



**Implementation of Lessons Learned from the
2009 & 2010 Fellows Institute and
an Examination of Preferred Learning Styles
for Native American Students**

Saginaw Chippewa Tribal College

Sharyl Majorski
Chemistry/Physics Instructor

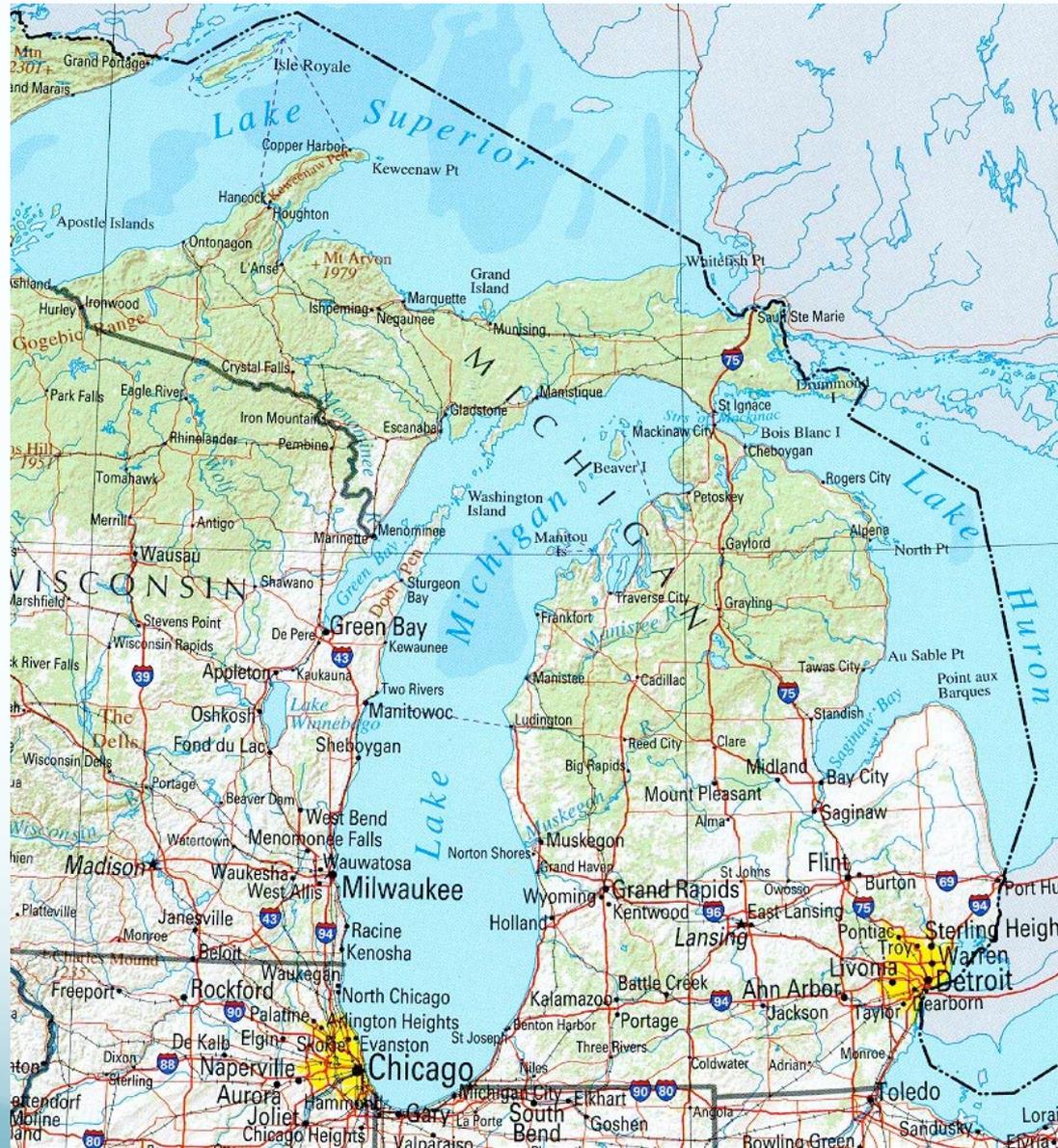
**2012 Summer Tribal Environmental Fellows Institute
Minneapolis, MN**

Overview:

- **About SCTC**
- **Part I: Review of material learned & Highlights from 2009 & 2010 Fellows Institute**
- **Implementation of what I learned into my general chemistry class.**
- **The next step... start a student research project**
- **Part II: Preferred Learning Styles - Pedagogy**

Saginaw Chippewa Tribal College

Mount Pleasant, MI



Mission: The SCTC will create an environment for learning and personal empowerment by providing programs and services that support learners in reaching their personal educational goals, through the framework of Anishinaabe culture and values.



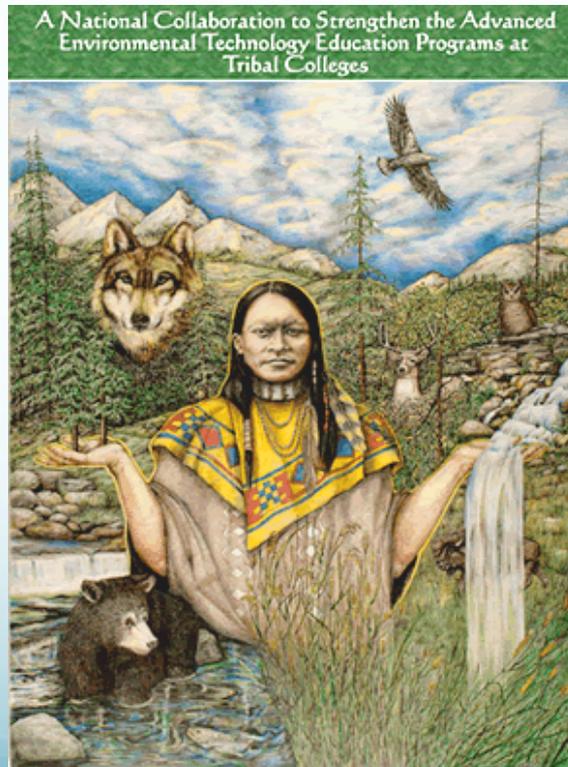
- **2 Year College, Established in 1998**
- **~ 150 students**
- **Student to Faculty Ratio = 11 : 1**
- **Associates in Liberal Arts**
- **One Semester Courses: CHM, ESC, PHY, BIO**
- **No Research Facilities**

Meet my class...

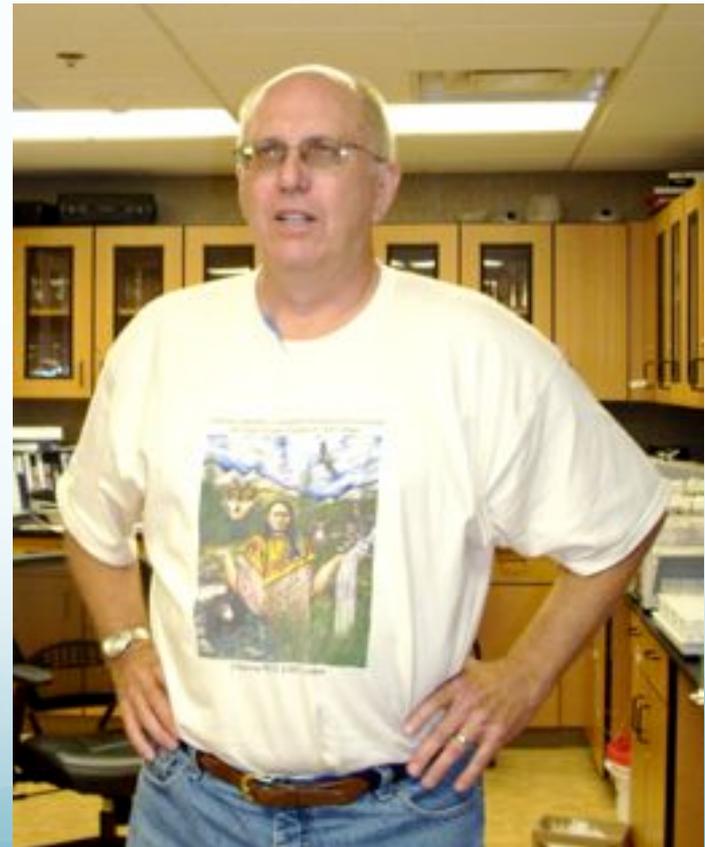
- **Most students are non-traditional**
- **70% female and 30% male**
- **~35% High School Graduates and 65% GED's**
- **Few had any prior laboratory experiences**
- **Most unsure what to do after graduation**
- **100% interested in the environment!**
- **100% wanted to help with pollution prevention of our waters!
HIGH ENTHUSIASM 😊**
- **Poor results on Chemistry pre-test**

Part I

Implementation of Lessons Learned from the 2009 & 2010 Fellows Institute



Perhaps the Best Highlight: Networking with Amazing People!



