very things I just mentioned? In our traditional and predictable classrooms, the primary emotion is fear. Our most solidified memories of school are often when we were embarrassed, marginalized, or corrected. That is why we remember them! However, it's the good emotions that can lead to healthy learning too. When I was a 6th Grader, each student in my class was allowed to pick one of the United States to focus on for a project. I chose Georgia, because I always liked peaches and I thought it was cool that there was a place where it was warn most of the year. It was a project I enjoyed doing, and you know what? I remember facts about Georgia, and will more than likely, never forget them! Here's the key~ I was able to choose, I enjoyed learning about something in a non-traditional way (we had to create a scrapbook,) and for me, because it was a "fun" experience, I really do remember! The good news is that as a current teacher, I was also a former student. It's not in too many jobs where that is the case. Will the students remember my lessons on the Ecosystems? Maybe. But they also *might* remember a lot of other things. Will they remember facts

about the Ecosystems if they are dressed up as a palm tree, handing out coconuts? I think so! ☺

While at my in-laws a few months ago, waiting for dinner to be put on the table, I found myself picking through the many magazines they have stacked in the living room. I never complain; I love magazines. I found myself drawn to a "Time" Magazine with the cover "The Brain: A User's Guide." With some neat graphics and applicable articles, I read it from cover to cover… *after* dinner. One article that I tagged, and knew I would use for this class, was called *The Flavor of Memories*. Right away I noticed many similarities to the previous article on "Brain Compatible Teaching." It stated that memory and emotion are intimately linked biochemically, with hormones like adrenaline actively involved in forming the neurological patterns we call memories. (The scientist in me loves this stuff!) I continued reading. It reiterated the fact that any kind of emotional experience will create a stronger memory that otherwise would be created. Most importantly, positive emotions… cement memory formation.

Inherently I know that coming to middle school, even walking through the door, is an emotional experience. Kids may be lonely scared, popular, or happy. They may have had a good morning or been bullied on the bus. It is my hope that my science room is a shelter from the storm. The trick is, instilling these positive emotions. Which lead me to my research question. I hope that using the Performing Arts in my room will be a positive experience, but that may not be the case for every student.

"Tweens"… like it or not, they are my thing. I found an article called, in fact, *Differentiating for Tweens*. It caught my eye, knowing that my students are in that potentially-awkward in-between stage, and they require oh so much, in so many ways. In

the article I read that differentiation requires us to invite individual students to acquire, process, and demonstrate knowledge in ways different from the majority of the class if that's what they need to become proficient. In the area of assessment, we should never let the test format get in the way of a student's ability to reveal what he or she knows and is able to do. In differentiated classes, grading focuses on clear and consistent mastery, not on the medium through which the student demonstrates that mastery. Tweens are interested in that which compels them, and appeals to their curiosity about the world. To successfully teach tweens, we have to be willing to transcend convention once in a while.

I love teaching the 6th Grade! They really are at such a unique age; they love stuffed animals, and their i-pods, and are just trying to figure out how to blend the two. "Transcend convention…" what a great idea. To successfully teach in the middle school, sometimes you have to think like a middle-schooler! I find myself getting bored in class, just like the kids, I want to roam the halls on a fifteen minute bathroom break, just like the kids, and can't wait till lunch, just like the kids. I like that the article put forth the idea of alternative assessments, grading on the mastery of a topic and not the format in which it is demonstrated.

I spent a lot of time looking for articles specifically on integrating Performing Arts into other subject areas. There were many articles that talked about it in a very general way, as in "it's a great idea!" with no more advice after that. I looked back to a book I had read entitled "How the Brain Learns" and found that chapter that was just what I needed, called *The Brain and the Arts*. Again, it was the use of real data that intrigued me. It highlighted that studies repeatedly show that in schools where Arts are integrated into the core curriculum:

- Students have a greater emotional investment in their classes
- Students work more diligently and learn from each other
- Parents become more involved
- Assessment is more thoughtful and varied
- Teacher's expectations for their students rise

In other words, what's not to love? The Arts provide new challenges for students already considered successful. Students who outgrow their learning environment usually get bored and complacent. The Arts offer a chance for unlimited challenge. This chapter was chock-full of great information, specifically information about using Performing Arts, more so than any other article I found.

