Reflection – A Semester at Minnesota New Country School

ExEd 634 - Practicum

By Keane Richards

Minnesota New Country School (MNCS) is a project-based learning high school in Henderson, Minnesota. I first heard about MNCS through Scott Wurdinger's *Education Reform,* where it and its replicate *Edvisions* schools have received much attention as an exemplary example of progressive education. Interested in different models of education, I knew that I would need to spend time at the school to learn how ideal a model it really was.

Scott put me in touch with Jim Wartman, an advisor at MNCS. I would not rather have had any other advisor to work with at the school. Jim is personable, honest, cares deeply about his students, and is committed to helping new people learn the most about the school. Jim was also happy to discuss issues of education reform, and other school models similar to MNCS. Every Tuesday except during holidays, I spent the day there, first spending time learning about the school, then leading team-building activities and teaching a Wilderness Skills course.

Overview of the School

MNCS is not anything like a traditional school. It is small, with less than 130 students. A huge, open middle room dominates the school, with a high ceiling and an infiltration of natural light. Student artwork hangs from the ceiling and adorns the walls. Around the edge of the building are "advisories," where twelve students and one advisor work.

Each student has a desk and a computer, and their workspace is personalized like you might find at an office, with pictures and art in addition to half-completed crafts and stacks of messy papers. Advisories are adjacent to each other, with only a four-foot high wall in between. In the middle of the building is the open space used for lunch, performances, presentations, and town hall meetings. The school has the feel of a newsroom.

Adjacent to the main room, there is a small but cozy library and a student-built greenhouse, with plenty of greenery and a huge stone fishtank (designed by students). Another doorway leads to an art studio, with pottery wheels, clay, and a kiln. Near the entrance of the school is the "shop," a large garage where students can build and work with wood. In the past students have constructed derby cars and other large projects there.

There are no formal classes at the school. Students complete projects (of varying length and time) for credit. The advisor's job is to assist students with their projects, focusing student work to achievable tasks, putting students in touch with experts, and and flexing project ideas to meet state standards. Math is taught through the online ALEKS program. To meet English requirements, students often work on weekly writing prompts in addition to writing they do for their projects.

For the first couple of weeks, Jim suggested I spend time following his advisory group, getting a feel for the school. I arrived at the school at 8:00am, in time to catch the last fifteen minutes of the weekly staff meetings. The school's entire staff meets around a circle of tables put together for an hour to discuss the workings of the school. There is no "principal" at MNCS, though one of the advisors holds an administrative license. All staff can – and do – weigh in on decisions. That MNCS is run so openly and democratically contributed to its welcoming and informal atmosphere.

After the staff meeting ended, students would stream into the school, usually spending some time to mingle with friends on their way to their desks. Jim started the day with advisory meetings, heading off to a conference room to discuss the issues of the day. Usually, he would check in with each student and cover school announcements. But sometimes conversation took a more interesting turn. I recall discussing eating moose tongue, and debating favorite types of pies and hot dish. These types of conversations seemed to help build community among the advisory group.

After advisory meetings, many students in Jim's advisory had math, moving into the science room to do ALEKS math lessons on computers. MNCS has one math / computer expert, Collin, who has no advisory group. Collin tries to be present at all math classes in addition to the advisor for each math group.

At one in the beginning of the semester, Collin addressed Jim's advisory. "Listen – what's the question everyone is going to ask about math this year? It's the same question every year."

"Can we have a hamburger?" A student joked.

"No. Not hamburgers. It's 'why'? '*Why am I doing this?*' Math here is about building work ethic and time management. I know you might say, how does this concern me, and how is it relevant to my life. But it's helping you build that time management and work ethic you'll need to succeed in life."

This shows that though ALEKS allows for self-paced study – a major tenet of the school - the actual subject material is basically the same in a traditional school.

In general, students in math asked for very little help. This didn't necessarily mean that they were succeeding, however. Jim showed me how to use the ALEKS program to track students' progress. Some students would get questions wrong over and over again, yet not ask for help. Jim could check students progress on his computer, then help those students in need.

After math, students had some time to work on their projects before lunch. I often checked in on students' projects during this time. Some projects I recall talking to students about included building a basic radio from scratch, learning about the art of tie-dying, how locomotives work, building bridges out of popsicle sticks, and learning about the pyramids of Ancient Egypt.

Students spent most of their project time on their computers. At times (especially when Jim was elsewhere) students would get bored or frustrated with their projects, and would begin to click around on their computer. I saw many students playing games, staring intently at the Pandora Radio screen, or scrolling through Facebook. Other times, students would be chatting with one another, and of course, this would usually attract other students, till a group of five was distracting everyone else. When it was obvious a student wasn't making very productive use of their time (or taking a constructive break) I would intervene and suggest they spend their time differently.

When Jim was present, he would often call over students to discuss student work. New projects are constantly being created and Jim meets with each student in the formative stages as well as during the course of

the project. I sat at Jim's small round table where he held discussions with students, so was able to observe how he assisted with projects.

An advisory group is tasked with serving lunch, and cleaning up the entire school after lunch (there are no janitors at the school). After lunch the students have an hour of quiet reading. For literature, students pick five books over the semester that they would like to read. They gain English credits through writing reviews and reports on these books. Most students are very intent on their readings during this hour.

