Innovations in Online Learning 2008

May 21-23

Incorporating 3rd party content into online coursework

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*Incorporating **3rd party content** into…*

KIN 5361: Biomechanical Basis of Sport

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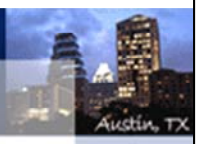

History

- Kinesiology Online Collaborative
- 6 Campuses
- Our Courses = Your Courses
- Our Faculty = Your Faculty
- 1st Courses – Fall 2000

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Biomechanics

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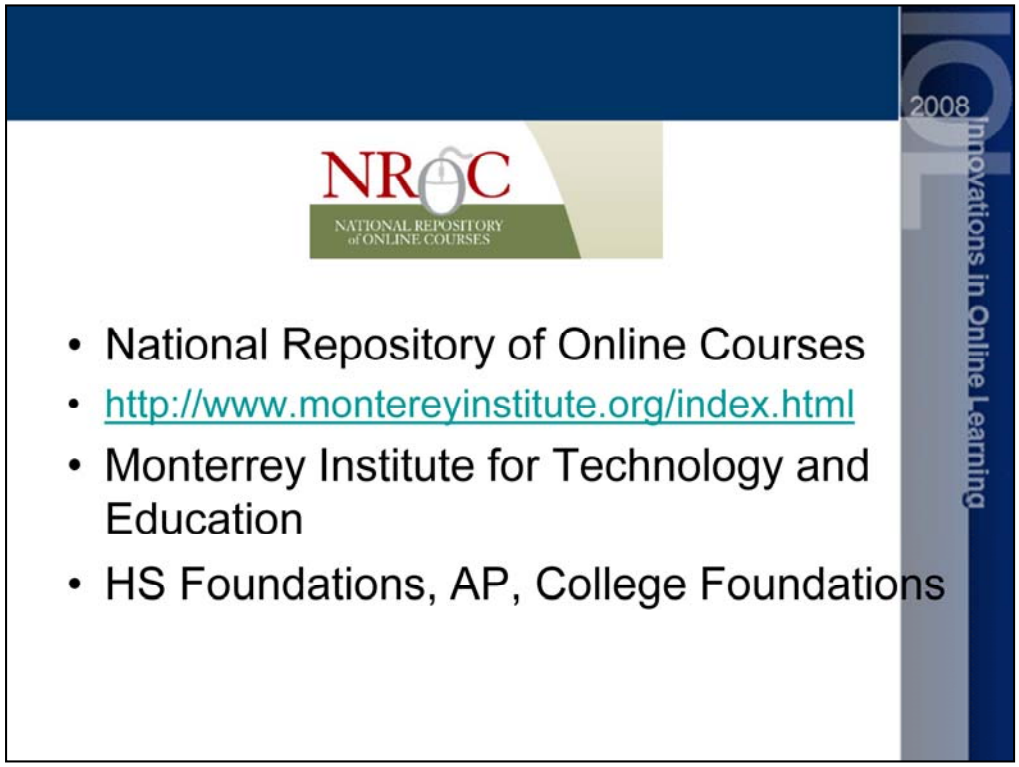
- 1st offered – Spring 2001
- 9 total offerings
- Minor changes
  - Textbook revisions
  - Assignments (new, revised)
  - Course shell
- Need – more than a facelift


NROC
NATIONAL REPOSITORY of ONLINE COURSES
2008
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• National Repository of Online Courses
• http://www.montereyinstitute.org/index.html
• Monterrey Institute for Technology and Education
• HS Foundations, AP, College Foundations

NROC Physics → Biomechanics

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- Video 
- PDF – additional content
- Sample math
- Sample labs

Student Response

- Did you watch the videos?
  - 10/15 responded (4 all, 4 most, 2 some)
  - "I would watch the videos to get another perspective of how the information was presented. I believe the videos help get the brain stimulated for applying the information in the discussion assignments."
- Did you download to MP3 or MP4?
  - 10/15 NO
  - But…. "I did not have the need to download because I did not coach anything this spring. If I had taken this class at any other time, I would have downloaded them. This is a huge plus because bus rides in this area are hours long and class access is paramount to people like me out here in the sticks, where Internet service can go down for days at a time."

Student Response

- Did you read the PDF files?
  - 2 all, 6 some, 2 none
  - "Sometimes they confused me because the terminology was different than yours"
  - "….the information that I needed help understanding was conveyed a different way and that is always helpful to me"
- Did you review the math samples?
  - 6 some, 4 none
  - "I wish I knew about them!"

Future

- Assignments
  - Revamp discussion items based on the video and/or PDF content
- Organize math samples
- Revise exam questions