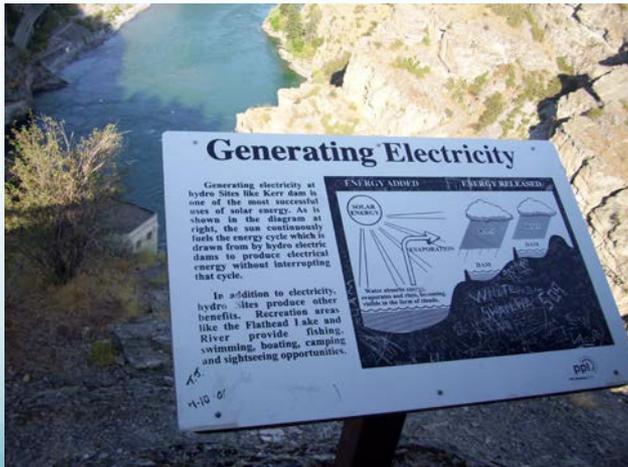
What I do in the classroom today is a result of the workshops and experiences from my past.



Networking



Learning



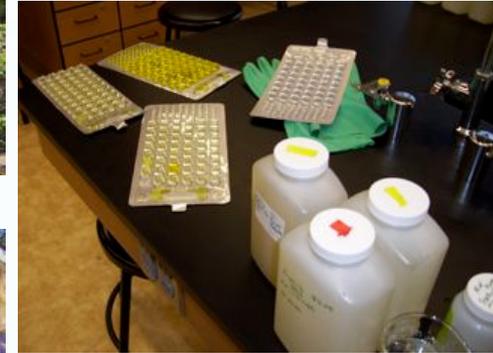
Discovering new ways of teaching



New Experiences give rise to new perspectives

Review of Material Covered from past

- Lab Safety
- River Sampling
- Preservation of Samples
- Aquatic Invertebrates
- Washing glassware
- pH & Conductivity
- Chemical Testing
- Fecal Coliform Testing



Material Now Incorporated into the Classroom

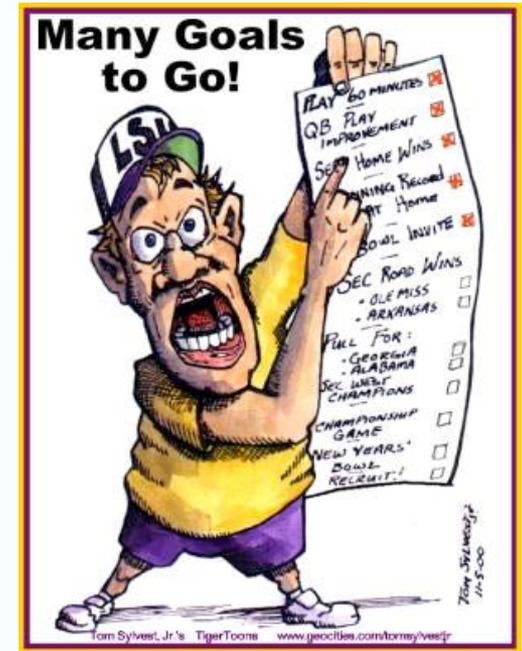


- Lab Safety
- River Sampling
- Preservation of Samples
- Aquatic Invertebrates
- Washing glassware
- pH & Conductivity
- Chemical Testing
- Fecal Coliform Testing



Project Goals

- To strengthen environmental interest
- To create a relevant research lab
- To become familiar with entry level instrumentation
- To strengthen math skills and data analysis
- To utilize the Scientific Method
- To teach how to present scientific data
- To assess the quality of water
- Work toward college goal of an Environmental Science Program



Create a Research Question

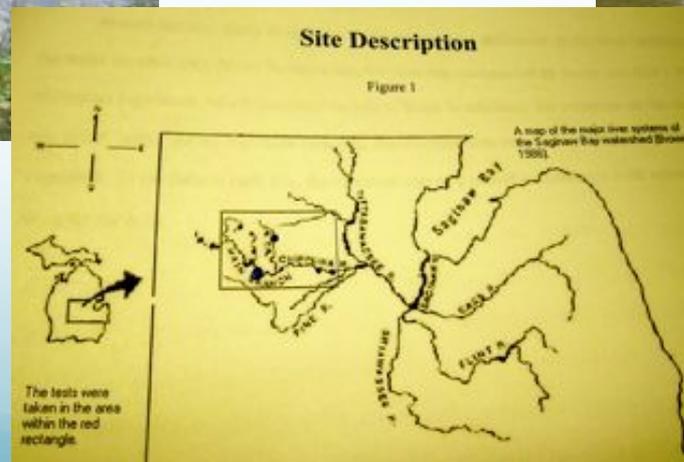
North Branch



Nelson Park



Meridian Park



Observations are Very Important!!!

- What does the water look like?

(color, clarity, garbage in it?)

- What is nearby land usage?

- Where does the river come from?

- Any plant life nearby?

- What is the weather like?

- What season is it?

- What is the river bank like?

- What type of floor does the river have? (granite, rock, sand)



Hypothesis of why Downstream is murkier than Upstream

- All students believed that the North Branch contributed to the problem.

Other suggestions included:

- There is a chemical company nearby.
- There is farmland nearby.
- Residents polluted the river.
- The North Branch had a muddy bottom while the main branch was rocky.



Experiment to Test Hypothesis

- Decided on tests to be done and Sites to be sampled.
- Learned to set up notebooks



11/10/11

**North
Branch**

Site Description: There is a steep hill on the river bank. It is next to a soybean field. There are a lot of tiny bugs, and yellow/green weeds.

tall trees, tall grass murky water, thick plant growth

Weather: slight warm breeze, sunny

**Air Temp: 54.6°C,
18.2°F**

Water Temp = 54.1°F, 18.2°C

Nitrates	near	middle	far
(mg/L Nitrate)	0.75	0.15	0.07
	0.52	0.05	0.04
	0.47	0.01	0.05

Phosphates	near	middle	far
(mg/L Phosphate)	0.5	0.2	0.7
	0.7	0.1	0.6
	0.8	0.1	0.4

Hardness	near	middle	far
(gpg = drops)	21	23	20
	23	23	20
	19	20	19

Alkalinity	near	middle	far
(gpg = drops)	10	10	11
	11	12	13
	11	10	10

Students learned how to set up and maintain a laboratory notebook.

Carbon Dioxide	near	middle	far
(mg/L CO2)	2	2	4
	5	2	5
	3	2	3

Dissolved Oxygen	near	middle	far
(mg/L DO)	12	12	10
	12	12	10
	14	10	12

Aquatic Organisms Found: 1 Crayfish,
2 little red worms, 3 snails

Velocity		pH	Depth
231859-230361	near		32 cm
233517-231859	middle		27 cm
235173-233517	far		6 cm

Width = 6 m

Macroinvertebrates tell a lot about pollution levels.

Macroinvertebrates

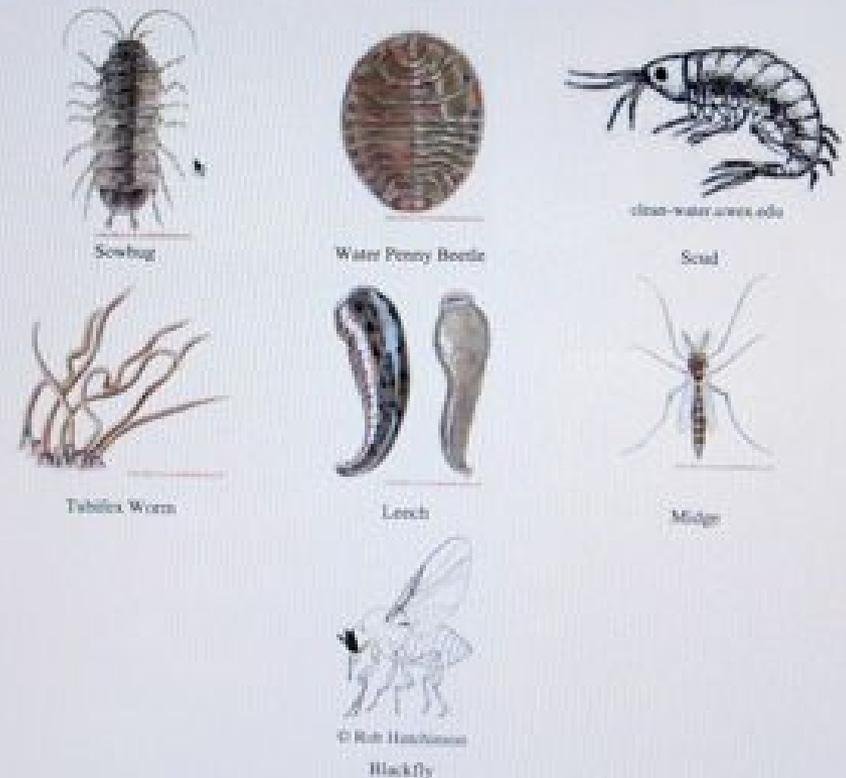
Reference Chart pg 1



IMAGES BY: Gina Mikel; <http://www.scientificillustrator.com/images.html>

Macroinvertebrates

Reference Chart pg 2



IMAGES BY: Gina Mikel; <http://www.scientificillustrator.com/images.html>

Calculate River's Quality Based on Macroinvertebrates

Name _____ Location _____ Date _____

Weather _____

River Width (m) _____ River Depth (Average – m) _____

Flow Rate: High _____ Low _____ Normal _____ Water Temp. _____ °C

Note: Select site where water is not running too fast (ideal depth is 3-12 inches)

Macroinvertebrate Count: Use letter codes (A=1-9, B=10-99, C=100 or more) to record number of organisms found in a 3 ft x 3 ft area. Then add up the number of letters in each column and multiply by the indicated index value.