Afternoons at the school are a mix of project work, writing, meetings, and PE. On Tuesdays at 2:45, the school holds a "town-hall" meeting. Teachers might raise awareness of issues at the school or describe upcoming activities. Usually, a few students would read poetry, or show movies that they had created. One town meeting consisted of a teen telling their personal story of domestic violence, to bring awareness to the issue.

My Work at the School – Team Building and Wilderness Skills Class

Dee Thomas, one of the longest serving advisors at MNCS, was excited about the idea of having more team-building activities. A previous ExEd graduate student had given team-building activities and they had been very successful. For three weeks I took advisory groups out to the yard, facilitating an activity in which students would attempt to make a perfect square out of a circle of rope.

These activities were always beneficial to my growth as a facilitator, and most often beneficial for the students. The idea behind the activity is to better understand group dynamics, especially how communication works in a group, and how group decisions are made. Most of the time, leaders and passive followers formed almost immediately. Groups with more than one leader usually failed the first time. Only groups that have centralized control, utilize the knowledge of the entire group, and communicate a strategy to all members before attempting it succeeded on the first attempt.

I realized the importance of reflection in these activities. Many advisory groups loved the activity, challenging themselves to do it as quickly as possible, but after didn't seem to understand what had contributed

to their failure or success. I usually had 45 minutes for the activity, with the activity running 30 minutes, and the debrief running 15 minutes. Once provoked with questions such as "who was your leader?" or "was there a strategy and was it effectively communicated?" students seemed to grasp the concepts much better. One advisory group I only had for a half hour. With very little time for reflection, these students – who already weren't as motivated to do the activity – made very few connections between what we did and any implications on group behavior.

Jim encouraged me to utilize my own background and skills to lead other activities for the students. I was interested in outdoor activities, Jim suggested we lead sessions at the Ney Nature Center, just across the Minnesota River.

I visited the Ney Center and realized aside from having accommodating staff, the Ney Center covers a huge area of prairie, forest, hills and ravines. I spent three hours walking on its trails, realizing its incredible educational potential.

Afterwards, I designed a curriculum for an Outdoor Skills course, with weekly lessons. (See the course description below.) Jim, who was eager to assist with the course, and I scheduled the course for 2:45pm - 3:15pm Tuesdays. Five of his students soon signed up along with three from other advisories.

Outdoor Skills / Becoming a Naturalist Course

This is Keane – you might remember me as the intern who works with Jim who taught some team-building activities. I'm going to be teaching sessions on how to think, act, and observe like a naturalist. A large part of being a naturalist is being comfortable in the outdoors, and so we will cover a lot of vital outdoor skills.

My background: I grew up on a homestead in the Alaska bush, about 50 miles from the nearest town (or road – or telephone – or other person besides my immediate family.) I'm well versed in the outdoors. It's what I've done every day until I was 18.

These will be fun and dynamic sessions. They will take place every Tuesday from 12:45 – 3:15. We will bus / take a van to the Nay Nature Center – a wonderful wilderness preserve just

across the Minnesota River – to conduct our sessions. It's a great way to get away from town, get outside, and learn some really cool stuff.

Here is a description of the individual lessons that I created:

Week 1. Building fires using native materials and matches

Due to Jim's schedule we only had an hour for this lesson. It was just enough time to go over the theory of fire building, gather materials, and have students actually start a fire. The Ney Center main building has a large stone fire-ring out front that its staff allowed us to use for starting fires. The weather was dry, and on a nearby trail we found all the fire-starting material we could need. I discussed the basics of a good fire – tinder, kindling, and larger wood – and the necessity to find easily combustible tinder that is as dry as possible. I asked students to gather all the material that they would be using for their fire.

Using my experience and Jim's local knowledge of trees and plants, we discussed the best tinder and kindling available. Dry grass was in ample supply, as were dead leaves. For kindling, I stopped to gather branches from under a coniferous cedar stand, and Jim and I talked about why we might gather these branches in particular, the water-shedding properties of a conifer, and the opportunities for finding dry material underneath it.

Back at the fire ring, I began building a fire and informed students that they could watch the methods Jim and I used, or get started right away. I also told students to keep track of the number of matches that they used. After my structure was alight, I moved around to check student progress and offer advice to those having problems.

Reflection. Students' personalities instantly emerged in the outdoors. Two students began to argue on the drive over, and once at the Ney Center, were basically tackling each other. I quickly understood which students had a harder time paying attention and which ones were always listening. One student in the class, who has a troubled

background, constantly talks about what he knows in an effort to be appreciated. It was a constant struggle to try and get him to focus on the task at hand, and not on how much he already knew about it.

The lesson itself seemed highly educational. It was practical and all students were interested. All students were able to light their fires, but some took much longer than others. A group of two brothers built an exceptional structure that took on the first match. Another student working alone had a fire going after the first match, but had to work harder to get it hot. A group of three students had much trouble getting theirs to light, going through matches and re-adjusting their structure, without understanding that their tinder was too large. But with perseverance and some coaching, they soon had a nice fire.

The young man described above had much difficulty. Highly intelligent, he completely over-thought the process, spending much time building a pretty *looking* structure (including acorns and large pieces of wood, which burn hot but don't light easily). When it came time to light it, he struggled with getting matches to stay lit. Those that did keep fire snuffed out when he stuffed them deep into the structure.