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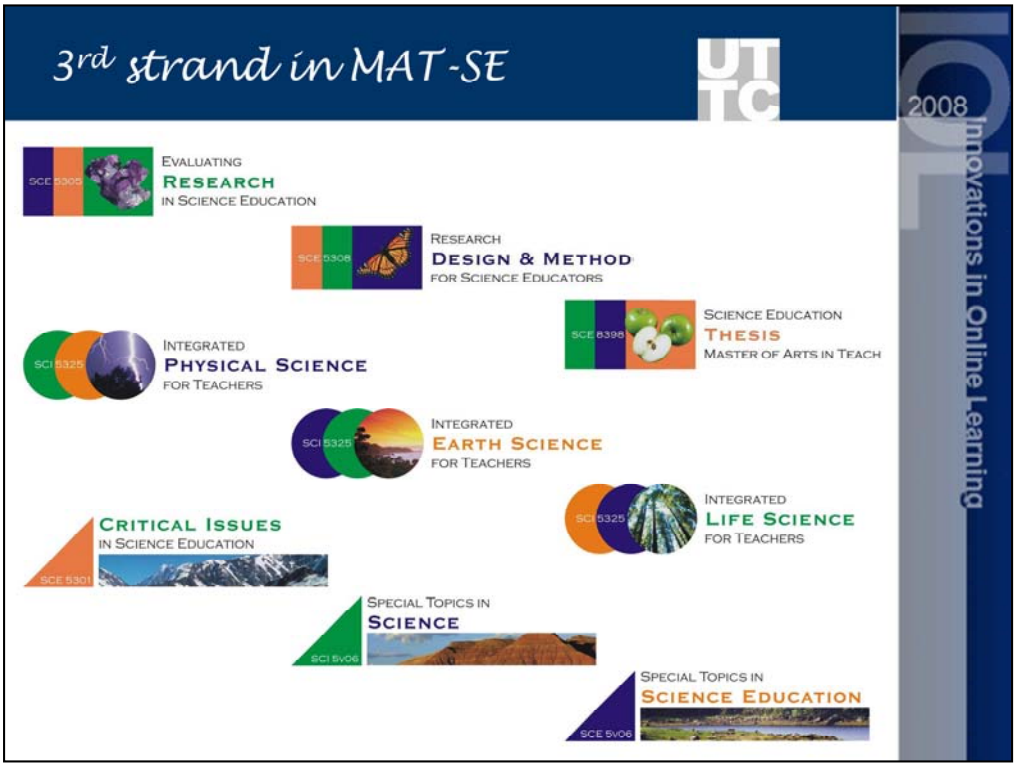
Happy birthday UTTC! For almost 15 years, my research has focused on information technologies in science education, especially teacher development. Luckily, I've been able to work with UTTC for over half of that time.

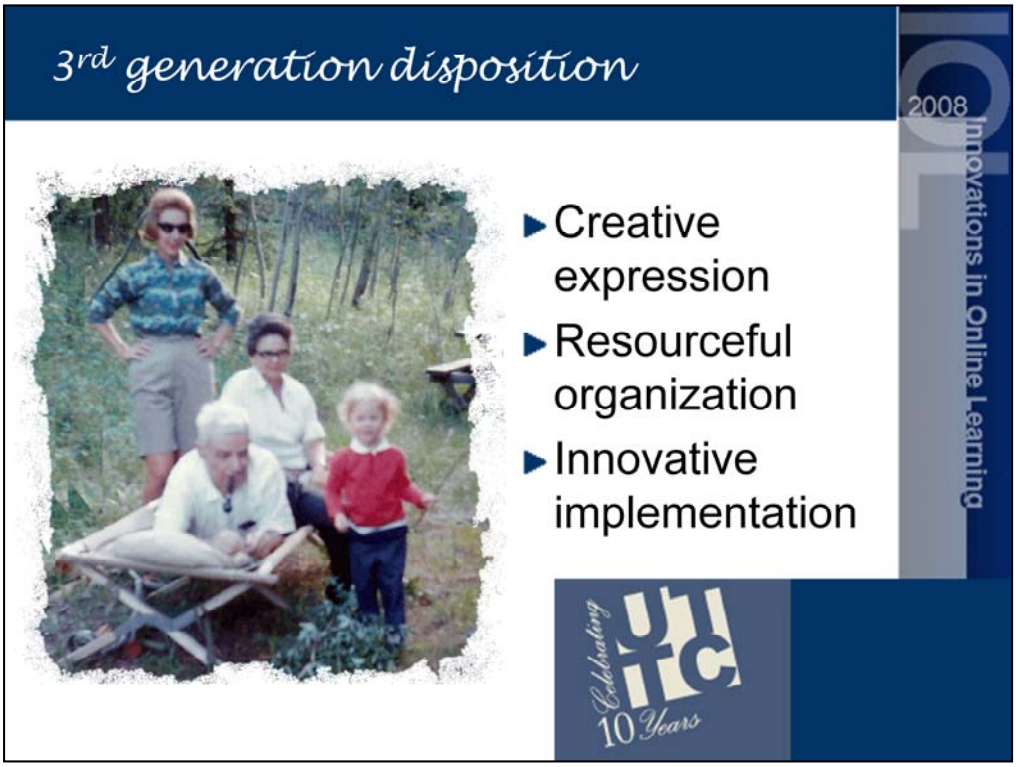
These are interesting times! And this course is my 'disruptive innovation'. Technology-based forces are gathering around public education and will overhaul the way K-12 students learn, finally! *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* predicts that the growth in computer-based delivery of education will accelerate swiftly until, by 2019, half of all high school classes will be taught over the Internet. As Clayton M. Christensen predicts, providers will gradually improve their tools to offer instruction that is more student-centered, in part by breaking courses into modules that can be recombined specifically for each student.

That's why I jumped at the chance to participate in the NROC pilot!



Integrated Earth Science for Teachers is a recommended course in the 3rd strand of the completely asynchronous, 100% online Master of Arts in Teaching – Science Education degree offered by UT Dallas and delivered through UTTC. It's not a methods course or a theory course. The comprehensive program design allows us to deliver innovative content in an integrated context.