SENSITIVE

_____ caddisfly larvae

_____ heligrammite

_____ mayfly nymphs

_____ gilled snails _____ crayfish

_____ riffle beetle adult

_____ stonefly nymphs

_____ water penny larvae

SOMEWHAT-SENSITIVE

_____ beetle larvae

_____ clams

_____ crane fly larvae

_____ damselfly nymphs

_____ dragonfly nymphs

_____ scuds

_____ sowbugs

TOLERANT

_____ aquatic worms

_____ blackfly larvae

_____ leeches

_____ midge larvae

_____ pouch snails

_____ other snails

Library Time/Computer Time!

CENTRAL MICHIGAN UNIVERSITY

- **Watershed information**
- **Research Design Considerations**
- **Background information:**
 - **Hardness**
 - **Dissolved Oxygen**
 - **Alkalinity**
 - **Hardness**
 - **Carbon Dioxide**
 - **Nitrate**
 - **Phosphate**
 - **E. coli**
 - **Temperature**
 - **Turbidity**

Provided Library Assistance

**Selected Books and Journals
to be placed on Reserve**

**Helped students navigate
online journals**

**Dedicated one lab session to
this.**

Analyze Data, Form Conclusions and Present to Others





Time to take it one step further... Start a Real Research Project



GOALS:

- Relevant Lab Experience
- Builds upon prior knowledge
- Fun
- New & Exciting
- Challenging
- Above freshman chemistry level

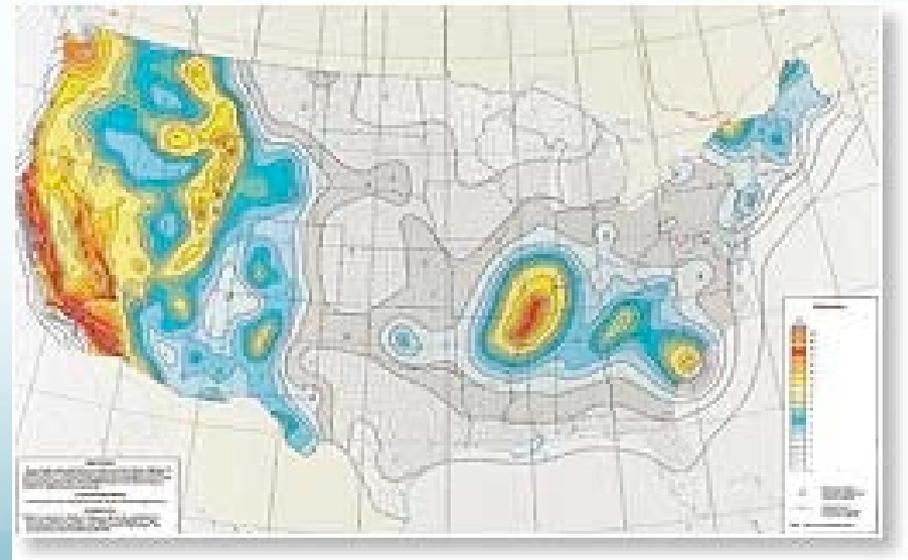
PROJECT:

- Climate Change Initiative at Haskell Indian Nations University (Summer REU)
- Recruited 2 students & Applied to Program
- Attended “Boot Camp” for 3 weeks at Haskell to learn GIS.
- 10 Week Summer Research Project



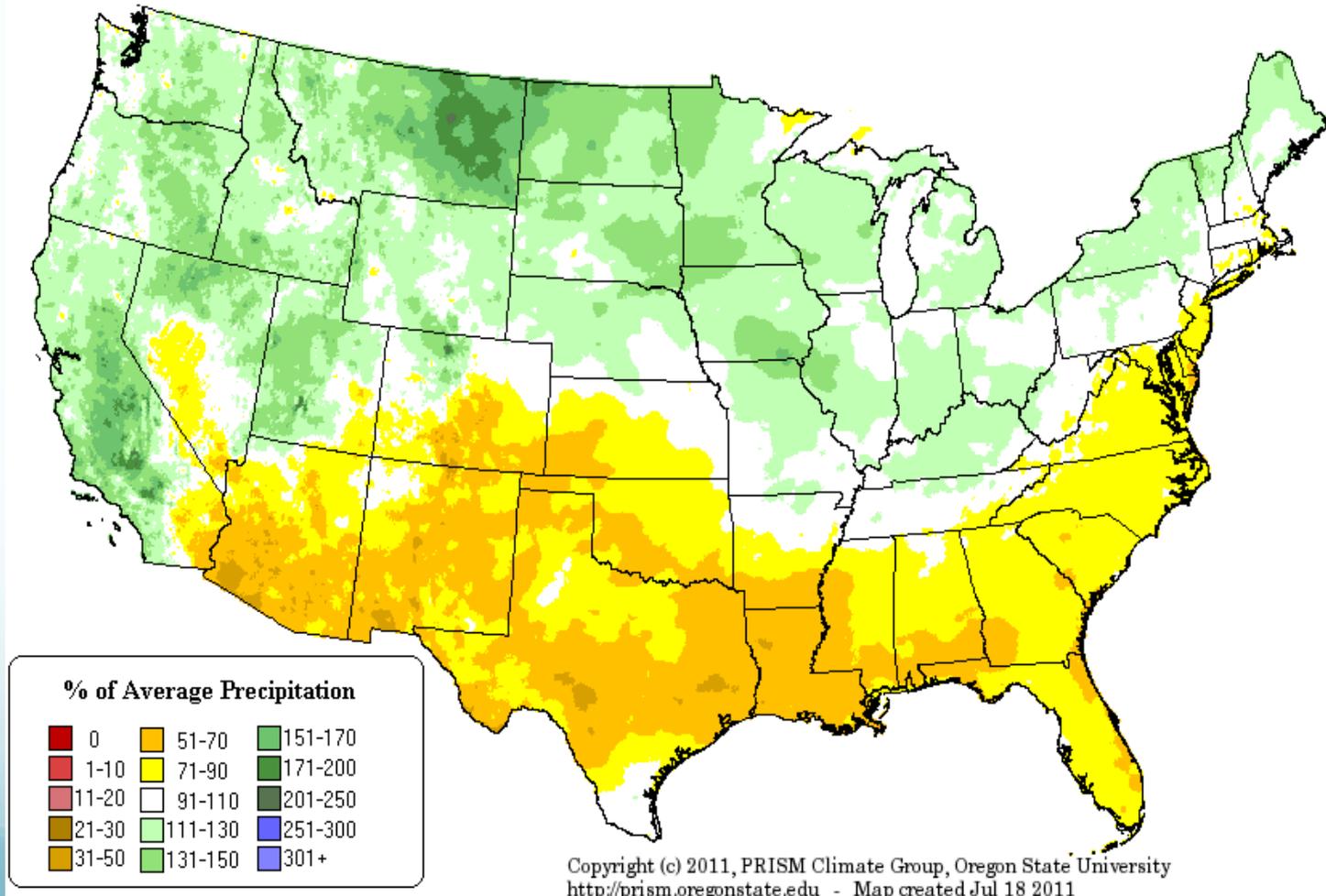
Geographic Information Systems (GIS)

- GIS workshop to understand “language” of mapping.
- GIS is useful in analytic knowledge - necessary to make critical decisions that shape the planet
- GIS allows one to visually see data and helps reveal relationships (patterns and trends).



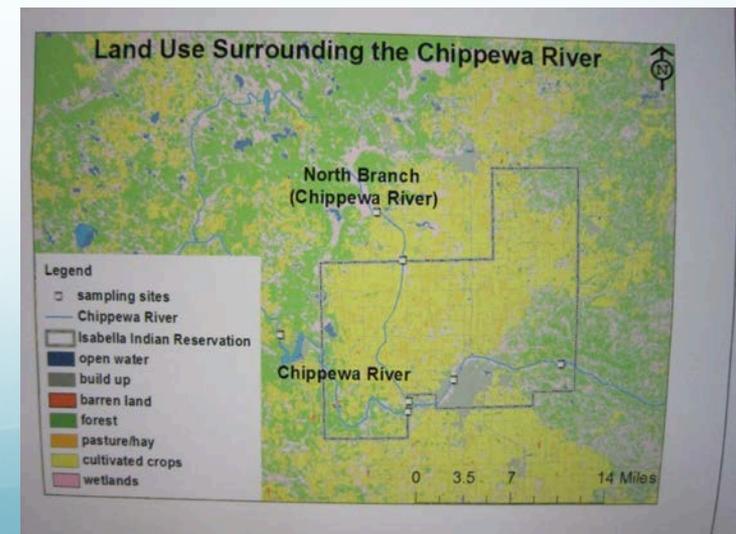
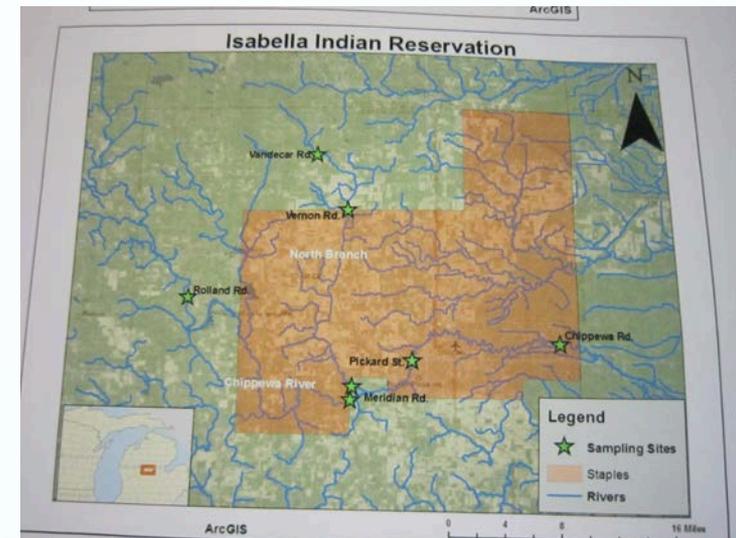
Computational Data Collection: Investigated changes in local area