We all know the definition of insanity; despite my attempts to coach, the student burned through matches without modifying his strategy or structure. I had to take the matches from him and first show him how to keep a match lit and then what was wrong with his structure. He did get a fire going and was obviously very relieved. It was a good lesson for me on when to let students problem solve on their own, and when to step in and help.

Week 2. ***Building a survival shelter using only native materials***

The next lesson focused on building a primitive survival shelter called a debris hut. I passed out the following handout after students arrived at the Ney Center:

Wilderness Survival: Shelter Building

"We should consider an often used survival acronym (S.T.O.P.) Stop and Think about the situation. Observe the area and then Plan your actions. We should ask ourselves things such as: Are we in immediate danger? Are there enough building and fire materials in the area? Are we somewhere where we can hopefully be seen? The last thing we want to do is allow fear to cause us to act irrationally. If we think we are lost, STOP!

Walking further will not only increase the distance from the last known position but it can reduce the chances of being found by rescue." (Practical Survivor)

"A proper shelter can keep you dry and warm enough to survive the night without a fire. If fuel is not readily available, or there is not enough time to gather enough wood, build a shelter that will keep you out of the wind and rain. A debris shelter or snow cave can help provide protection without a fire. We must stay out of the snow and rain if at all possible. If your clothing becomes damp by either rain or perspiration, the insulating properties can drop as much as 80%." (Practical Survivor)

"Choosing the proper position for the shelter is very important. If you are on a mountain, one side of the mountain might not get much sunlight. Some things to keep in mind are:
*** Make sure to ask yourself questions like, if a sudden rainstorm was to move in, would I be standing in water, can rocks or debris fall on my shelter.**
*** If possible position your shelter entrance to the opposite side of the prevailing wind. This is especially important for a lean-to since it is open on one side." (Practical Survivor)**

1) Natural shelters
- **a) Rock formations (overhang, cave, etc.)**
- **b) Trees (find a tree with giant boughs)**

2) Debris shelters
- **a) Lean-to shelter**
- **b) Double Lean-to A-frame**
- **c) Debris Hut**

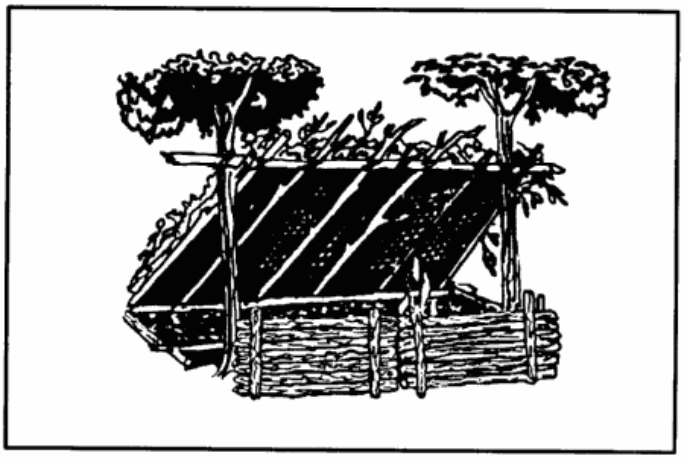
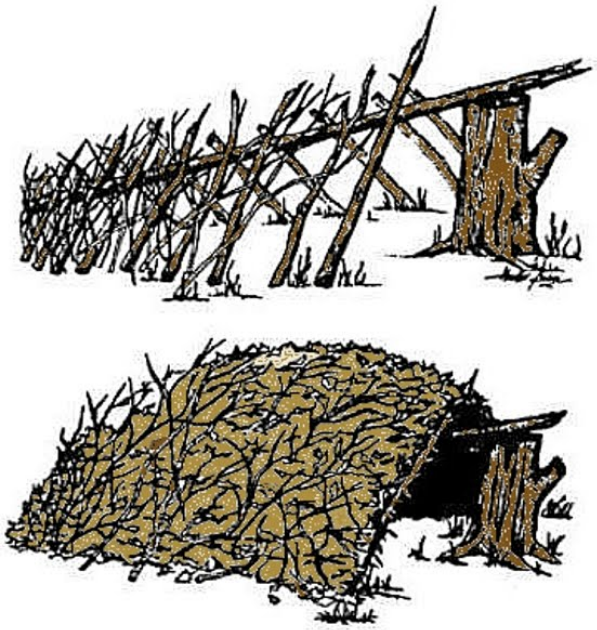


Figure 5-9. Field-expedient lean-to and fire reflector.