This was some of what I was looking for*: results of research*. If I, as the teacher, am willing to put forth the effort I am sure it takes to do this, and do it well, the results seem overwhelmingly positive and everything that I am looking for. I will be curious to see if my own research correlates with what was presented here.

For my final article, I found a wealth of information in an article published online called *Learning Through the Arts*. It was a synthesis of research on the contribution of Arts education to learning. In fact, the article quotes the United States Department of Education in saying that "using Arts processes to teach academic subjects results not only in improved understanding of content but it greatly improved self-regulatory behavior." It also said that the Arts offer especially valuable tools to facilitate learning for those who are primarily visual and kinesthetic. As stated in the article, students who demonstrate a visual learning style are about 40% of the population and kinesthetic students form about 45% of the population.

As much as I can try to do labs, not every lesson can follow the scientific method so easily. There are still those topics which have a tendency to be, well, dull. In the article it reiterated what I already know: my kids want to, and need to, move! They are visual and kinesthetic, it's not just what they want to do, they *need* to do it to learn. I find that fascinating. As the human race we were not formed with cookie cutters, why should we teach in one mold?

All in all I found my literature review reassuring and encouraging as I embark on my research project. To be honest, I did not know there was information out there! I thought of the idea on my own, thought it'd be a great idea, and come to find out, the experts think so too! Will it work for me and my population of students remains to be seen. I am curious to what extent it is successful, and what treasures are unearthed in the process.

Methodology

"Okay, five times a day, cleaning the room, organizing the desks, picking up streamers, picking up sunflower seeds, mixing smoothies, a lost-and-found pile with more clothes than my closet, going home feeling slimy and sweaty and tired, acting interested and excited each and every time… this is exhausting."
Excerpt from my Journal

I began my research project with the start of the Ecosystems unit, which began in the first week of February, 2008. The research & data collection culminated in the first week of March, 2008. I chose to focus my research on two of my six Science classes. I looked at the daunting task of using all of my students as guinea pigs, and make the wise decision to limit the focus to one morning and one afternoon class. My second period class had 20 students, and ninth period, 24. Both were heterogeneous groups, equally balanced sections of male / female, students with special accommodations, and gifted students.

So, what did I *do*? I cannot pinpoint where exactly the idea came from or why I chose the vehicle that I did. Was it a bit of brilliance or a bridge designed to break? You'll have to keep reading and answer that for yourself. I designed an Ecosystems group project built around the idea of a week full of "Biome Days."

I proposed the project to the students, and first took suggestions for teammates. I toyed with the idea of creating the groups for the students, but at the same time wanted their input. I knew this project would last approximately one month, would require both class time and time spent outside of the school day, and did not want it to be miserable simply because the students did not like the people in their group. I asked the students to anonymously write down 3 – 5 other students in the class that they would like to work

with. I then took their suggestions home and made the groups based on my own knowledge of the students and their personal preferences.

For the research project, I decided to teach the Ecosystems while integrating Performing Arts. Instead of teaching each of the earth's biomes to the entire class, I divided the classes into "drama troupes." Each group of four - five students wrote, planned for, and presented a drama presentation that showed, and in-effect *taught* the viewer about the given biome. They created a multi-sensory experience us all to view, incorporating many of the 5 senses. The project was first explained to the students as follows:

Ecosystems Project
Biomes- A Trip Around the World!!

This is going to be our best project of the year, and it's going to be awesome! Your group will be responsible for one biome. No two groups in your class can have the same biome. Your choices are…

<u>Land Biomes</u>
Tundra
Grasslands
Desert
Tropical Rain Forest
Coniferous Forest
<u>Water Biomes</u>
Marine (Ocean) Biome
Fresh Water Biome

Your presentation will last one class period. It will be, in 40 minutes, a trip to your biome!!