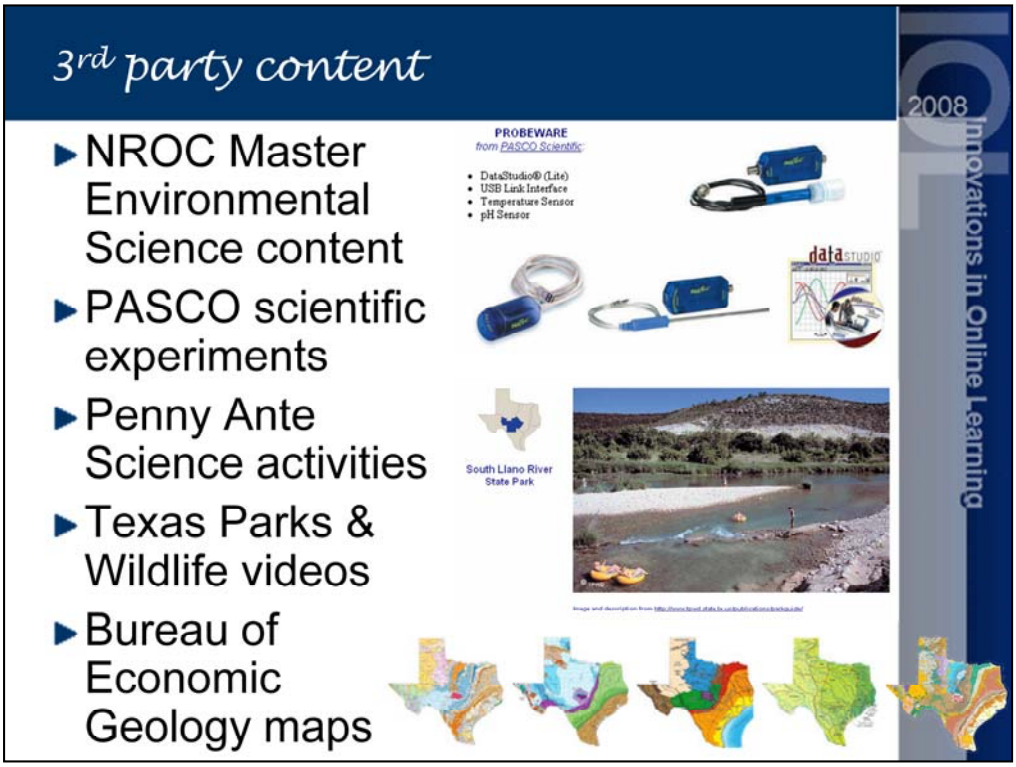
It's truly my honor to 'teach' classroom teachers. That's not as easy as it might sound… Those seeking an MAT degree are experienced – and are pretty sure that they know their content. My job is to help them break out of their pedagogical boxes so that they can reach every child.



This pioneering spirit is really more of a genetic trait rather than a technological gift. I have to admit that my deep seated reason for applying for the NROC pilot was to see for myself if 'canned content' can be put to good use. Again, luckily, my mother's knack for creative expression, my grandmother's incredibly resourceful organization skills, and my own sense of adventure made this innovative implementation a success. But it wasn't easy!

~ and I couldn't have done it without UTTC's expertise!

Like most educators, I get to play many roles throughout the day. In this case, I had the unique perspective of being the course designer and developer, the course instructor and class facilitator, and still managed to do some research while I continued to learn from my students, the content providers at NROC, and the UTTC team. So, I know this course inside and out!



Third-party content is just what it sounds like: content generated by an outside provider. These folks are bridge builders. They know how to put things together to last and they create beautiful works, but without users to go from one side to the other even the most extravagant bridge is of little value.

I tried to weave free-form routes through SCI 5325 by pulling together the following items:

•~ 110 NROC Master Environmental Science animations, simulations, videos, text summaries, and images

•24 PASCO scientific configuration files, teacher information pages, and student response sheets

•~ 40 Penny Ante Science activities as PDF downloads, plus

•6 Texas Parks & Wildlife video clips and

•6 Bureau of Economic Geology maps with accompanying text.

As John Muir so simply stated: *"When we try to pick out anything by itself we find it hitches to everything in the universe".* That's basically the premise for Integrated Earth Science. Three books I was reading at the time really influenced the final course design – and gave me the footing I needed to actually make this leap!

Small Pieces Loosely Joined by David Weinberger inspired hope that my teachers could make sense of the overwhelming chaos to mediate the information overload.

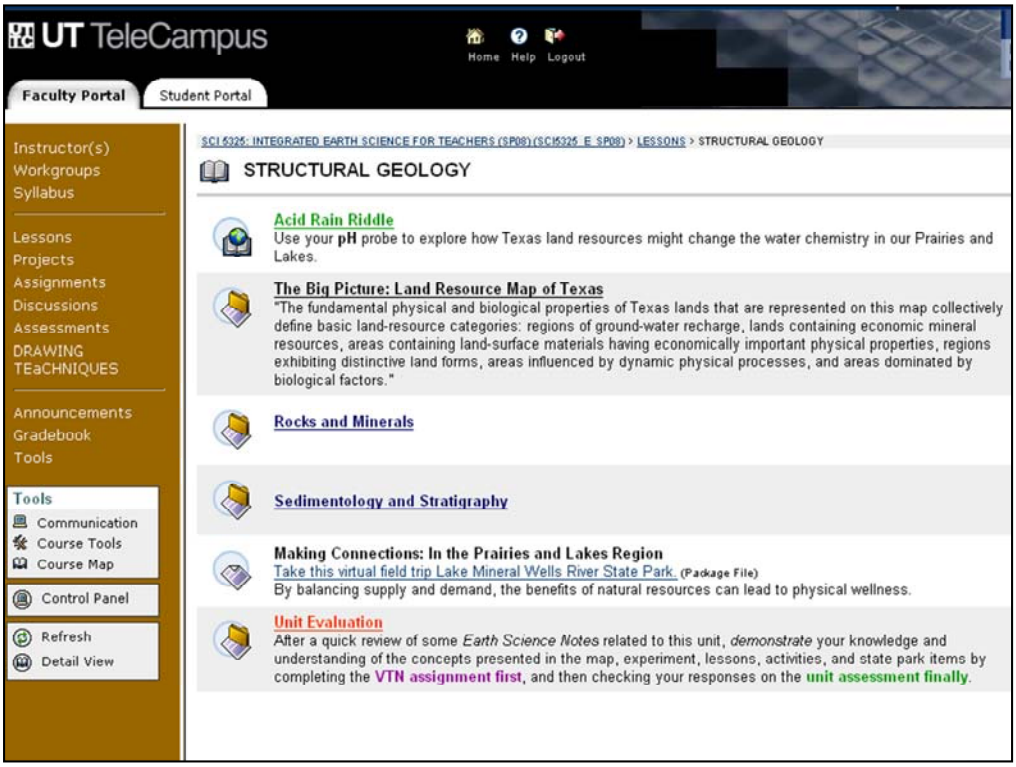
The Art of Changing the Brain by Dr. James Zull helped make sense of why this felt like the right thing to try. Education is all about making new connections; he literally explained how that works in a learner's brain.