Wickiup / wigwam



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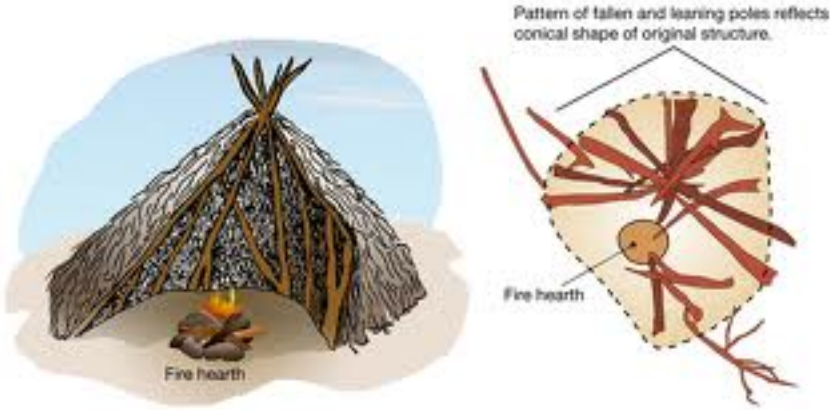
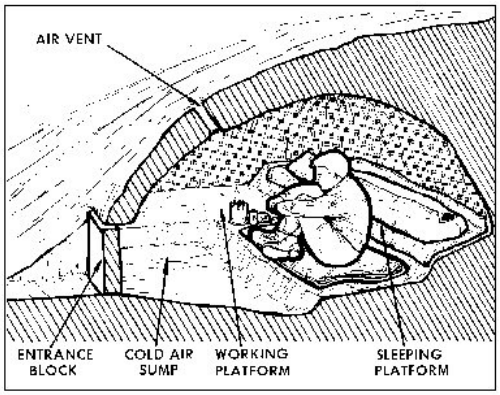


3) Poncho / Tarpaulin shelters
a) Lean-to
b) Double lean-to (a-frame)

4) Snow Shelters
a) Snow caves
b) Quinzhee / Quinzee hut



Unfortunately, Jim had a student meeting conflict with our departure, and we only had about an hour. Once at the Ney Center I introduced the concepts like “S.T.O.P” described above. Then, with a trail in mind for building our debris hut, I handed a map to a volunteer and asked them to find this trail.

Having only been on the trails once, I myself didn't recall where we had to go. Soon we were very turned around, and a confirmation from Jim revealed we were nowhere close to our destination.

However, a large stand of oaks perfect for shelter building stood nearby, so we headed into the woods to choose a spot. The students required much help deciding since the location, direction, and nearby resources matter much to the success of the shelter (indeed, Jim and I ourselves disagreed where to build the shelter). That we were a large group further slowed the process. The time spent thinking was more positive than negative, however, because I deemed the shelter a huge success.

Once started, it went up rapidly. Using branches and bark, and then piling on countless armfuls of dead leaves, we built the hut with a small entry. Then we brought in dead leaves, grass, and some cedar boughs to the interior of the hut, discussing the importance of closing the door, insulation, and avoiding getting sweaty or wet before entering the shelter.

Reflection. I was very satisfied with this lesson. Getting "lost" was unexpected but fit in beautifully, since building a survival shelter is a very practical solution for spending an unplanned night out in the outdoors. Getting lost also built well on concepts we discussed on the handout, like reacting well mentally in difficult situations.

That students had trouble choosing a spot was not surprising, and as I mentioned, largely educational. In the end I basically decided the spot, but student had time to investigate other alternatives, and understand my argument for why such spots might not be as ideal. I was surprised at how easily the structure went up and how well it looked after being built. The students were all highly motivated, and had a good work ethic. When we visited the shelter three weeks later, it was perfectly intact and completely dry underneath.

Week 3. Hypothermia and Keeping Warm Outside

Our hypothermia lesson was the longest, most theoretical, and definitely most uncomfortable. Here is the handout I gave that week:

HYPOTHERMIA LESSON

What is hypothermia?

UNDERSTANDING HYPOTHERMIA

Hypothermia is when the body loses heat faster than it can produce it, resulting in a drop in body temperature. A typical body temperature is 98.6 degrees F. Hypothermia becomes medically serious if the temperature drops below 95 degrees.

Mild Hypothermia - core temperature 98.6 - 96 degrees F
- *Shivering - not under voluntary control*
- *Can't do complex motor functions (ice climbing or skiing) can still walk & talk*
- *Vasoconstriction to periphery*

Moderate Hypothermia - core temperature 95 - 93 degrees F
- *Dazed consciousness*
- *Loss of fine motor coordination - particularly in hands - can't zip up parka, due to restricted peripheral blood flow*
- *Slurred speech*
- *Violent shivering*
- *Irrational behavior - Paradoxical Undressing - person starts to take off clothing, unaware s/he is cold*
- *"I don't care attitude"*

Severe Hypothermia - core temperature 92 - 86 degrees and below *(immediately life threatening)*
- *Shivering occurs in waves, violent then pause, pauses get longer until shivering finally ceases*
- *Person falls to the ground, can't walk, curls up into a fetal position to conserve heat*
- *Muscle rigidity*
- *Skin is pale*
- *Pupils dilate*
- *Pulse rate decreases*
- *at 90 degrees the body tries to move into hibernation,*
- *at 86 degrees the body is in a state of "metabolic icebox." The person looks dead but is still alive.*

5. How to Assess if Someone is Hypothermic
- If shivering can be stopped voluntarily = mild hypothermia
- Ask the person a question that requires higher reasoning in the brain (count backwards from 100 by 9's). If the person is hypothermic, they won't be able to do it. [Note: there are also other conditions such as altitude sickness that can also cause the same condition.]