Performance Task: You and your group members are the owners of a tour company for students & teachers. You are planning a trip for us to your biome. When we enter the classroom, you will be welcoming us into your biome. More specifically, you will be welcoming us to one country in your biome. The classroom will BECOME the biome. Do your best to make it look like the environment of your biome. Pretending as if we just got off the plane, we will, as the students & teachers who are on the tour, expect to see & hear the following:

Animals native to the biome
Land formations found in the biome
The climate & temperature of the biome
Types of vegetation (plants) from the biome
A clear representation of the culture of the country of the biome
Other ways to make your presentation more interesting…
Playing music native to the country
Serving food from your country
Interesting tourist facts about your country
Activities to do in the country
Wearing clothing and / or costumes appropriate for the weather
Prepare a brief guide/brochure to the biome for the students

Be creative, make it your own, make it memorable. As the tour operators, you are responsible for all planning, teaching, and details on your Biome Day. Mrs. Hansen will be traveling with the other students, and looks forward to learning from you!

The students were given class time, library research time, and rubrics to guide their research and planning. Over the course of three weeks, they worked diligently to prepare for their Biome Day presentations. In the last days of February, 2008, I "traveled" to Paris, Australia, Africa, Hawaii, Alaska, and The North Pole. In the midst of all the confusion and jet lag, I managed to collect research data as well.

My main question was "What happens when I integrate Performing Arts into my 6th Grade Science curriculum?" My sub-questions were (1) "Do I enjoy teaching Ecosystems while integrating Performing Arts and feel the students are sufficiently learning the content?" (2) "How does integrating Performing Arts affect students' enjoyment and interest in Science?" and (3) "Are the students learning from each other, or do they learn only the content they are involved with?"

The types of data that I collected were:

(1) Teacher Reflective Journal

(2) Teacher Observations & Field Notes

(3) Student Surveys: "Pre" and "Post" Ecosystems Project

(4) Persuasive Essays

For the "Teacher Reflective Journal," I recorded my own uncensored observations, and included reflections on those observations. I addressed what I saw, what I heard, what students asked me, etc. I also touched upon my own experiences with the project. I thought about the questions and sub questions as I wrote each day… Was it going well, in my opinion, were the students learning, or was it more work for everyone with no net gain? I enjoyed journaling and did not find it cumbersome. For this project, I journaled everyday during "performace week." I found that I much to say (vent?) and need someone, or *something* to "talk" to! I often wrote quick notes after the students had left the room, and reflected on those notes when I had a minute to sit down. I wrote uncensored, and often with much emotion. The use of capital letters and exclamation points made it clear the intensity with which I *felt* some of the things I was writing down. The analysis of my journal was simply me making note of topics and / or emotions that "popped up" time after time. Certain reflections that I noted time and time again were considered worthy.

For the "Teacher Observations & Field Notes," I made objective observations with detailed descriptions of what was happening in the room on a daily basis. I did this in the same notebook in which I journaled; it was right next to my desk and very handy. The students found it perfectly normal that I was writing things down, and it made it helpful to grade them as well. The observations were quite different from the journal; in this section I tried to remain both unbiased and objective. As I analyzed my observations and field notes, I tried to remain objective about what I read. I took the observations as

valid data, realizing that it is what was actually happening at the time and not laced with my own judgments. My observations and field notes turned out to be invaluable, as they were untainted by my own exhaustion and frustration during the seemingly never-ending performances during the actual week of performances.

In addition, I chose to survey the students, both "pre" and "post" Ecosystems project. The questions at both times were the same, and the *differences* in their responses before and then after the project were what I analyzed. For each question, I noted if they became more or less positive towards a certain aspect of Science, or of Science class. The students found the surveys easy to navigate and fun to complete. I kept all of the responses anonymous, and above all, encouraged to students to be honest, and tell me what they really felt. I have included a copy of the survey in the appendix of this research paper.

For my final piece of data, I wisely chose to kill two birds with one stone. One of the things my school was focusing on during February was "persuasive writing" in all content areas. At the conclusion on the project, I assigned a persuasive writing piece directly relating to the Ecosystems project. The students were well-versed in persuasive writing, and had no trouble writing about something they felt very strongly about. The students were given the essays as a class assignment, to be completed in one period. I did not coach or encourage them to write one way or another, just instructed them to follow the format they had been taught in Language Arts and to again, be honest. I have included a copy of the persuasive prompt in the appendix of this paper. The essays were analyzed and I found rich content. I took notes as I read, and re-read, and highlighted

students' responses that were particularly notable. Since the essays had the students names on them, I could directly relate their experiences to what I saw happening in class.