The Sciences: An Integrated Approach eloquently put forth the challenge to paint the big picture with a systems perspective. It's a classic that we recommend for all 3 of our science courses.

So, let me show you how it all played out in the actual course!

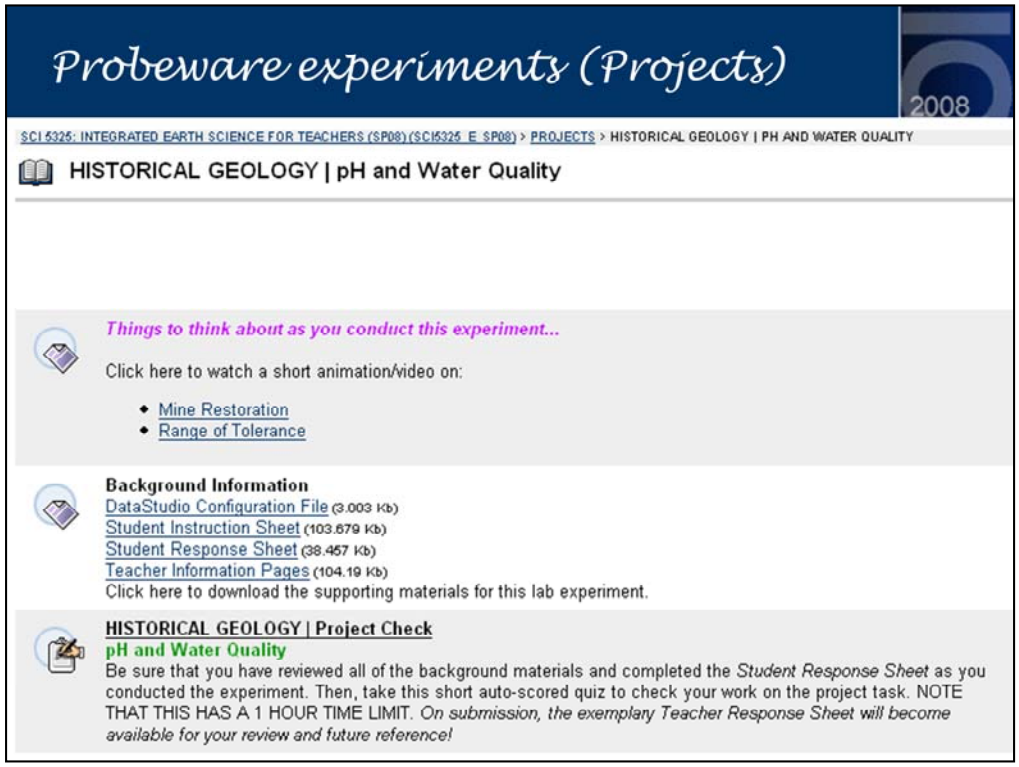
In addition to the introduction, midterm and final lessons, there are 6 units that contain two lessons. Students have 2 weeks to submit:

- 1 probeware lab quiz,
- 1 metacognitive assignment,
- at least 1 discussion posting, and
- 1 content exam.



Here's how each unit is formatted. Because there are so many 'parts', I put everything within the unit, in a logical flow from concrete to abstract. I inserted course links to the projects, assignments, discussions, and assessments at an appropriate place in each section. Those same items are also accessible through the course menu.

Color and textual summaries are intended to help students stay oriented and on track. For example, the probeware experiment is in green. The map exploration and park tour are in black and surround the two topics in blue. The assessment section is at the bottom with an orangy-red header. Third-party content is sprinkled throughout the entire unit.