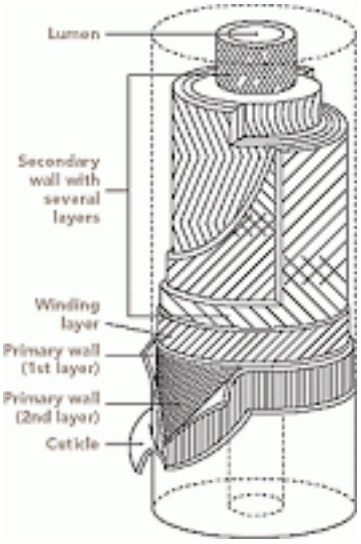
PREVENTING HYPOTHERMIA

The body creates heat through metabolism – the conversion of chemicals from food into ATP (energy). Much of this happens in the muscles. We're an internal-combustion engine. The more our muscles work, the more chemical reactions, the more heat as a waste product, and we get warmer.

For our body to metabolize, we need two key things: WATER and FOOD. To generate excess heat, we need ACTIVITY in our muscles.

- What happens when we feel we're "wearing out"?

Heat transfer basics:
Heat is a transfer or energy from one material to another. Heat on Earth travels mostly through convection (direct contact of material to material). Denser materials transfer heat faster than less-dense materials – there is more of the material in contact to transfer the heat. **Water conducts heat about 25 times more efficiently than air!**



Evaporation also cools the skin, furthering the problem.

When your body gets cold, it constricts the blood vessels to your extremities. No blood = no heat = frostbite and potentially lost limbs.

- So what is the ideal insulator?
- What is the best insulator we have available?
- How do we keep this insulator in our clothing?
- Why is the cotton fiber (right) a terrible fabric when wet?
- How do we layer our clothes to keep that air inside?

Summary: you create heat with FOOD, WATER and ACTIVITY.
You lose heat quicker if you're WET, and don't have enough INSULATION (likely a lack of layers)

TREATING A PERSON WITH HYPOTHERMIA

Case study: Nicolle the Skier

You were out with a group of three friends on a ski trip. Temperature is about 0 degrees F. About four miles away from your destination (a cabin with a wood stove) you are going steadily uphill. Nicolle, who is very athletic but new to skiing, and who has always been in the rear, is falling behind. She's wearing a sweater and a thin ski jacket, some thin ski pants, a hat, and cross country ski boots. Finally the group stops and it's obvious she is having a really hard time making it up the hill. She's slipping and even sliding backwards.

The group goes back to see how she's doing. "I'm fine," she says. "Are you cold?" You ask. "No," she says, "I'm fine. It's just these stupid skis." She shivers. As the rest of your friends gather round she begins to shiver more, and when she talks, her teeth chatter together. It's obvious that she's become very cold.

What do you do next?

How do you help a person with mild to moderate hypothermia?

- Get them dry (if possible)
- Give them warm, sugary liquids
- Get them to exercise – this is the way that the body warms itself
- Once they begin to warm up, continue with warm sugary liquids, but start feeding them solids - carbs

NOTE: with moderate to severe hypothermia, it can sometimes be dangerous for the victim to exercise because the rush of blood from the cold extremities causes an "after drop" in body temperature. Ideally, victims are brought to a warm environment – a hot bath with the legs and arms OUT of the water is ideal, or put warm compresses on the torso, groin, and head / neck. If able to swallow, still feed warm and sugary liquids.

Jim and I both agreed that getting students uncomfortably cold was essential to learning about hypothermia. Fortunately, it was a chill October day with a temperature of 35 degrees F. We walked over to a pond at the Ney Center with a wooden overlook and dock. First, we filled buckets with ice water. Then we had a seat at the overlook, and stripped down to our t-shirts.

While we began to get cold, I discussed what was happening to our bodies – the constriction of blood vessels to the extremities, the body's reaction in attempting to generate heat through shivering, and how our overall temperature was lowering. We could feel our fingertips numbing (with the breeze making it all the quicker). After maybe four minutes, when everyone had begun to shiver, we put on all of our clothes and begun to run as fast as we could around the lake.

After everyone was sufficiently warm, we headed back to the dock. Jim led the next activity, in which he dumped bolts, nuts, and washers into the bucket of ice water. Students who volunteered could try to assemble the nuts and bolts.

Only two students were willing. I also tried the activity, and was able to feel how quickly my hands went numb, and how clumsy they were after being so cold, and then feel with uncomfortable precision my blood vessels opening back up and flooding warmth back into my hands.

I had intended on leading a *cotton versus wool socks* experiment, in which students would put on a wet cotton sock and a wet wool sock and wait three minutes to observe which foot got colder. Students were already too cold. We ran around to warm up again, and then headed back to the Ney Center building. I had prepared hot water and hot chocolate, and we sat around a table to warm up. Jim and I talked how the body creates and loses heat, and the importance of eating and hydration to the body's generation of heat. We also discussed density, insulation, and how materials transfer heat. Then we tied these issues to dressing warm, eating and drinking well, not wearing out your muscles, and how to warm a hypothermic victim. I also used cotton balls to show how cotton absorbs and holds water.

Reflection. This lesson might have worked best before building a debris hut, so students had a theoretical understanding of insulation, staying warm, etc. But it also worked well after.

Once again, we didn't have the full two hours. We could have easily spent half the day doing different activities related to hypothermia and clothing. But we did have twenty minutes for our warming-up and reflection. This time was critical to understanding the primary experiences.