Findings

"Biome day is a fun, educational, and teach kids to be responsible kinda. You also get fresh food. It teach them to be responsible by making them clean and by helping others. So that is why biome day is a great idea."
Daria's Persuasive Essay

I have chosen to summarize my findings by working through each of the sub questions. Each question was explored and eventually answered by different data. They say no man in an island, and I propose that no sub question is either. The overlap is obvious and necessary, as each sub question feeds and nourishes another.

Question #1: Do I enjoy teaching Ecosystems while integrating Performing Arts and feel the students are sufficiently learning the content?

My own reflective journal and observations and field notes were rich with data to feed this sub question. If the teacher isn't happy, the class isn't happy. And if the students aren't learning, the teacher is most definitely *not* happy.

Notable excerpts from my journal (uncensored):

"This is a lot of work for me, but the kids seem to LOVE it. I guess it's all worth it?"

"The good kids are amazing at this stuff, the special education kids simply cannot figure it out. It is so frustrating."

"They are so creative ☺"

"Okay, five times a day, cleaning the room, organizing the desks, picking up streamers, picking up sunflower seeds, mixing smoothies, a lost-and-found pile with more clothes than my closet, going home feeling slimy and sweaty and tired, acting interested and excited each and every time… this is EXHAUSTING."

"It's so fun when it's a good presentation, but man, some of them stink."

"I am up to my ears in biomes. The kids love it all the way through."

"One group asked to come in tomorrow morning at 7:00 to set up. That is enthusiasm. I said no, I would not be here that early. They were disappointed. But gee, there is a point."

"They really got better as the week went on. I am proud of these guys."

"This is a great project for the girls. They are well spoken and confident, they love the food, costumes, and decorations. Some of the boys HATE me."

Notable excerpts from my observations & field notes (uncensored):

"They were very excited about the project idea. I fielded a lot of questions right away."

"As they worked with their groups today, in the planning phases, all they seemed to talk about was what snacks they would serve the class. I think we are missing the mark."

"Parents are concerned about how the students will be graded, and of every student in the group will get the same grade. They of course are calling for fairness."

"Students are not concerned about the grade their project received."

"The students all came in early with supplies to drop off for their project presentations. Many parents commented on what a 'great idea' the project was."

"Each group seems to have found a leader."

"Many students do not listen to the factual presentation portion of the presentation."

"As the week wore on, students got a little too comfortable with the flexibility of the week. I had to discipline more during the presentations."

After analyzing my journal & observations, the following themes emerged in answering the first sub question:

- I worked quite hard, and was very tired.
- It was a good way to break up the year, almost a "vacation" from normal school.
- I enjoyed watching the students have fun.
- I worked much more than I thought I would. I was looking forward to "taking it easy" that week and letting the students do the work. In fact, it was the most I'd worked all year.
- It was very encouraging for me to have the students so excited to come to class.
- There is a first time for everything. Many hits, more misses.
- I felt that the students learned a ton about their own biome, more than I thought or dreamed, but very little about the presentations they were supposed to be watching.
- The brochures that the students created were outstanding, full of solid information.
- Throughout the project presentations I saw many different students "shine" and use their talents and gifts in ways I had not known or seen before.

Question #2: How does integrating Performing Arts affect students' enjoyment and interest in Science? *and* Question #3: Are the students learning from each other, or do they learn only the content they are involved with?

To answer these questions, I looked at the survey results and the students' persuasive writing essays. Since these questions focused on the students own experiences, I was anxious to look at the data that they provided for me. What I found easily answered the questions, and then some.

Notable excerpts from the persuasive writing essays (uncensored):

"Imagine yourself in a cool classroom eating fruit kabobs, and drinking fruit punch. Imagine a bright, airy, decorated room. You play games, eat, learn about the Tropical Rain Forest in a new and exciting way, and most of all… have fun!"