15-month Percent of Average Precipitation: Jun 2011
Provisional Data

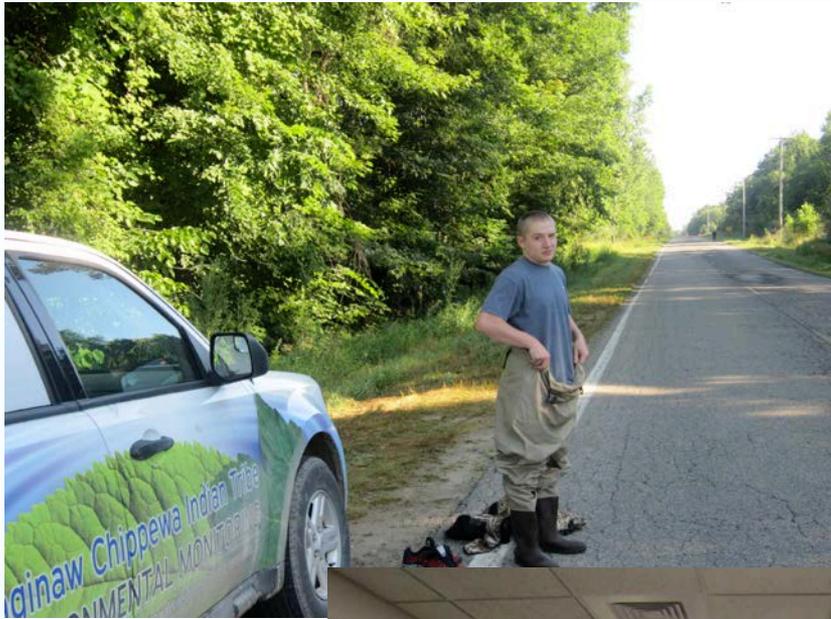


Research Hypothesis: The Chippewa River will be impacted by increased precipitation over time creating biological and chemical changes in the river

- Student designed research project
- Built upon prior knowledge
- Increased confidence for students
- Incorporated new skills of GIS
- Expanded on presentation skills



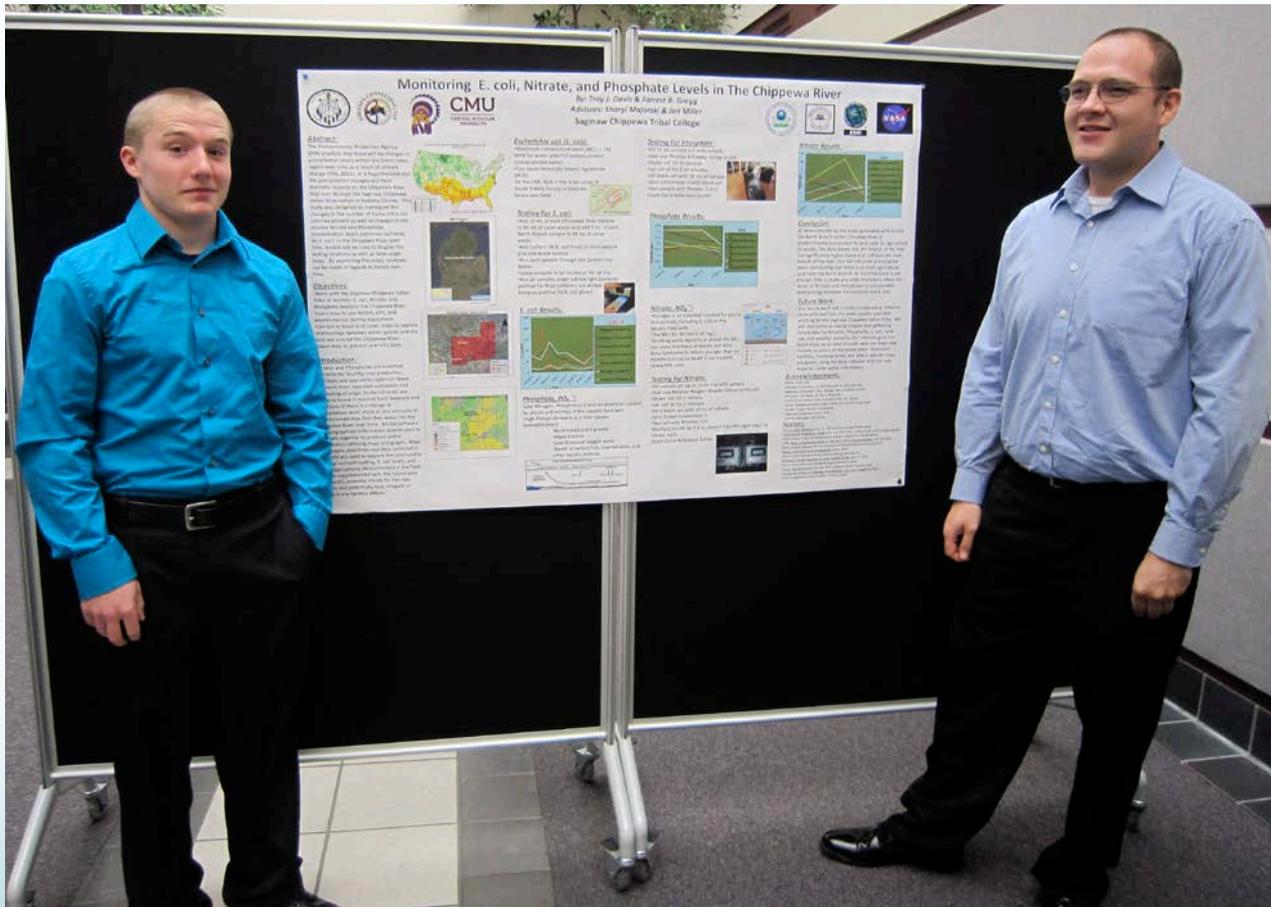
Lack of Resources at SCTC: Collaborate with Tribal Operations and nearby school (CMU)



When (not if) funds are low, work with others to do extraordinary things.



Proud Presenters at National Center for Atmospheric Research (NCAR)

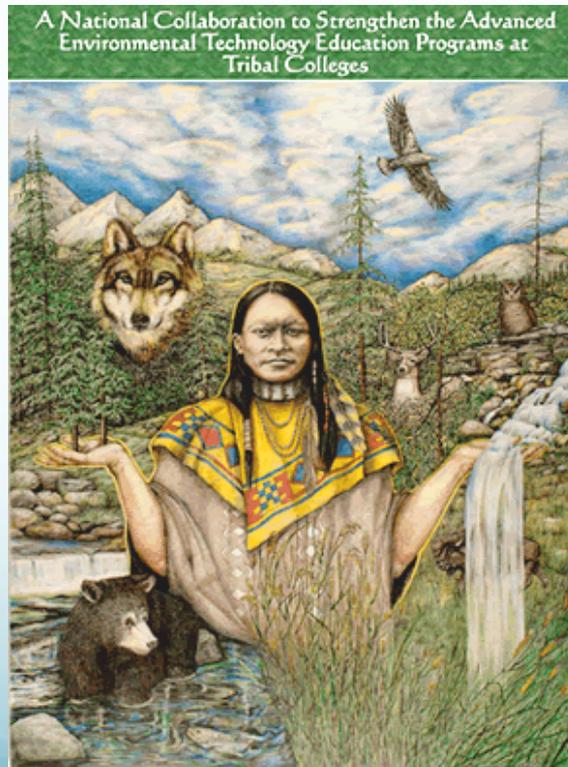


Outcomes from Incorporating Project Based Learning with Water Analysis

- **Improved student retention in chemistry class**
- **Improved attendance (rarely did students miss on days we were doing labs)**
- **Post Test Scores averaged 80-90% up from Pre Test Scores of 20-40%.**
- **For 2 students that completed Research Internship:**
 - Student 1: Major = Environmental Studies**
 - Student 2: Major = Something in the Sciences**

Part II

Preferred Learning Styles for Native American Students



Create an Environment of “Want to Learn” Focus on the Big Picture with Culturally Relevant Topics!