I was very satisfied with the lesson. It contained many scientific concepts, but the content was tied to the activities, which were easily remembered. Learning how to stay warm and treat hypothermia was hopefully immediately relevant to the kids given their interest in the outdoors.

One difficulty came in getting students warmed up after our first activity. Most students ran and warmed up nicely; a few students jogged and walked. Jim demanded that these students do jumping jacks after it became obvious they hadn't even pushed themselves to breath hard. Still, when I checked in on students short while later to ask how cold they were, these students remarked that their feet were getting cold.

There was little to no danger in the activity. We barely dropped our body temperatures enough to shiver, and got safely warm afterwards. It was optional to dunk hands in ice water, and those that did only had to put on gloves and jackets to warm up in minutes. The Ney Center building was only a few hundred yards away, with hot chocolate waiting. However, I wonder what restrictions a traditional public school might put on the lesson, and if I give courses like this in the future, how much I will be forced to remove critical experiential activities for liability purposes.

The reflection at the Ney Center was critical, and I was pleased with the balance of theoretical discussion after the activities. One important connection was made when we were drinking our hot chocolate and discussing what to do with mildly hypothermic persons. The body warms quickly from the inside out, and sugar metabolizes quickly with warm water, especially with some physical exercise. Hot chocolate or tea with sugar is a great way to warm up a hypothermic person, and hopefully this was all the more memorable because it was precisely how we were warming ourselves.

Week 4. Wilderness Awareness

The fourth week we switched gears from practical skills to mental awareness. We walked the farthest trail in the Ney Center – the Ravine Trail – which I find the most beautiful part of the preserve.

We left the trail and hiked down the ravine, which was trickling with water. The leaves had fallen off of the trees and we had great visibility. Jim and I stopped and mentioned the necessity of being quiet to observe nature. Farther down the Ravine, Jim read a section from a book about the author's place in nature that had a great peace and meaning for him.

We then did an activity used by the Northern Outdoor Leadership School called "sense of place." I had brought paper and pencils and distributed them. The activity involved sitting out of earshot from other members of the group, drawing a circle on the paper with a dot in the center (representing yourself and surroundings), and writing or drawing everything that we saw, heard, or felt. Nothing was off limits and there was no right way to do it. I encouraged the students to write what objects might feel like – to draw an oak tree, for instance, and write "rough" for how the bark might feel, or draw the stream and write "cold" for the water. The idea was to extend all of our senses around us, bringing awareness of the happenings of the wilderness.

After fifteen minutes, Jim called us back and we had a quiet debriefing before hiking up the hill to rejoin the trail.

Reflection. I was worried that the students would find this activity boring. As we hiked down the Ravine Trail, there was much loud talking and crunching of dead leaves as students paid little attention to being quiet. After discussing this, the students were much better. However, this was a very difficult day for the student described previously, and he lingered behind by himself, seeming to have little interest in keeping up with the group.

Students surprised me by finding the activity very interesting. I personally found no shortage of animals, patterns of plants, and terrain features to notice and write down. When Jim asked everyone, "Okay. So who could have sat there for another hour?" it was not just the students who I knew were interested in learning about plants and animals that answered; it was basically everyone.

In this age of constant technological stimulation, this might at first seem surprising. But the activity itself shows how stimulating nature can be. By awakening the senses and noticing how the woods were bustling

with activity, we had no problem being intrigued by all that was happening. In the woods, birds were fighting, squirrels were gathering nuts, branches were breaking and falling, the wind was fighting to reach the lower parts of the ravine from the upper slopes, and one student even saw a deer bounding away. Perhaps, in trying to connect youth to nature, educators must realize that nature is not just a calming and peaceful place where we watch the wind blowing through the trees, but also a busy community where exciting aspects of life and death happen all the time. In fact, I think naturalists are drawn to nature as much by the fascination with observing the stories of the wild unfold as they are the peace and "quiet" associated with it. (Nature is actually by no means quiet, but rather containing sounds that are not unpleasing or obnoxious. When the sound of a train whistle echoed up the ravine just as our fifteen minutes ended, its call was annoying and out of place compared to what we had been listening to.)

I also recall my experiences growing up in the remote Alaska wilderness. In my teenage years I loved climbing trees. One of my favorite spots was the very top of a 100 foot spruce tree. I was by no means zoning out in the peace and quiet when I was up there; I looked for animals, watched the birds, noticed feathers left behind on trees, and listened to squirrels chirping. From the tree I could see nearly a mile in all directions. A busy colony of beavers lived across the river just upstream, an I watched them and was always noting their activity, trying to find out how many beavers there were and which two were the mating pair. I spent every minute I in that tree absorbed in the happenings around me, because nature is a busy place.

Week 5. Day-long session bringing it all together

This last session is planned for December 6th. Students will attempt to build a fire in the snow, build a tarp-lean to reflect the heat, and stay warm. Because this takes place on an "Experience Friday," we have the whole day to work.

Reflection on Wilderness Skills as a Whole

The course allowed me to establish a robust beginning to a comprehensive outdoor skills class. I was very happy with the outcomes of all of my lessons, and it was especially helpful to team-teach with Jim. An outdoor enthusiast and nature lover, Jim both has practical experience as well as knowledge of the local animals and plants. Having both of our perspectives added much to the course.