"To me biome day felt like an actual vacation and an experience that I will remember for my life. Half of those biomes, I didn't even know they were words."

"Students can put to use and gain skills for life from this project such as cooperation, team work, creativity, problem-solving, and a lot more."

"Biome day is a fun, educational, and teach kids to be responsible kinda. You also get fresh food. It teach them to be responsible by making them clean and by helping others. So that is why biome day is a great idea."

"This project is challenging but it is fun in the end."

"It was like no other project that I've ever done before!"

"I really had fun working with the students I never worked with before."

"I made two new friends while doing this project."

"The biome days were all so good, they were all mini-vacations with blazing sun, or freezing cold ice."

"I know loads more about the tundra than what I did before."

"I looked forward to coming to school that day. Learning about biomes was fun. It was like a trip to a different place."

"Science class was educational and fun. Like a 2 in 1 package."

"Our class had a blast with it."

The following themes emerged from the persuasive essays in answering the second sub question:

- Fun, fun, and more fun. They seemed to have, well, fun. That response was found across the board.
- The students were anxious to insist that learning and fun should go hand in hand. Many examples were given of "boring" classes where no one learned, simply because they were bored.
- Students gave examples whenever they could of presentations, both their own and others, which were good or great.
- Students wrote of benefits I had not thought of: building teamwork, cooperation, public speaking skills, making new friends, responsibility, and planning ahead.
- Students often listed facts they had learned to really bring home the point.
- Students claimed to look forward to coming to class, and school, on biome days.
- I received 2 essays in which the students wrote of biome days in a negative manner. The students said biome days were too messy and too loud.

In addition to persuasive writing samples, the students completed surveys both pre and post biome project. The questions were exactly the same, I was in fact looking for differences in thoughts and attitudes, and if the students *changed* their way of thinking as a result of the project. In the survey template below I have indicated the answer with the highest number of responses in both February and March.

F: Highest number of responses, February 2008 **M: Highest number of responses, March 2008**	☺ Strongly Agree!!	Agree Somewhat	Disagree	☹ Strongly Disagree!!
I like Science Class	F M			
I like working on my *own* in Science Class				F M
I like working in *groups* in Science Class	F M			
Working in groups is fun	F M			
Working in groups is frustrating				F M
When I work in groups, I am more interested in what I am doing in Science	**M**	**F**		
I like going to see plays and / or musicals	F M			
I like performing in plays and / or musicals	F M			
I like writing songs and singing songs that I wrote				F M
I learn a lot from reading the textbook and working through Notes Packets		F M		
I learn a lot from doing labs and projects in groups in Science Class	F M			
When I work in groups I am too frustrated to learn anything				F M
I learn a lot from class discussions in Science class	F M			
I learn a lot when I research a topic that I've chosen	F M			
I am interested in EcoSystems & the Environment	**F**	**M**		
I know enough about the Biomes of the world to teach a lesson to other students		**M**		**F**

Significant findings from the Student Survey:

- Students "like Science Class." This was true before and after the biome project.
- Students like working in groups in far greater numbers than they like working on their own, this was true before and after the biome project.
- Students say working in groups is...
    - ✓ fun
    - ✓ not frustrating
    - ✓ something that makes them more interested in Science
- Students claim to learn the most from doing labs and projects in groups in Science class, this was true before and after the biome project.
- When asked if they know enough about the biomes of the world to teach a lesson to other students, students replied "Strongly Disagree" in February and "Agree Somewhat" in March.
- Students were "more interested" in Science when working in groups.

My findings gave me much to think about and analyze, and I will now discuss the implications, limitations, emerging questions, summarize the research study in a conclusion, and draft an implementation plan.