**Sustainability:
The Water Cycle
Recycle – Reuse
Fresh Water for All!**



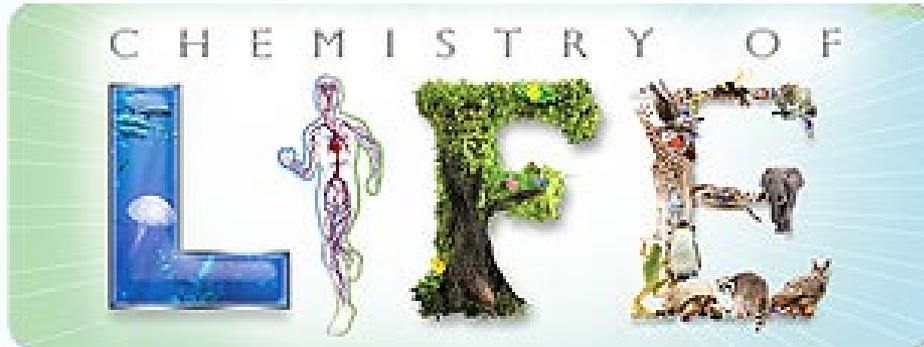
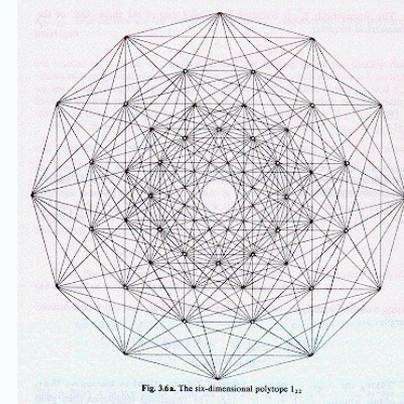
**Balance Between
Humans and the
Environment**



**Interconnectedness
of Humans with the
Land**

Native Americans have a preference for Holistic Learning (Pewewardy, 2002)

Interconnectedness: Studies within the Big Picture.



Holistic learners begin with a big picture and establish meaning only in relation to the whole

Learners take all pieces of information and link them together so it is connected.



Holistic learners are field-dependent.

- **Field-dependent learners do not think linearly.**
- **They are concerned with life and with all of its relationships.**
- **In a classroom, they are more likely to listen to everything before contributing in discussion.**
- **They are more reflective in nature.**

Memorization is a HUGE problem for holistic learners!

“Without relevance it is nearly impossible to retain basic information; therefore teaching the relevance for each process is just as important as the step.”

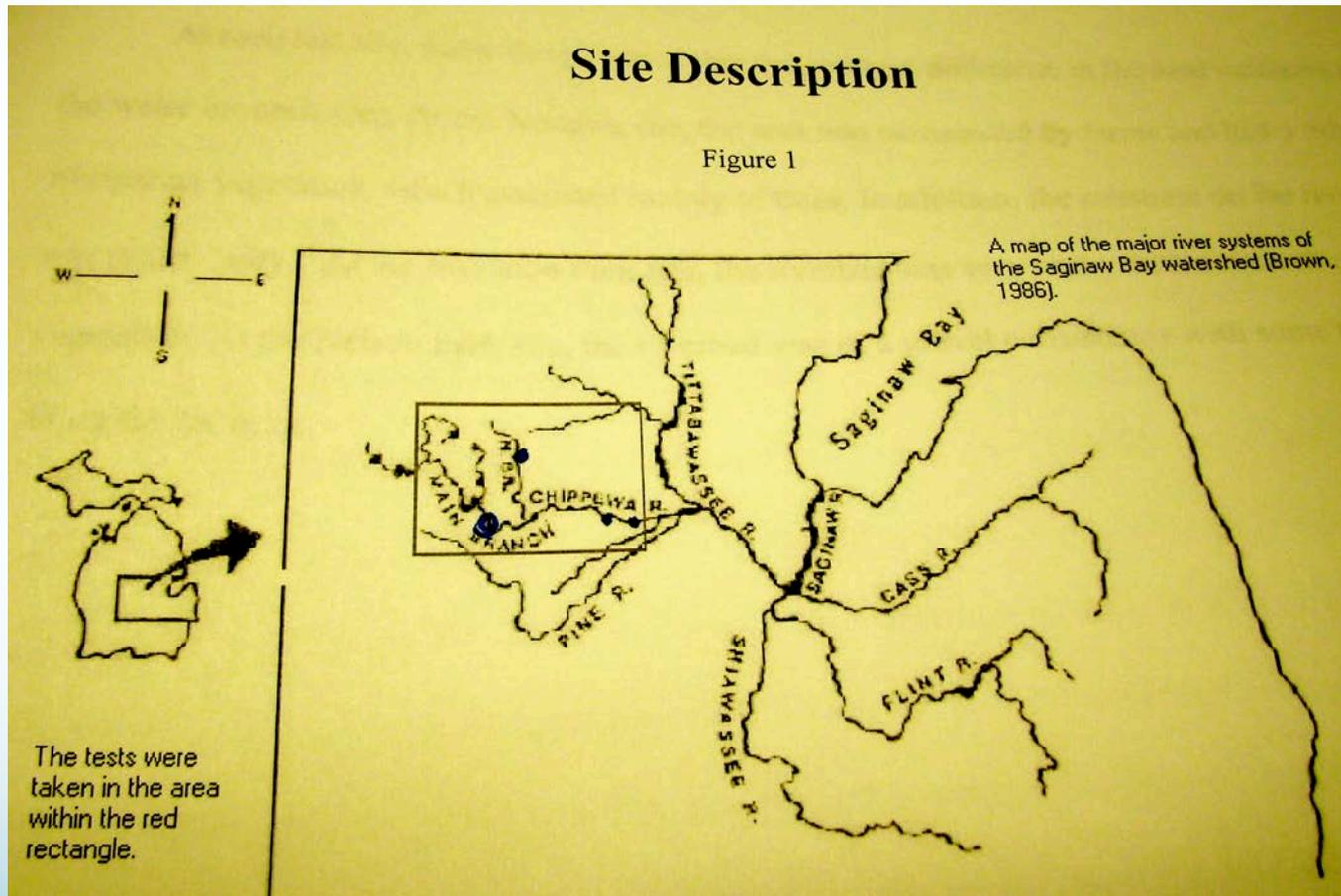
(Sherwin, 2011, p. 24)

In Chemistry, Memorize Polyatomic Ions...

Phosphate = PO_4^{-3} Sulfate = SO_4^{-2}

Successful Strategies: Start Early, State/Show Relevance, Repetition, Build on Concept

Incorporate Relevant Examples and Laboratory Experiences



“When education is not taught merely as “banking” information, students have the opportunity to understand the relevance and meaning of knowledge they are being taught.”

MOTIVATION AND INTEREST: students taught personal relevance, leading to motivation



BUILDING BLOCKS: Use prior knowledge when building new concepts



BASE: Prior Knowledge = Experiential Knowledge = Indigenous Knowledge

Kinesthetic Learners

- Learn best when they can move around
- “Hands-On” Learners
- Work well with their hands
- Often well coordinated
- Very good athletes, actors & dancers
- May have been considered “hyperactive” as a children
- Would rather take something apart to learn how it works



Students enjoyed hands-on work 😊



Strategies for Math Improvement

“Beadwork provides a hands-on demonstration of math in action and can be used as an effective vehicle for teaching mathematics. There is virtually no mathematical concept that cannot be illustrated using beadwork.”

(Barta, 1999, p. 37)



Narrative Learning – Learning from Elders

Elders provide a solid foundation of experiential learning.

- **Story telling has been a traditional way of teaching.**
- **Build upon knowledge that has been already taught.**
- **This process allows students to value their community knowledge as equivalent to what is taught in school.**
- **Students begin to value local and modern choices after graduation.**
- **Improves family support formal education.**



for

Narrative Learning: Story Telling

- **By using a story, knowledge that is considered deep and serious can be passed down through the generations often using humor to enlighten the impact.**
- **Although there is fiction within the stories, there is deep meaning as well.**



Story Telling makes use of Kolb and Fry's 4 learning phases:

- **Relating experience**
- **Invoking one to make observations with reflection**
- **Conceptualizing the concept**
- **Testing the implications of what the learners believe relative to future experiences**

(Randall, 1998)

“The elder’s opinion is truth. All power, all truth comes up from the roots of the family tree, the dead ancestors, to the trunk, the elders, and passes up to parents and children, the branches, leaves and flowers.”

(Merriam & Kim, 2008, p. 71)



Social Learning encompasses behavior, environment and cognition as important factors in learning.

There is an importance in listening and learning from others in the community and relating the learning to the betterment of the tribe.



Narrative Learning: Talking Circles

- A place to share concerns while learning how to deal with emerging issues
- Reflect what the person is thinking from within
- Listeners from around the world listen to a radio call-in program from Albuquerque, NM
- Way to incorporate Spirituality (Spiritual Learning)



Margaret Snow uses a traditional talking circle as a method to teach Menominee tribal language Wednesday to third-grade students at Keshena Primary School.