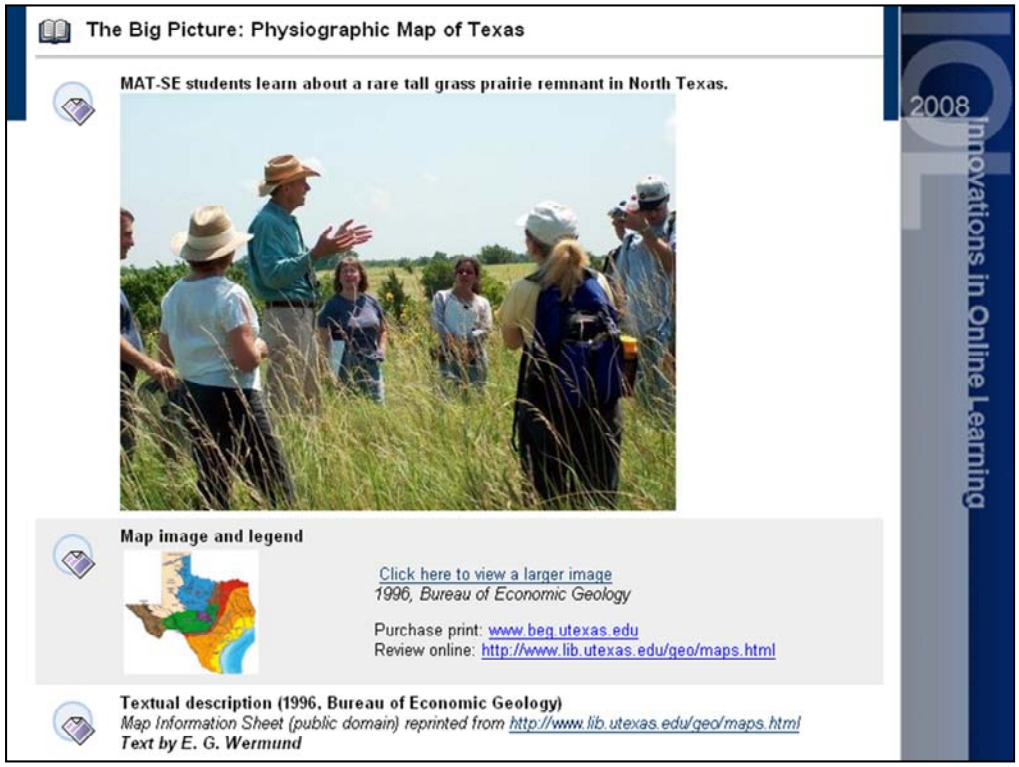


Each probeware experiment section includes a ‘things to think about…’ item to help link the data to the unit topics. These mostly came from the NROC course.

Students then download various files created by PASCO scientific to complete the experiments.

After they submit their responses to the automatically-scored Project Check quiz, an exemplary response sheet becomes available for further review. Using adaptive release here allows students to keep going whenever they’re ready to work without having to wait for my intervention.

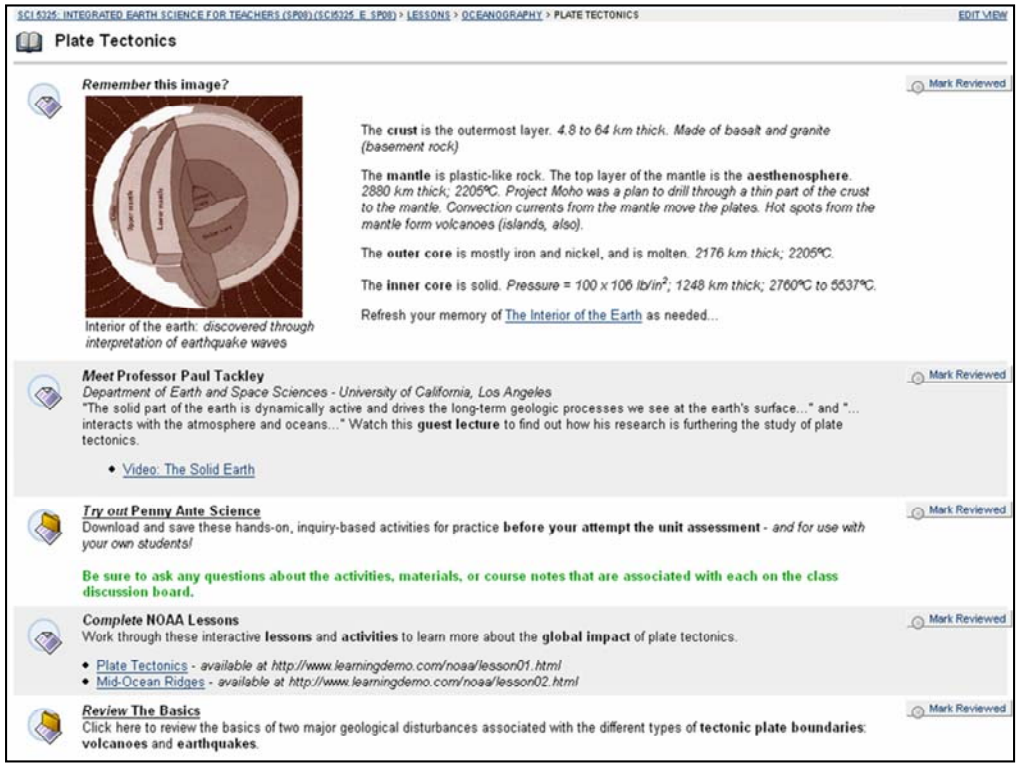
We use different probes in each science course in lieu of a textbook. In this course, we wanted to model use of purchased Teacher Resource Kits.



Each unit is introduced with a different kind of Texas map in the public domain: vegetation/cover type, tectonic, river basins, physiology, land resources, and geologic. A thorough explanation of the map detail is included on the back of the map as well as reproduced in the course.