Implications

"Imagine yourself in a cool classroom eating fruit kabobs, and drinking fruit punch. Imagine a bright, airy, decorated room. You play games, eat, learn about the Tropical Rain Forest in a new and exciting way, and most of all… have fun!"
Christian's Persuasive Essay

It became clear to me what is important to my students: a learning activity is judged solely on whether or not it is "fun." Lucky for me, this project was "fun." Phew. In reading the persuasive essays, the students were insistent upon stating that the biome project was *fun* above all else. The students thought the project was valid because it was fun, which is something I learned was quite rare in the middle school curriculum according to its 12-year-old customers. My take-away lesson from this is that I need to engage and stimulate the students, more than just for a week at a stretch. Their idea of fun is very different from my own. I rather enjoy sitting at my computer and organizing paperwork while they are quietly working. They do not. Integrating Performing Arts into the curriculum (my second sub question) had a positive influence on student's enjoyment and interest in Science

They say hindsight is 20 / 20. As I look back on the week that was biome week, I can honestly say I enjoyed doing it. I was tired, very tired. It was an extremely long week and it took a lot of my time and energy. By the end of the week I was wearing sneakers to work and already-stained pants. It was a new and different way for me to teach, something I had not done before. When I looked though my journal I saw the frustration and the exhaustion. I also saw the little miracles: my happiness in their happiness, my excitement in their excitement. Do I feel that they learned the

information? Yes, I do. I enjoyed teaching Ecosystems while integrating the Performing Arts, and felt that they sufficiently learned the content. I am a firm believer in quality over quantity. I probably now have ten students who can talk about the tundra for ten minutes, and ten students who can talk about the coniferous forest. None of the students can talk about both. For me, that's okay. It became clear from my observations and field notes that the students learned a great deal about the topic they themselves researched, but much less about the projects they watched other students perform (my third sub question.)

I was encouraged that they liked Science before we did the biome projects, and encouraged that they liked it after even more so. The whole thing could have flopped, but it did not. It thrived. As I read and re-read the persuasive essays, I read how my *students* saw it all. I saw in from their perspective. They were excited to share what they learned. Isn't that what it's all about?

Limitations

"The good kids are amazing at this stuff, the special education kids simply cannot figure it out. It is so frustrating."
Excerpt from my Journal

It's not often in life that we get a "do-over." This, unfortunately, is one of those times that we *don't*. I experienced problems. I had performance groups that jelled and groups that cried. I saw a teacher in the mirror who at times *wanted* to cry. Although I would definitely call my research project and subsequent questions a success, it of course could have been much, much better.

One of the problems I experienced was the project itself. As I saw the student groups attempting to complete their task and do it successfully I saw flaws in my assignment. I made many notations on the project task sheet for things I will do differently next year, when I intend to assign the same project to my new batch of sixth graders. My journal entries & field notes will be helpful to me for years to come. It is very evident to me now what an enormous benefit it is to be a continual teacher-researcher. Looking back on my own writings, I see the faults and failures with many logistical aspects of the project. "Biome Day" will probably be tweaked each and every year, and then tweaked again. I think that is the goal of the teacher-researcher, to grow and change and modify and adapt.

Another logical problem I encountered was working with the students who were uncomfortable with the flexibility (and "un-scientificness" perhaps) of the project. I realize I was attempting something unorthodox, allowing students to eat fruit kabobs and dress in a hula skirt. We collected no data, made no graphs, and wrote no definitions.

All of those things are comfortable and acceptable in Science class. For some students, it was a hurdle, to try something new, to *have* to try something new, because I said so!

This was a research plan I was happy to implement. In the beginning I was scared and unsure, but as the project played out I saw how the benefits outweighed the costs. I did not do the project for me, I did it for my students. Having said that I know my own personal preferences and attitudes influenced the very nature of the assignment. It actually is important to me that my students like me. Did I do a project I knew they would like, so they would like me? Maybe. Did I make it too easy on them, because I did not feel like being too tough? Perhaps. My interpretation of the success of the venture was reliant upon me smiling at the end of the day. Maybe because I had a good time I assumed the students did as well. Maybe I wanted them to learn the information so this very paper would be a success! For the same reason I cannot buy a couch without first asking my husband what he thinks of the slate blue color, I cannot conceivably accurately judge my own research plan. I will do the project again, however, because next year I will again want it to be a success.

Emerging Questions

"Students can put to use and gain skills for life from this project such as cooperation, team work, creativity, problem-solving, and a lot more."
Leon's Persuasive Essay

In my opinion there do remain questions for further study, some would be better asked by myself, and some would be better asked by another researcher who would give them a new and fresh perspective. I only wish there were more hours in the day!