Here are some ways that Jim and I both think the course could be improved:

Most importantly, we would have more lessons, and spend more time on each lesson. For instance, a large part of connecting with nature is identifying different plants and animals. I would like to do at least one plant identification activity and a field animal track identification activity.

I had planned a wilderness navigation activity, but ran out of time in the semester. Knowing how to navigate using the sun and stars, and use a map and compass if available, is a critical wilderness skill. A student also mentioned that it would be neat to learn about edible plants and how to hunt or snare animals for food.

I also didn't like that the course was entirely male. At first, two girls were interested, but never showed up. It may be a struggle for girls to realize that learning wilderness skills does not need to be male-centric. Likely this is a cultural barrier, with many dads probably taking their sons out hunting, fishing, and canoeing more than their daughters. Altering the course title and adding more naturalist-type activities may help.

Overall, the course was an unexpected and highly valuable learning experience for me. I had planned my internship at New Country School to revolve around getting to know Project Based Learning, and less teaching at the Ney Center. I realized that I have a passion for teaching wilderness skills and trying to connect youth with nature. I also realized that, though I'm sure that I can improve, I had designed and facilitated successful lessons. I hope that the boys I got to know through course were improved through taking it.

I am planning on contacting schools in the area to teach similar courses. My plan would be to run a weeklong, intensive course. I hope that given my personal experience, and having led this course once with good results, schools will be interested.

Reflection on the MNCS Model

For Scott Wurdinger's *Project Based Learning* course, I designed what I my ideal educational environment. I compared three other innovative, project-based schools to MNCS, and designed a theoretical school of my own that I hope to someday create in my home state of Alaska.

In thinking about MNCS and these other schools, I first had to conclude what a "great education" even means. Through thinking, discussions with peers and teachers, research, and interviews with the heads of various schools, I came to this list of critical skills and mental attitudes we should all youth should gain from a high-school education:

1. A deep understand of *who we are* and *who we want to be*. This is not necessarily related to work or career goals, but rather realizing one's strengths and weaknesses, and working toward becoming the person who builds strengths and overcomes weaknesses;
2. The confidence and humility to achieve goals;
3. A dedication to making the world a better place;
4. An understanding of our civic responsibilities and the historical and political literacy to make educated decisions;
5. The belief that the world is fascinating, and that education is a fulfilling, useful, and lifelong pursuit; and
6. The 21st century skills needed to survive and excel in higher education and the workplace.

I believe the following to be prerequisites to making any of the above come to fruition:

1. An active, involved, interested learner;
2. Education that is empowering;
3. Primary experiences traveling and doing service;
4. Involved, passionate mentors who are knowledgeable in their fields;
5. Quality personal relationships – to build character, work ethic, and interpersonal skills, it is imperative that a student have personal relationships with peers, mentors, and advisors;
6. Student Choice – a curriculum that values each student's interests, and makes subject material relevant;
7. Adversity in the following forms:
    a. Challenging each student to accomplish more than they think they can – the "rigor" of education;
    b. Educational environments that force each student out of their comfort zone and into new experiences;
    c. New attitudes, cultures, and ways of thinking, that force each student to understand who they are and why; and
    d. The embracing of failure as critical to education.

MNCS went a long way toward achieving this environment. Perhaps my first impression was the welcoming and friendly atmosphere of the school. Everywhere, students and advisors mingled, and I never once witnessed bullying. Advisors form deeply personal relationships with their students, and the students to their peers. A notable example occurred near Thanksgiving. Jim and one other advisor hold an annual Thanksgiving lunch. Students and staff volunteer to cook their favorite dish, and Jim had roasted a turkey on an outdoor grill. For at least an hour before, students were preparing their dishes and setting tables. Before we enjoyed our hearty, hour-long lunch, we sat down to say what we were thankful for and what we were looking forward to.

In what other school would this even be possible, let alone be tradition? The community-building value of the event surely transcended the few hours lost as students cooked, prepared, and cleaned. And these students *wanted* to help, showing the positive feedback of a constructive, welcoming community.

I love that students are given remarkable flexibility to pursue projects interesting to them. For most students, this engages them in their learning and motivates them. With a flexible curriculum, learning for the most part became an enjoyable task. This takes a much-needed stride away from the culture of standardized testing, where schools are teaching material nobody – not even the teachers – are interested in. If students are not engaged in "learning," the very idea becomes negative, and as I've already mentioned, building a life-long love of learning should be a primary goal of any school.

MNCS students are evaluated through presentations and work submitted over the course of their projects, with letter grades only upon request. The feedback is oral or written and constructive. This is vital toward learning that failure can always be positive. Whereas grades are competitive and failure-focused (few students actually look over their work to see where they went wrong, instead readying for the next exam), written and oral criticism works to overcome weaknesses. It also prepares students for the real world. After all, when is the last time your supervisor handed you a sheet of paper giving you grades for attendance, participation, and marked up your last memo?

The school also has "Experience Fridays" every week and two "Experience Weeks" in the fall semester. These opportunities get students out of the school and experiencing the world. With journeys to the Boundary

Waters, New Orleans, and elsewhere, students are offered great learning opportunities present in few other schools.

I also identified with the democratic management of the school, where every staff member has a voice. Students walk in while staff meetings are still happening and observe the openness of the school. That the school management is so open, and that there are no closed doors, undoubtedly is positive in the eyes of student and staff alike.