**Provide meaningful science programs for students in traditional (non-industrialized) settings.
Incorporate culture in lesson plans.**

- ***Culture includes: the norms, beliefs, values, expectations and practices within a community***
- ***Much of the Western style scientific work embraces certain agreed-upon procedures***
- ***Its cultural context influences which research projects to participate in and helps generate the questions to be asked.***



Incorporate Indigenous Concepts into Your Lectures



- Chemical Concepts:**
- pH
 - Acid Rain
 - Importance of trace analysis (polyatomic ions)
 - Bioaccumulation of Hg
 - Phosphates & Nitrates
 - Temperature



Understand Priorities of the Students you are working with – Climate Change Workshop at Haskell Indian Nations University

"The time has come for us to play to our strengths as “big picture” or holistic and, most importantly, Indigenous Thinkers.” -Red Paper

CLIMATE CHANGE GROUP VISION:

Because of our recognition that the life-ways of Indigenous people hold tremendous lessons for all of humankind to consider as we collectively think about our future, we have formed the American Indian and Alaska Native Climate Change Working Group to take immediate steps to ensure tribal Peoples will have the expertise within their own communities to make good decisions.

Native Americans are Strong Visual Learners.

(Alhelm, 1973; Kaulback, 1984)

- **Would rather see a graphic or physical representation of what is being said**
- **Visual aides help students remember**
- **Pictures provide a better set of instructions compared to words**
- **Would rather see a map than read directions**





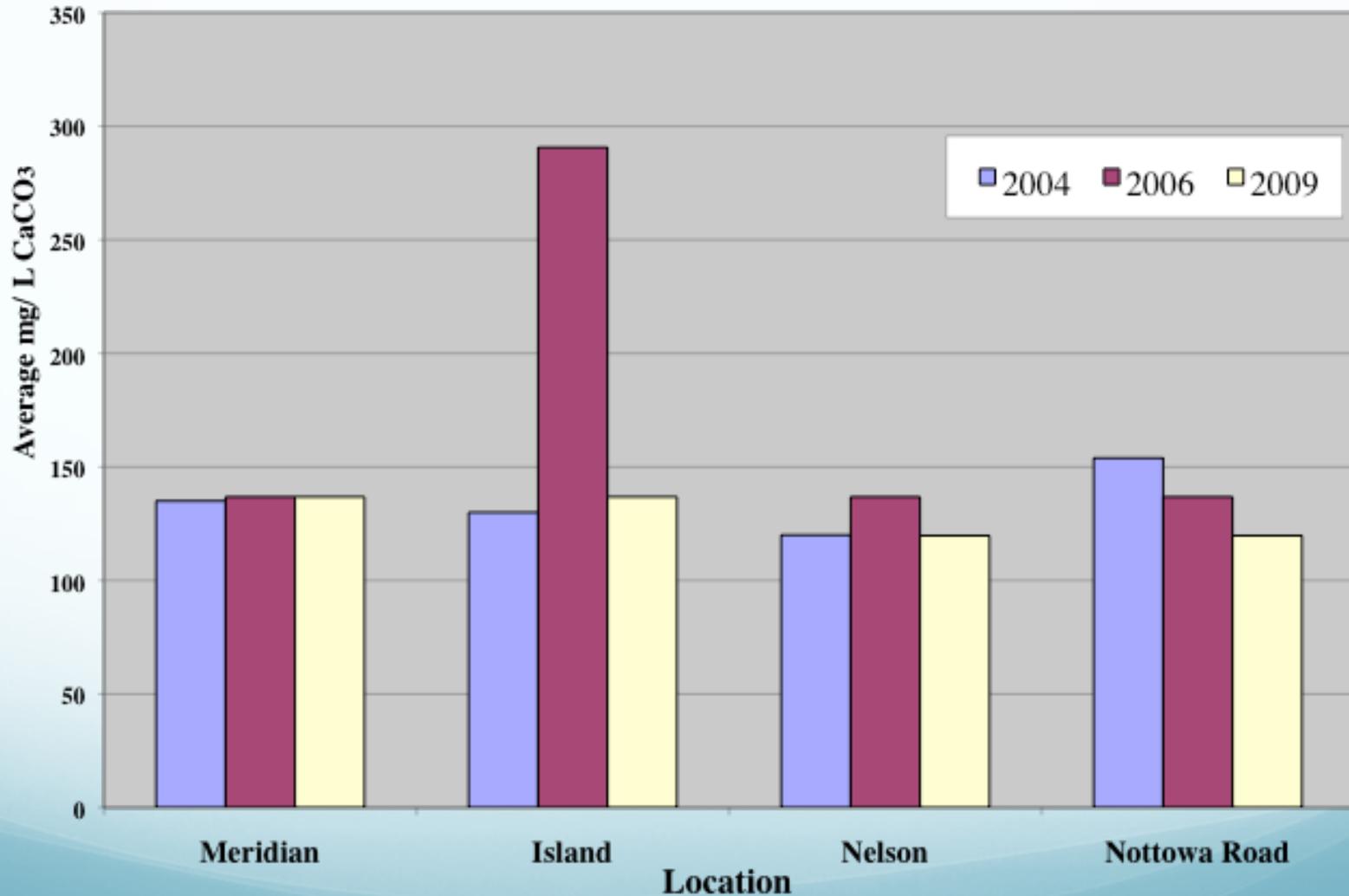
Characteristics of Visual Learners



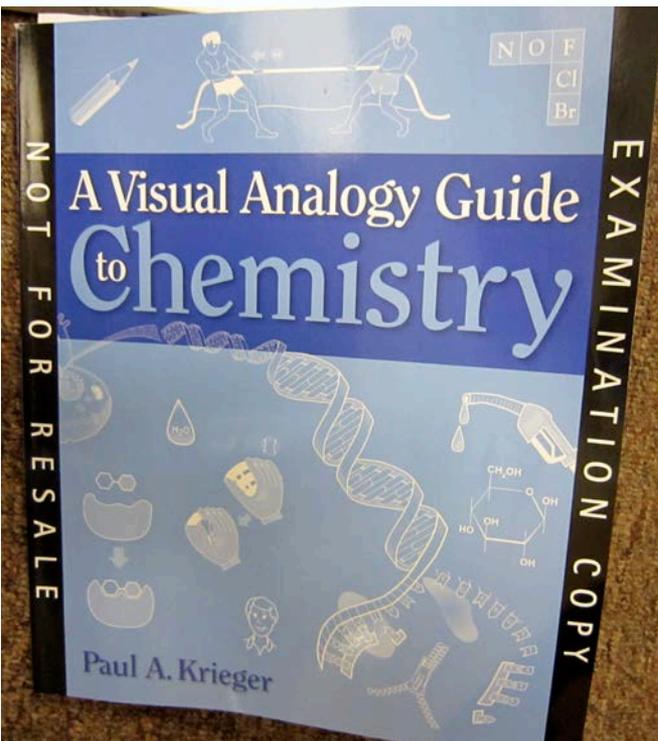
- **Can make “movies in their minds” of information that they read**
- **Have an easier time remembering items in pictures, diagrams or charts**
- **Generally have strong visual-spatial skills (sizes, shapes, 3-D depths)**
- **Pay close attention to body language (facial expression, eye movement, stance)**
- **Appreciate art & visual media**

Students were able to learn Excel Graphing

Alkalinity Levels in the Chippewa River

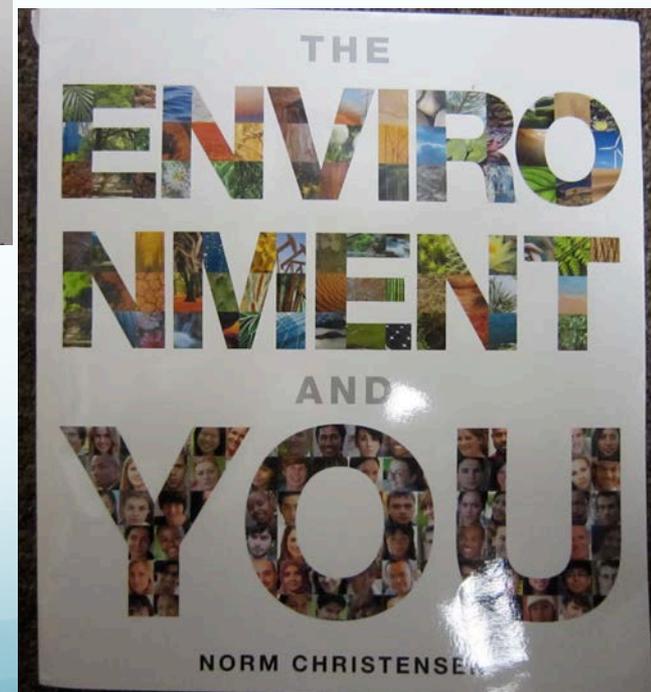


Select Textbooks that favor Visual Learners



VISUAL ANALOGY INDEX

TOPIC	ANALOGY	ICON (S)	PAGE NO.
1. Atoms and elements— Electron-dot structures	A compass shows where to position the electrons		46, 47
2. Chemical bonds— Octet rule and chemical bonding	The symbol to represent the octet rule is an eight ball		54, 55
3. Chemical bonds— Octet rule and chemical bonding	A more stable product is like a stable couple		54
4. Chemical bonds— Covalent bond	A covalent bond is like two people locking arms		57, 161
5. Chemical bonds— Electronegativity	Electronegativity is like a tug of war		58, 59
6. Chemical bonds— Bond polarity	A dipole is like a bar magnet		59
7. Chemical equations— Understanding chemical equations	Mixing ingredients together to make pancakes is similar to the parts of a chemical equation		72
8. Chemical reactions— Combination reactions	Combination reactions are like making a compound word	"cupcake"	76
9. Chemical reactions— Decomposition reactions	Decomposition reactions are like deconstructing a compound word	"cup"	76
10. Chemical reactions— Replacement reactions	Replacement reactions are like changing dance partners		77, 120
11. Chemical reactions— Oxidation-reduction reactions	Redox reactions always occur in pairs like two people playing catch		79