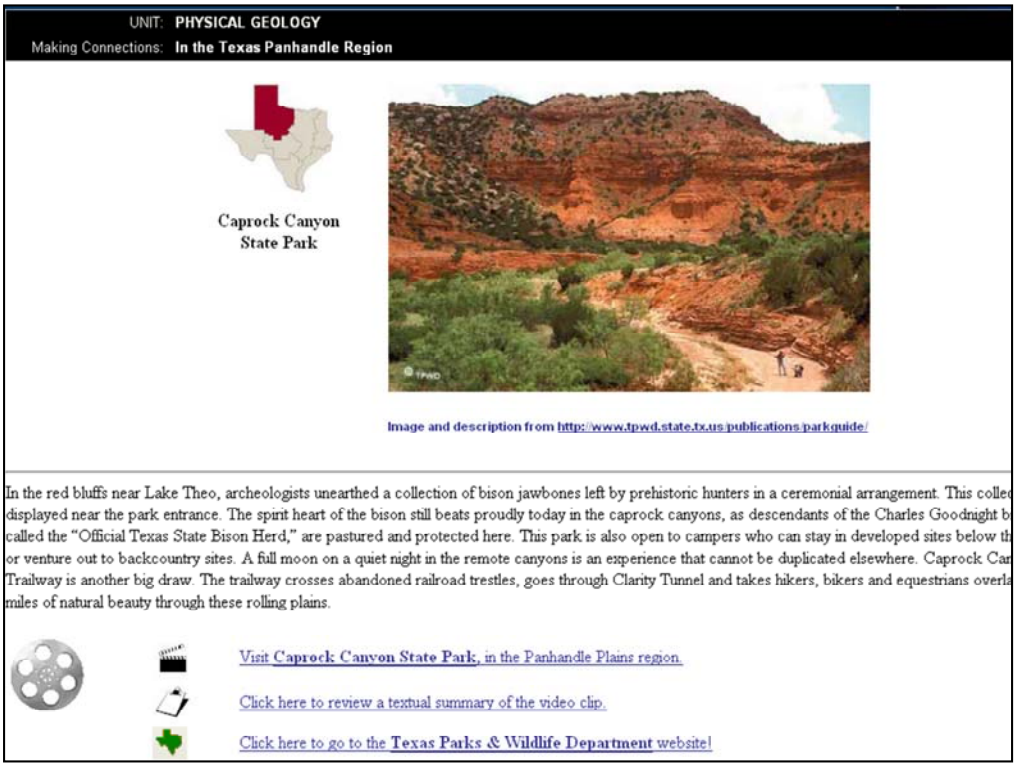
By the end of SCI 5325, these thumbnail images were burned into the minds of our students to help them see the bigger picture of how the physical trends are inter-related and the sciences are inter-dependent.

I tried to develop a sense of community by including images of MAT-SE graduates working in the traditional program from my own collection.



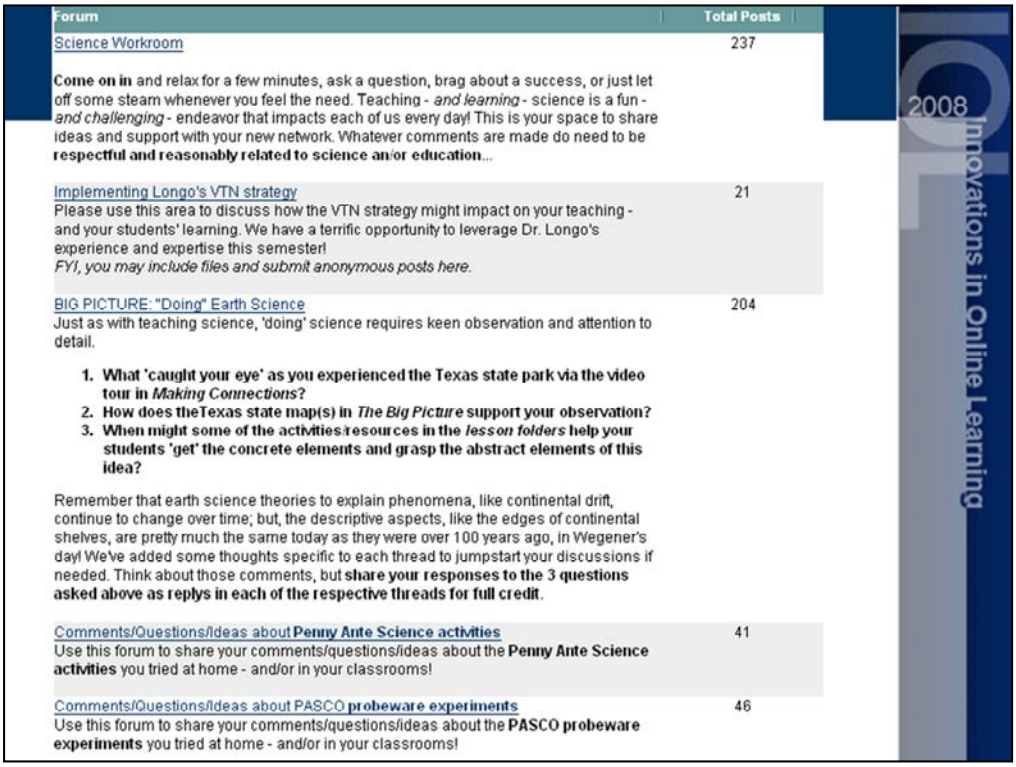
The 2 topic areas (conventional lesson content) are loaded with content, almost exclusively 3rd party. It was important to me to actually teach, not just entertain, with the rich media available. So, as you can see here, I tried to personalize each item with a hint of its importance to foster professionalism. Notice the verbs. They '**met**' various guest lecturers, like Dr. Tackley from UCLA. They **tried out** hands-on activities to see how they might work in their own classrooms. They **completed** mini-lessons to **review** the necessary basics.

Students were warned that one of my goals was to expose them to different ways of looking at the few major themes and concepts of earth science on a global scale! It took some work to collect related items from the NROC content as they fit my objectives. (You can see examples of the different elements on the NROC site.) For example, I combined the Plate Tectonics and Mid-Ocean Ridge items to present the 'parts' in manageable chunks. I also enabled the review option for each item so that students could bookmark their progress if it helped them.