- "*What makes certain classes 'fun' and not others?"*
- *"Do students learn more when they perceive they are having 'fun?'"*
- *"Should public performance be a state standard?"*
- "*How do I find the balance between content, instruction, and activities?"*
- *"Will I have the energy to be creative and innovative when I have a family?"*
- *"How often should I write in a reflective journal, and does the reading of that journal improve my own teaching?"*

Conclusion

"Science class was educational and fun. Like a 2 in 1 package."
Isabella's Persuasive Essay

"Has this been helpful?" "Will it be useful to others?" And the dreaded question… "Was it a waste of time?" My answers are "yes, yes, and no." In early February of 2008 I began a journey. No, allow me to correct myself. In the summer of 2007 I began a journey. Quite literally, I traveled down to The College of New Jersey campus for five days in August to begin my discovery of how to become a teacher-researcher. Because I have a Science background, research has always meant one thing: quantitative data. And lots of it. I admit I have done a 180-degree turn. Quantitative data has it's place certainly, but I have been introduced to a new type of research as well, the kind that teacher's can actually *use*. To comprehend the fact that I as a teacher-researcher have information to gain and share has been the most valuable lesson of all for me.

The information that I gathered in my study can and should be useful to other teachers. In fact, in Green Brook Middle School, it already has been. During "biome week" I had more than a few curious visitors, many of them shocked that I had attempted such a project. I was happy to share with the other teachers why I was doing it, and what I hoped to learn.

In many of the articles I read for my Literature Review, it was discussed how music, the performing arts, and the arts are all beneficial for learning. Few mentioned teaching other content areas *through* them, or using the arts to teach concrete subjects such as Science. At best, I would hope that my study encourages other teachers to "Go for it!" At the very least, I went for it.

Implementation Plan

"The biome days were all so good, they were all mini-vacations with blazing sun, or freezing cold ice."
Eric's Persuasive Essay

The good news is, every calendar year has a September. Looking towards September, 2009, I see Mrs. Hansen in Room 222 of Green Brook Middle School with a new batch of fresh blood (er.. students) eager to learn and eager to please. Based on what I now know, I will change a few things. One of the things I try to ask myself after every new experience is "So what's the take-away?" I hold myself to high standards and insist on getting better. Next year I intend to teach the same curriculum, with a few tweaks. I will again assign the biome projects, but next year I will save it for May or June. I will develop a stronger rubric for the students and hold them to it. I will provide more structured class time for research. Finally, I will stretch the project presentations to last over two weeks, in effect, giving their teacher a little breather! That way, we can appreciate each one, and talk about the lessons learned the day after, rather than steamrolling on to the next presentation. And maybe, just maybe, this teacher-researcher will be asking herself *new* questions.

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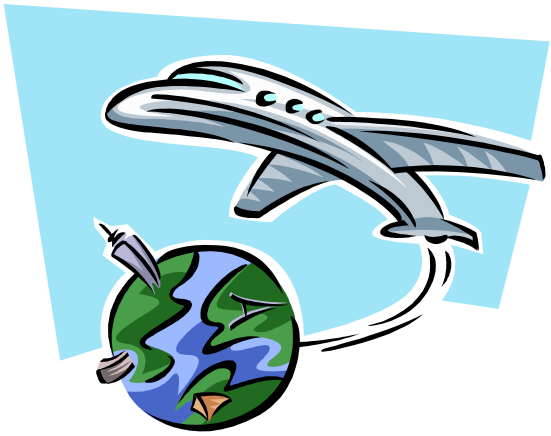
Appendix A: Biome Day Project Task Sheet, Given to all 6th Grade Students

Mrs. Hansen
6th Grade Science
EcoSystems Project, Textbook Chapter 3
Biomes- A Trip Around the World!!



This is going to be our best project of the year, and it's going to be awesome!
Your group will be responsible for one biome. Your choices are…

Land Biomes
Tundra
Grasslands
Desert
Tropical Rain Forest
Coniferous Forest
Water Biomes
Marine (Ocean) Biome
Fresh Water Biome

Your presentation will last one class period. It will be, in 40 minutes, a trip to your biome!!