There were several things that made me feel the MNCS model was not ideal, however. For one, it seemed like most students spent far too long at their computers, and many projects end up being research only. While research allows students to explore their own interests, staring at a computer for most of a day is certainly not engaging.

MNCS's math education philosophy can only describe as a cop-out. Math should be interesting for its own sake, not a meaningless task designed to promote work ethic and time management. That math is thought of in that way in such an innovative school was very surprising. I see no reason to believe difficult material cannot be made relevant and interesting for students if it is taught in a multidisciplinary fashion and tied to real-world concepts. (I suggest an alternative way to teach math farther below.)

MNCS definitely does not look highly upon classes, though they welcome volunteers like myself implementing experiential curriculums. Aside from a guest speaker at a town-hall meeting, I never witnessed a formal lecture. Mostly, I believe this is a manifestation of the culture of choice in learning at the school. This raises the question: should what a student learns always be their choice, or should we also put students in structured environments that are not of their choosing?

Personally, I believe there is no dualism between choice and structure – students need both. I have experienced marvelous teacher-created educational environments when I was in my teens. One example that comes to mind was a 6-week microbiology and genetics course I undertook at 17. The course had a very experiential curriculum based on lectures, readings, and real-world experiments at the University of Alaska

Fairbanks. At the time, I was not particularly interested in microbiology, but I had a scholarship, and was generally open to learning new topics.

But once there, every aspect of the course grabbed my attention – from the in-depth microbiology lectures, to the readings, to the sometimes 10-hour days at the lab. It made me realize the value of exploring outside a core interest group. If a child's innate curiosity is not beaten out of them, exposing any of the world's many fascinations should be interesting if done right, as it was for me.

While doing research for my ideal school project, I came across a course model from High Tech High. HTH uses teacher-created, multi-disciplinary project-based courses (which also consist of lecture and assigned readings). I immediately realized that was precisely the description of the genetics course I took, and many of my best learning experiences.

By limiting a school to *only* student-initiated projects, much is lost. Had I never volunteered at MNCS, what student would have gone out to the Ney Nature Center to practice wilderness skills? Or even if they had, what student would have forced themselves to get cold as a way to understand hypothermia, or realize the importance of naturalist-style "sense of place" activities? And if a student is never pushed outside of a core group of interests, will they miss opportunities to discover new fascinations? If students never have to learn subjects challenging for them, will they ever feel the satisfaction, and empowerment, that comes from learning something they thought they couldn't (and hopefully realizing it was far more interesting than they thought)?

Below is a theoretical course I created, inspired by the High Tech High class model (see http://www.hightechhigh.org/pbl/) and a student's project on bridges at MNCS. The course is designed to exist as one of several math options in a school where students must take two teacher-structured courses per semester in addition to working on MNCS-style project based learning.

Mathematics of Bridges

High School Grade level: Any

Essential Questions:
How does gravity act upon different sorts of structures? What geometric structures are strongest and why? What materials are used in creating bridges, and how are they put together?

Duration: 8 weeks

Description:
This course focuses on the mathematics, physics, and engineering of bridges. Students will be introduced to the mathematics of gravitational force, and how gravity pulls at different structures. Students will be introduced to different types of bridges and the geometric shapes that compose them, and their various strengths and weaknesses. Students will divide into groups of five (depending on course size) to work on an end-of-term project: building a model bridge out of popsicle sticks that can span a 1.5 meter gap.

The course also entails the study of a local bridge. Each student is responsible for choosing a bridge, conducting a field study of the bridge, and contacting experts to find who built the bridge, its cost, and techniques used. Halfway through the semester, students will present this case study to the class in a five to ten minute presentation describing the bridge physically, mathematically, and including any social factors that were discovered in research and interviews.

Over the duration of the course, students will have submitted drawings of their bridge designs. They are also expected to submit drawings taken during their field study. The teacher will be a resource for teach team in designing their bridges, but will not assist in any other way.

At the end of the class, students will have finished their model bridges. Each team will discuss its bridge in a fifteen-minute presentation to the school and community, explaining the mathematics and physics behind the bridge structure. The team will have been required to do a mathematical estimate of total weight capacity of the bridge. The bridge will then be weighted gradually until it breaks. The difference between the calculated weight capacity of the bridge, and the actual breaking point, will be recorded. The winning team is the team with the least difference in breaking weight and calculated weight capacity.

Alaska Standards: Math (Geometry, Calculus, and Algebra), Physics, Engineering, Social Studies

Taking part in *well-executed* teacher-created courses might force students to delve deeper into the material and discover new passions, while facing and overcoming adversity. For this reason, it is my opinion that a great school must have a blend of student-initiated projects, and teacher-created courses. MNCS certainly does a lot of things right, but I think it is a mistake to view project-based learning as the ideal educational system itself, rather than an important educational tool amongst many.

Conclusion

For this paper I was supposed to answer the question: *was your experience worthwhile*? I only need to point back at various parts of my essay – my growth as a teacher, my relationships with students and staff at MNCS, and the opportunity to understand project-based learning first-hand – to answer this question. The internship at

MNCS was the perfect next-step after learning about education reform in Scott Wurdinger's classes, and surprised me with new experiences that will be immensely valuable throughout my life as an educator.