To give us all a needed break, the virtual field trip was our class reward for wading through the 2 lessons. Texas Parks & Wildlife Department gave me permission to compress clips from their state park DVD.

I picked sites in each of the major tourist regions that related to each of the map investigations and tied directly into the probeware experiments. Again, the intent was to improve observation skills for making those real-world connections as we moved from the concrete to the abstract.



Forum	Total Posts
Science Workroom **Come on in** and relax for a few minutes, ask a question, brag about a success, or just let off some steam whenever you feel the need. Teaching - *and learning* - science is a fun - *and challenging* - endeavor that impacts each of us every day! This is your space to share ideas and support with your new network. Whatever comments are made do need to be **respectful and reasonably related to science an/or education**...	237
Implementing Longo's VTN strategy Please use this area to discuss how the VTN strategy might impact on your teaching - and your students' learning. We have a terrific opportunity to leverage Dr. Longo's experience and expertise this semester! *FYI, you may include files and submit anonymous posts here.*	21
BIG PICTURE: "Doing" Earth Science Just as with teaching science, 'doing' science requires keen observation and attention to detail. 1. **What 'caught your eye' as you experienced the Texas state park via the video tour in *Making Connections*?** 2. **How does theTexas state map(s) in *The Big Picture* support your observation?** 3. **When might some of the activities/resources in the *lesson folders* help your students 'get' the concrete elements and grasp the abstract elements of this idea?** Remember that earth science theories to explain phenomena, like continental drift, continue to change over time; but, the descriptive aspects, like the edges of continental shelves, are pretty much the same today as they were over 100 years ago, in Wegener's day! We've added some thoughts specific to each thread to jumpstart your discussions if needed. Think about those comments, but **share your responses to the 3 questions asked above as replys in each of the respective threads for full credit**.	204
Comments/Questions/Ideas about **Penny Ante Science activities** Use this forum to share your comments/questions/ideas about the **Penny Ante Science activities** you tried at home - and/or in your classrooms!	41
Comments/Questions/Ideas about PASCO **probeware experiments** Use this forum to share your comments/questions/ideas about the **PASCO probeware experiments** you tried at home - and/or in your classrooms!	46

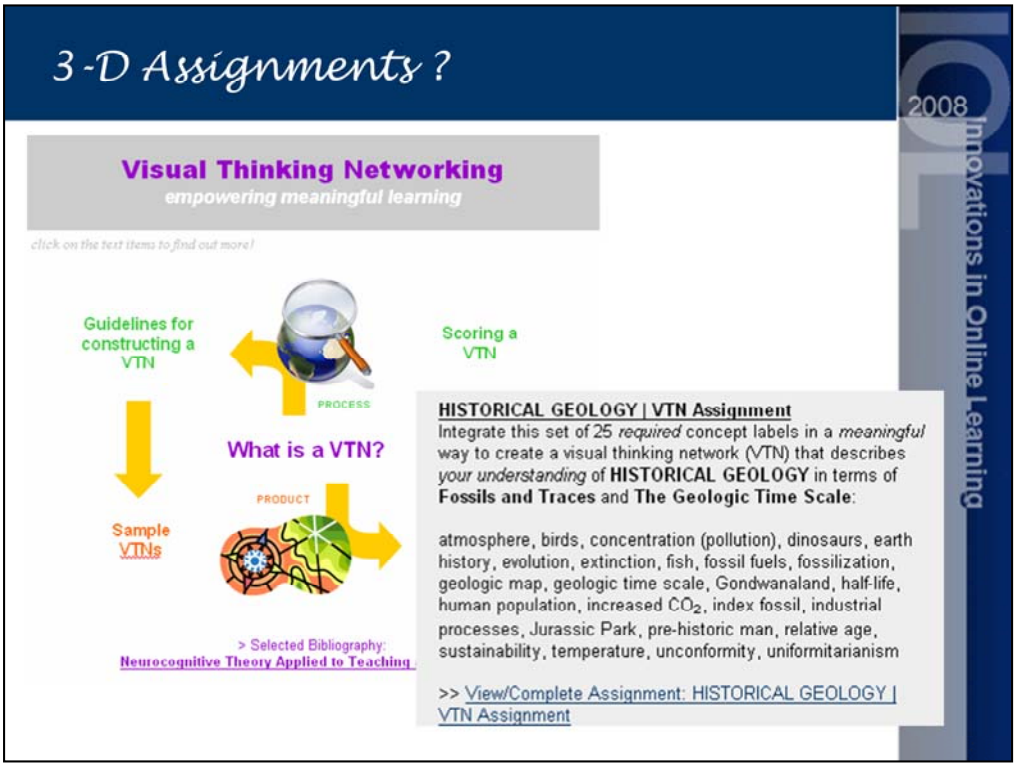
Problem-solving is rarely an individual or isolated task. Working with others broadens one's knowledge and deepens one's understanding.

That's why the discussion board was imperative! 20 students generated almost 550 legitimate posts!