Presentation days are February 25 – 29 (Monday – Friday)

Group Members (Other than yourself, first names only)_____

Biome Day_____

Biome_____

Parent Signature_____

You and your group members are the owners of a tour company for students & teachers. You are planning a trip for us to your biome. When we enter the classroom, you will be welcoming us into your biome. More specifically, you will be welcoming us to one country in your biome. The classroom will BECOME the biome. Do your best to make it look like the environment of your biome. Pretending as if we just got off the plane, we will, as the students & teachers who are on the tour, expect to see & hear the following:

Animals native to the biome
Land formations found in the biome
The climate & temperature of the biome
Types of vegetation (plants) from the biome
A clear representation of the culture of the country of the biome
Other ways to make your presentation more interesting…
Playing music native to the country
Serving food from your country
Interesting tourist facts about your country
Activities to do in the country
Wearing clothing appropriate for the weather

Prepare a brief guide/brochure to the biome for the students (One page)

For example, if your group decided to present the Deciduous Forest Biome (no group is, that's why I chose it!) your presentation may look like this from the students' perspective…

As we entered the biome we heard the sounds of a rushing stream, frogs, and birds. (coming from the CD player) We saw paper trees all over the classroom. We saw pictures of insects, spiders, snails, mice, raccoons, and blue jays to name a few. Our guides introduced themselves and told us about themselves. Our tour guides were dressed like they were going on a hike in the woods! They told us all about Vermont, where out plane landed. Yum! They served us Vermont Cheddar Cheese and Apple Cider to welcome us to their habitat. While we were eating, they told us all about the Forests. Forests are not just in Vermont, but all over the Eastern US, in Canada, Europe, and Asia too! These forests are home to maple trees and oaks trees for example. Our tour guides passed around leaves from these trees. I couldn't believe how many animals they said we would see! They gave us a little guidebook to the animals with pictures. I heard we were to be careful of the snakes. I was happy to hear that the climate was not too hot & not too cold, and since it was spring, it would be about 60 degrees today. Nice! Our tour guides were nice enough to tell us all the cool things that we could do in Vermont while we were here. There's white water rafting, hiking, camping, skiing in the winter, and hunting. I can't wait! I will read through the "Guide to the Forests of Vermont" that they gave us to get ready!

This is an example of what your tour introduction might look like. Be creative, make it your own, make it memorable.

Please get this task sheet signed by tomorrow!!

You will have 3 class periods (Friday, February 8 & Friday, February 15 & Friday February 22) to research & work with your group. Please use time outside of school to plan your biome day!

Appendix B: Student Survey

Science Survey

EcoSystems Project

It's an anonymous survey, PLEASE be truthful!
How strongly do you agree or disagree with the following statements?
Put an "X" in the box that best represents your opinion.

	☺ Strongly Agree!!	Agree Somewhat	Disagree	☹ Strongly Disagree!!
I like Science Class				
I like working on my *own* in Science Class				
I like working in *groups* in Science Class				
Working in groups is fun				
Working in groups is frustrating				
When I work in groups, I am more interested in what I am doing in Science				
I like going to see plays and / or musicals				
I like performing in plays and / or musicals				
I like writing songs and singing songs that I wrote				
I learn a lot from reading the textbook and working through Notes Packets				
I learn a lot from doing labs and projects in groups in Science Class				
When I work in groups I am too frustrated to learn anything				
I learn a lot from class discussions in Science class				
I learn a lot when I research a topic that I've chosen				
I am interested in EcoSystems & the Environment				
I know enough about the Biomes of the world to teach a lesson to other students				

Appendix C: Persuasive Essay Writing Prompt, Given to all 6th Grade Students

We have just completed our "Biome Day" projects in Science. For four weeks your group spent a great deal of time and energy preparing for and presenting your biome. Is the "Biome Day" project a valuable learning experience? The principal of your school is concerned. Write a persuasive essay in the form of a letter to your principal and explain your reasoning. Should Mrs. Hansen do the "Biome Day" project next year, or is it a waste of time?