This past summer, I was fortunate to be selected to participate in an Educator's Science and Mathematics Institute Series (ESMIS) called Island Hopping Across the Curriculum. This was the second ESMIS Program I participated in, the first being a trip to Isle Royale in the Summer of 2000.

This paper summarizes a conceptual teaching unit. It discusses the design, implementation, and evaluation of an Environmental Science Summer Day Camp primarily targeted for fourth and fifth graders.

Sanilac County's Economy is agriculturally-based. The County is divided into seven school districts. There are no large cities. There are very few parks or woodlands. The term 'Sanilac' is French for "without lakes". Sanilac County is the only county in the State of Michigan without any inland lakes. However, Sanilac County is also home to the magnificent shoreline of Lake Huron along its eastern edge.

I am the lone science instructor at the Sanilac County Science and Math Center which is situated in the geographical center of Sanilac County. During the school year, I instruct ninth through twelfth graders in Advanced Science, a challenging interdisciplinary and research-based curriculum which includes biology, inorganic and organic chemistry, microbiology, earth science, astronomy, bioecology, anatomy and physiology, genetics, and bioethics. Our Center provides services to students from all seven local school districts as well as home-schooled and christian-schooled children. I approached the Science/Math Center Director with an idea to utilize our Nature Area in summer by offering a Summer Science Camp. Since I normally instruct at the high school and college level, this camp would provide many obstacles, surprises and unexpected rewards for me both professionally and personally.

While participating in the ESMIS Program on the Manitou Islands, the design of this environmental camp was the "lesson plan" I decided to focus on. The ESMIS Program
ran from June 25-30, 2001. The Environmental Science Camp was scheduled to take place July 9-13, 2001. This did not leave me much time to finalize details of what was to take place in this camp. I had never run an environmental camp before, and young students are not part of my normal teaching experience.

My instructor, Mary Hindelang, PhD. was very receptive to my ideas. She gave much moral and professional support. She also designed the ESMIS experience to include time to ponder the project and to work in small groups on concepts. My ESMIS co-participants provided me with many useful insights and creative ideas.

While on the Manitou Islands, I designed a template for the upcoming Summer Environmental Science Camp. The day camp would run five consecutive days, from Monday through Friday, and would be divided into two sessions, a morning session and an afternoon session. The template was a rough guideline for what I wanted to accomplish. As the Camp begin-date quickly approached, the schedule of what events would take place and when, would change. Also, being unfamiliar with this age group, I had a tendency to plan too much for the time allotted, but more about that in the evaluation section of this paper.

Twenty one students registered for the camp. Their ages ranged from ten years old to thirteen years old. The campers included thirteen females and eight males. I had the invaluable assistance of one of my high school seniors, Anne Seifferlein, as a camp counselor.

The first day itinerary included introductions, orientation and housekeeping hints. I required campers to keep journals. They also completed a pre-test/survey. One of the first topics was scientific method. Several activities were completed which stressed scientific methods and team-building strategies. We carved up and tasted and classified different types of apples. We did an observation/team building activity using thirty toys in a tray and having groups take ten seconds each to make an observation list. A presentation on wilderness followed, including Specifics on the Wilderness Preservation Act of 1964. Before our snack break we covered LNT = `leave no trace', which weaved its way throughout the course of the camp. In keeping with LNT, students were issued a water bottle which the rinsed and used daily. We also used plates and utensils donated by a local restaurant which went out of business. This way we did not generate Styrofoam and paper trash for the local landfill.

After our snack of fruit punch and granola bars, our next set of topics were food chains, food webs, predator/prey relationships, and scent and survival simulations. Campers used string and made large cards with markers and recycled tag paper to simulate a wetland food chain and web. They donned bandanas to cover their eyes and used noisemakers to find other members of their ‘species’ before the silent stalking predator ate them. They became baby chicks and mother birds armed with recycled film canisters filled with differently scented cotton balls in a simulation of how many animals use scent to identify their young.

After the above, we gathered in our `crop circle' in our 32 acre nature area which adjoins our building to discuss the events of the day and to share topics from our journals. The predator/prey activity was the overwhelming favorite of my young campers, who wanted to know if we could `play' that activity everyday for the rest of the week.
Day two found us going over yesterday's activities for review. The young campers were so excited, I had to limit them to only two questions/comments per kid. As a high school teacher, I found this enthusiasm surprising and warming. As the camp progressed, many times I found myself thanking elementary teachers world-wide who are very special people to keep up with the pace of this age group.

We started out our new material with animal camouflage and the activity ´Gone Fishin', where students take turns fishing from a newspaper pond and try to catch ´fish' cut out from newsprint, and various colored paper. We then went over our data, which we placed on a large marker board the kids decorated. We analyzed our data and drew some interesting conclusions.