Provide Useful Teaching Tools

Important Physical Data of the Elements

Atomic mass in u
Atomic number
Boiling point in °C
Melting point in °C
Density in g/cm³ at 20 °C (with gases in g/l at 1013 mbar)
x = sublimes
p = under pressure

Oxidation states (Bold most stable)
First ionization potential in eV
Electronegativity (Pauling)

IA	IIA	IIIA	IVA	VA	VIA	VIIA	VIIIA										
1 H	2 He	3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne								
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar										
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57-71 La-Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89-103 Ac-Lr	104	105													

87 La Lanthanum
88 Ce Cerium
89 Pr Praseodymium
90 Nd Neodymium
91 Pm Promethium
92 Sm Samarium
93 Eu Europium
94 Gd Gadolinium
95 Tb Terbium
96 Dy Dysprosium
97 Ho Holmium
98 Er Erbium
99 Tm Thulium
100 Yb Ytterbium
101 Lu Lutetium

89 Ac Actinium
90 Th Thorium
91 Pa Protactinium
92 U Uranium
93 Np Neptunium
94 Pu Plutonium
95 Am Americium
96 Cm Curium
97 Bk Berkelium
98 Cf Californium
99 Es Einsteinium
100 Fm Fermium
101 Md Mendelevium
102 No Nobelium
103 Lr Lawrencium

LL: 10 first meeting p. 380 p. density 2.34
C: C diamond, melting p. = 3550, density 3.51

Periodic System of the Elements

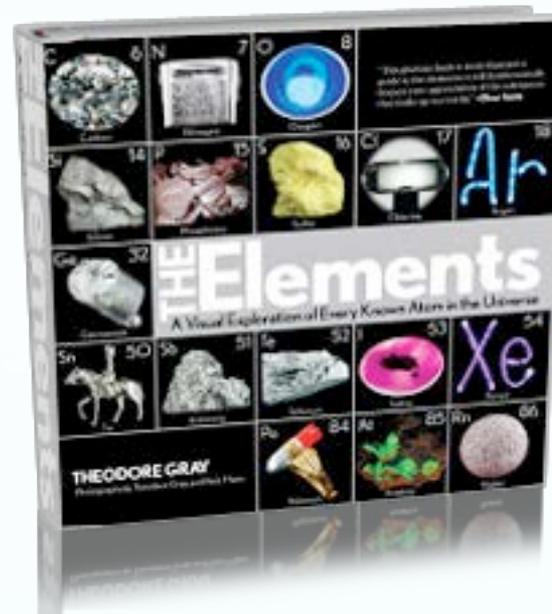
IA	IIA	IIIA	IVA	VA	VIA	VIIA	VIIIA										
1 H	2 He	3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne								
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar										
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57-71 La-Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89-103 Ac-Lr	104	105													

87 La Lanthanum
88 Ce Cerium
89 Pr Praseodymium
90 Nd Neodymium
91 Pm Promethium
92 Sm Samarium
93 Eu Europium
94 Gd Gadolinium
95 Tb Terbium
96 Dy Dysprosium
97 Ho Holmium
98 Er Erbium
99 Tm Thulium
100 Yb Ytterbium
101 Lu Lutetium

89 Ac Actinium
90 Th Thorium
91 Pa Protactinium
92 U Uranium
93 Np Neptunium
94 Pu Plutonium
95 Am Americium
96 Cm Curium
97 Bk Berkelium
98 Cf Californium
99 Es Einsteinium
100 Fm Fermium
101 Md Mendelevium
102 No Nobelium
103 Lr Lawrencium

Wow!
chemchems™

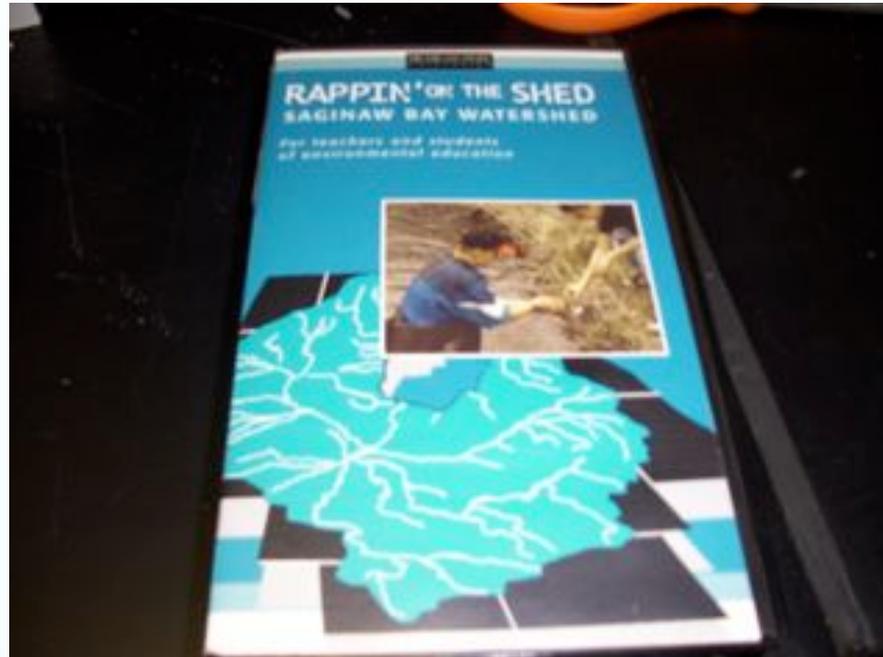
1	H																	2	He											
2	Li	Be											3	B	4	C	5	N	6	O	7	F	8	Ne						
3	Na	Mg											9	Al	10	Si	11	P	12	S	13	Cl	14	Ar						
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr												
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe												
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn												
7	Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt	Uun	Uuu	Uub	Uuq																	
**Lanthanide series			57	La	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb
**Actinide series			87	Ac	88	Th	89	Pa	90	U	91	Np	92	Pu	93	Am	94	Cm	95	Bk	96	Cf	97	Es	98	Fm	99	Md	100	No



Atomic Weight	20.1797
Density	0.9 g/l
Melting Point	-248.59 °C
Boiling Point	-246.08 °C

Neon signs really are made with neon, like this Ne-shaped tube filled with this inert gas. A high voltage transformer sends an electric current through the tube, creating a characteristic bright neon-red arc.

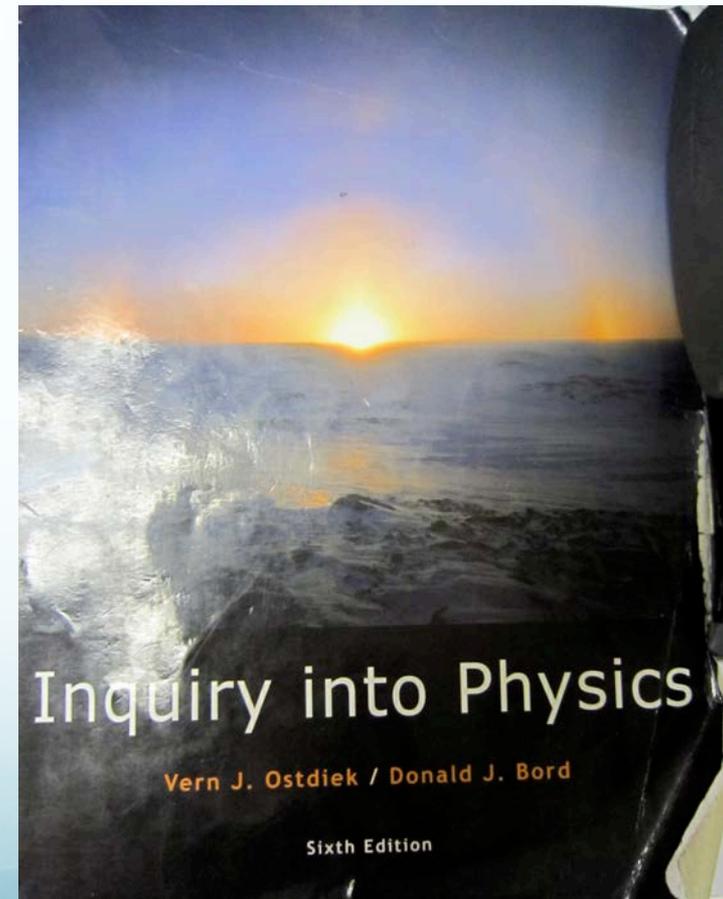
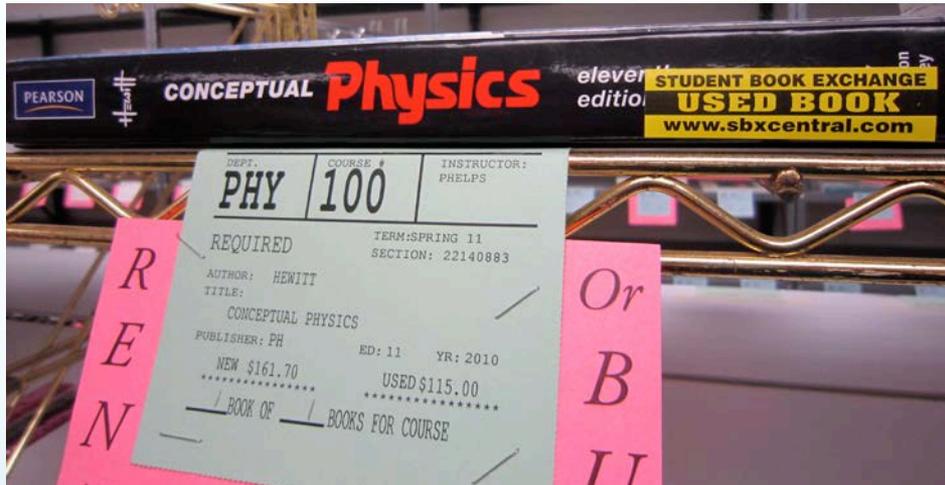
Investigate Media for Relevant You Tube Videos and DVDs.