Our next activity was borrowed directly from my ESMIS experience while we were at Sleeping Bear Dunes. Yes, we went orienteering. What a blast! We went over “red in the shed” and a few basics about origin, destination, and direction and pacing, etc. My backpacking map from ESMIS 2000 Isle Royale was very useful as the would-be explorers pondered distances and directions to Moskey bay from Rock Harbor. Then the excited explorers divided in to teams to capture the flags which I had hidden the day before in our nature area. Each of the three teams had a different set of directions. All teams were successful eventually. It was heartwarming when the first place team members pitched in to support and help the other teams. All were winners.

After all of that exploring, it was time for break. This day found us designing our own personal GORP and experimenting with Kool-Aid® mixtures using my camp pots and pans.

After clean-up, we hiked out to under a large maple tree for backpacking basics. I had pre-loaded my external and internal framed packs, a day pack, and fanny pack. One item at a time, we unloaded the items and talked about day trips and extended packing. Weaving throughout we reinforced LNT and respect for the environment. The campers erected two of my tents and of course had to see how many giggling kids could fit inside at one time. All of them wanted to camp out overnight.

After controlling the giggling and listening to their numerous and spirited personal camp stories, they wrote in their journals as they munched on GORP from break, and we discussed parasites, giardia, blisters, sunburn, bites and poison ivy.

Day three found us gathered and going over our journals. Campers used a list of key words and had to create a story. (predator, LNT, camouflage, tent, compass, north, smell, sound, wilderness). Each camper read their story to the class using sound effects and gestures. I laughed so hard I cried. What a creative bunch of unique kids.

We then discussed limiting factors; food, shelter, water and space under a beautiful 100 year old Burr Oak. The students became black bears and tried to survive by bringing fruits, nuts, etc. (cards) back to their dens.

We re-gathered under the oak to discuss the simulation. Then we discussed the difference between preservation and conservation. We looked at a concept I learned while at the Lake Superior Youth Symposium at MTU in the spring about forestry and open spaces. We then discussed the three native pines of Michigan and looked at
branches and cones from each. Next, we discussed Kirtland Warblers, and forest fires.

The ever-important snack was next. We fired up our lab hot plates and made pasta surprise and continued Kool-Aid® investigations.

After break, we wandered down the rail to along the wetland area to plant some native tree seedlings. While we hiked, all campers were on the lookout for wild wacky brain-boring worms from outer space, which were actually segments of pipe cleaners I had hidden along the trail that morning. They reinforced our discussion of camouflage. We hiked to our tamarack grove and discussed determinant vs. indeterminant species. After getting back to the lab, I passed around a large ‘beaver log' and beaver skull. I showed the campers the picture of the largest ‘beaver tree' I ever saw, which was two weeks prior on the banks of Manitou Lake while at the ESMIS workshop.

We gathered our buckets, nets and periscopes and headed to the dock at the north edge of the pond to collect invertebrates. We then had to hike double-time back for parents to pick up campers.

Day four found us evaluating our samples from the pond. This activity caused much excitement as campers pipetted samples to slides or plates and used dissection scopes and magnifying lenses for observation. Campers used OBIS® Pond Guides and algae ID sheets to identify the invertebrates, then sketched and labeled them in their journals. The campers worked during snack time and ran from station to station as they found a new species.

Our snack theme on this day was ‘Wilderness Survival', and we used emergency ration cheese and peanut butter on army issued crackers and made K-ration lime drink.

After break, we used squares of muslin and acrylic paints to produce our own leaf print bandanas. Much of the staff of the building came to join us in this activity. The campers became teachers and taught the adults how to leaf print. One parent brought in a sewing machine and hemmed each bandana. My pant-covered campers were released to their parents.

The last day of camp began with a post-test and evaluations. Each camper was given a t-shirt and a photo collage. We cranked up Bunsen burners and released Jack Pine seeds which the campers could plant and discussed the natural cycle of forest fires in Michigan. We took the ‘Big Hike' and planted some of the seeds in the nature area. Break today was leftovers from previous breaks. The afternoon was devoted to bird studies in the wetland, survivor tag, and finishing leaf printing.

Parents and campers wanted the camp to extend for another week... Many people have called the school office to see if the environmental camp will run again in the summer of 2002.

I learned many things from this experience. First of all, "Island Hopping Across the Curriculum" with Mary Hindelang, PhD was an invaluable and awesome experience. The wealth of knowledge shared by my colleagues during that week really helped make this camp a success. My admiration for elementary teachers and all they face on a day to day basis with their young students has definitely been reinforced. My interaction with my young campers was a very positive experience for me. I had a tendency to plan too many
topics on a given day, and in my planning did not allow for the time it takes a younger
student to complete tasks, their sometime lack of eye-hand coordination, their
exuberance in asking many questions, clean-up time, and transition time.

I look forward to doing more outreach activities in the area of environmental science. I
also am very aware that I utilized things I learned in both of my ESMIS experiences, the
MTU Youth Symposium, backpacking trips, conversations and interactions with many
elementary and secondary teachers. I hope that my young campers take what they
learned to make the world a better place. I feel an optimism about our country’s future
after having the honor of working with this talented, enthusiastic, caring group of campers.

Happy trails,

Brian Derowski
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