- **Have Students Find Them**
- **Fun way to introduce topic**
- **Quick overview of topic**
- **Generates Interest!**

New Class = PHYSICS

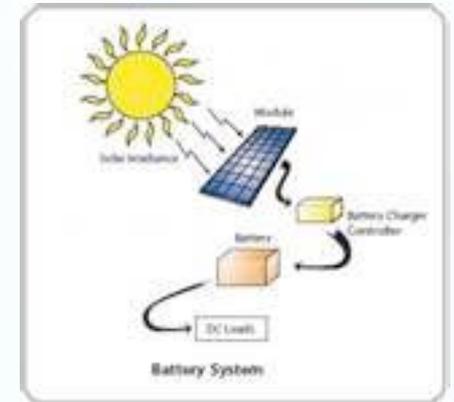
Important Decisions Start Before the Class Begins



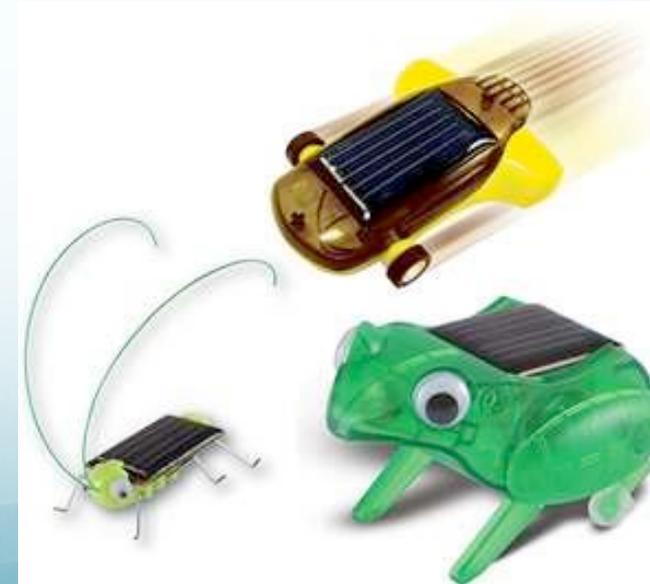
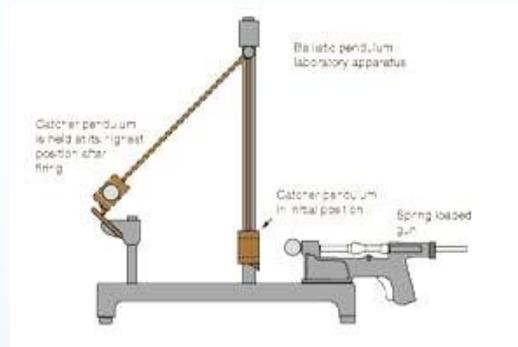
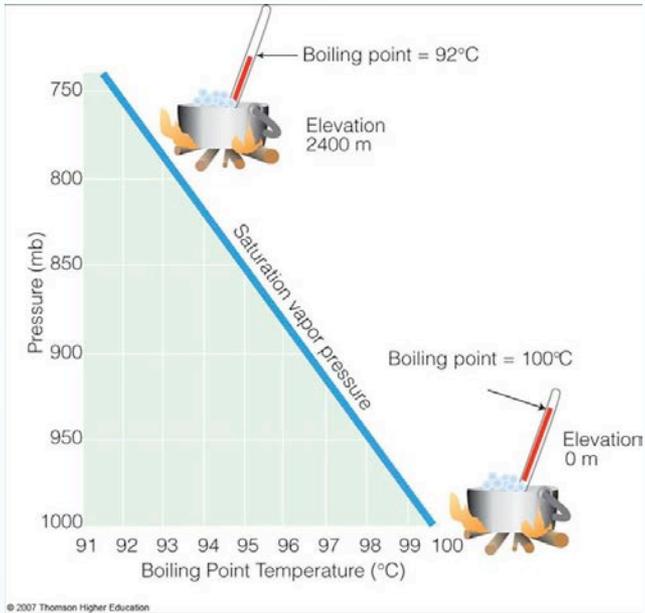


Incorporate Cultural Relevance in the Classroom while using Learning Theory

- **Energy Planning Projects**
- **Alternative Energy Sources**
- **Sustainability**
- **Biodiversity Conservation**
- **Indigenous Science**



Provided Hands-on Laboratory Experiments that directly correlated with lecture and used more visuals.



Brought in 2 Speakers and Encouraged AISES Conference Attendance

Dr. Lori Alvord

*Associate Dean for the College of Medicine,
Central Michigan University*



Dr. Lori Alvord, MD, is a pioneer in bridging traditional Navajo healing and conventional Western medicine. At least the old-fashioned way, she provides culturally competent care to restore balance in her patients' lives and to speed their recovery.

As a Stanford-trained surgeon, she developed her technical and clinical skills. Alvord was the first Navajo woman to be board certified in surgery. But when she returned to the New Mexico reservation to work in a Navajo community she discovered, she says, that "although I was a good surgeon, I was not always a good healer. I went back to the healers of my tribe to learn what a surgical residency could not teach me. From them I have heard a resounding message: Everything in life is connected. Learn to understand the bonds between humans, spirit, and nature. Realize that our illness and our healing alike come from maintaining strong and healthy relationships in every aspect of our lives."

Dr. Alvord is still a surgeon, but she tries to heal, not just fix, her patients by working with families, other practitioners, and constant cultural awareness. She looks for the places in the patient's life, relationships (both personal and with health care providers), and environment where things are out of balance.

Students Volunteered to Help with Outreach Day! We collected macroinvertebrates and determined velocity and speed.



Summing up my changes...

- **Visual textbook**
- **More visual examples**
- **Relevant hands-on research project (Energy)**
- **Allowed visual expression in posters**
- **Allowed more group work**
- **Incorporated demonstrations**
- **Incorporated math pictures**
- **Incorporated reflection questions into exams**
- **Guest Speakers & Attendance at AISES**

Outstanding Evaluations after incorporating changes

1. What activity made this a good Course?

- Nothing in particular, it was all good.
- Everything.
- Physics Jeopardy
- Concepts-notes, vital information “right to know”
- We were taught a ton of math and using formulas and that was good because it will prepare us for further courses.
- Hands on experience!
- Experimenting... able to do hand on activities and see how things work.
The
- Labs (experiments) games and such.
- The alternative energy projects.
- It was fun to see the science in real life. All of the activities made it a good course I really like the making water boil with our hands most. The hands on activities.

2. What did the instructor do well?

- **Everything**
- **Helped the students understand the concepts.**
- **Taught me not to give up**
- **Teach/taught well above standards went above expectations with students.**
- **Taught us well. Made it fun.**
- **Involved everyone in the class.**
- **Demonstrations.**
- **made it fun, drove the topics home by having the lab relate to the topics we learned in the lecture.**
- **She always made sure to go over things again if we seemed to not understand, until we got it.**
- **Gave real examples of the concepts.**

3. What would you like to change about the course?

- **Nothing...loved it!! Nothing.**
- **Nothing. Nothing. Nothing. Nothing.**
- **More classes (MWF?) Longer periods, Maybe**
- **Make a physics I and Physics 2 because there is soooo much to learn.**
- **More time for lab.**

Acknowledgements...

- **National Partnership for Environmental Technology Education (Kirk Laflin, Sarah Gross, and rest of Committee)**
- **Saginaw Chippewa Tribal College**
- **Central Michigan University**
- **Haskell Indian Nations University**
- **National Science Foundation**
- **And most importantly YOU!**