By design, I did not monitor every forum on a regular basis. I did however monitor the 'Doing Earth Science' forum closely. That's where students shared their prior experience, reported their observations, and synthesized the topics as pertinent to their respective practice. For example, students were guided with these key questions:

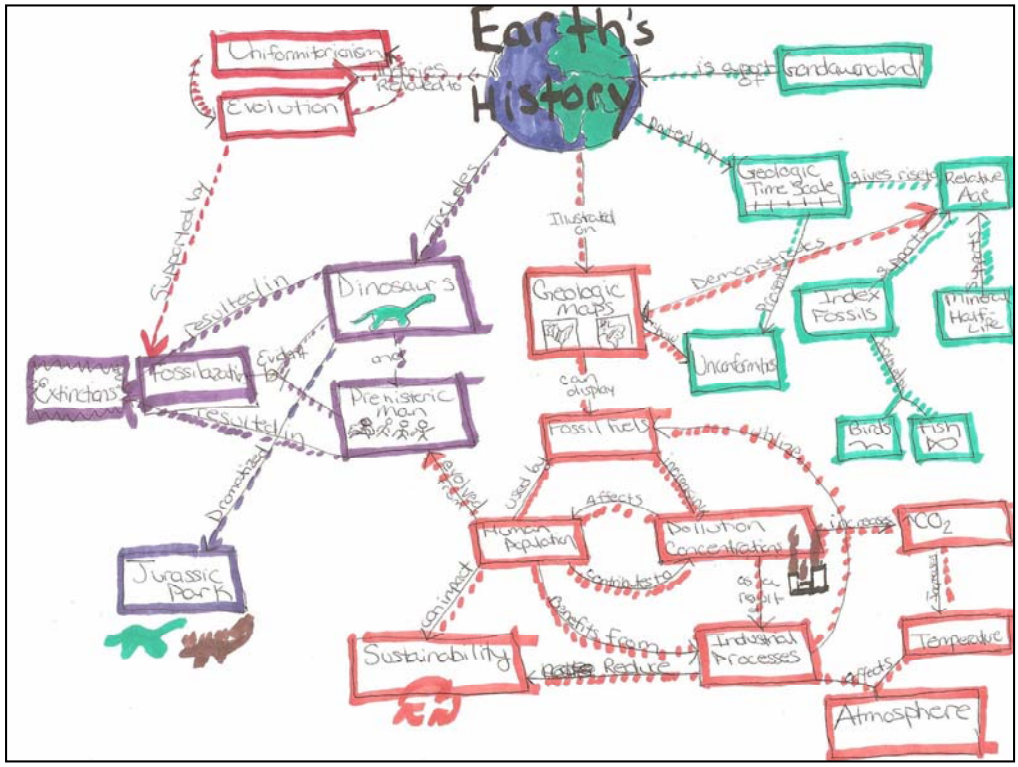
1. What 'caught your eye' as you experienced the Texas state park via the video tour?
2. How do the Texas state map(s) support your observation?
3. When might some of the activities/resources in the *lesson folders* help your students?

Excellent questions were posed and vetted references were cited to further enrich the on-going discussions.



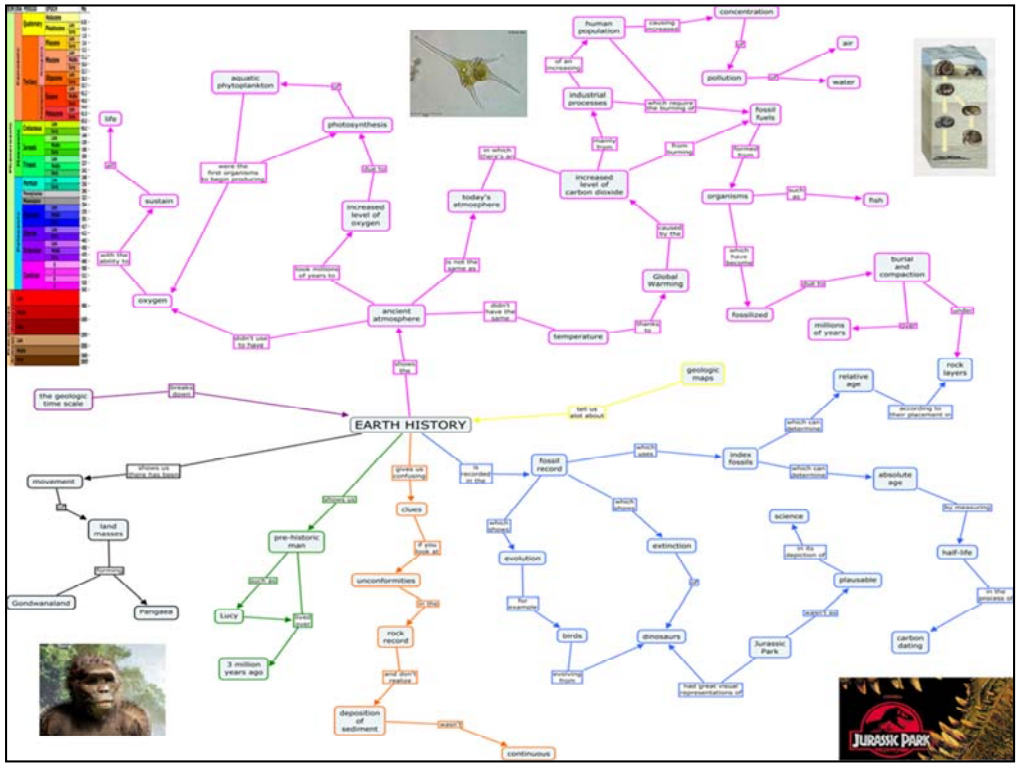
Before students could access the unit exams (which are really important to teachers), they had to submit an open-ended assignment. Part of my action research, students were given full freedom to create these Visual Thinking Networks that demonstrated their present knowledge and understanding of the relationships among certain keywords I provided. These designs were uploaded as PowerPoint files.

My colleague and I will soon report a statistically significant gain in abstract reasoning abilities (which play into problem-solving) thanks to this learning strategy!



One student emailed me this: *I want to make a correction to my physical geology VTN. I hope that I can do this even though I have already submitted it. I had a 'light bulb' moment when I woke up this morning. I missed the weathering and erosion question on the assessment because I didn't quite have the two concepts straight in my head. I get it now.*

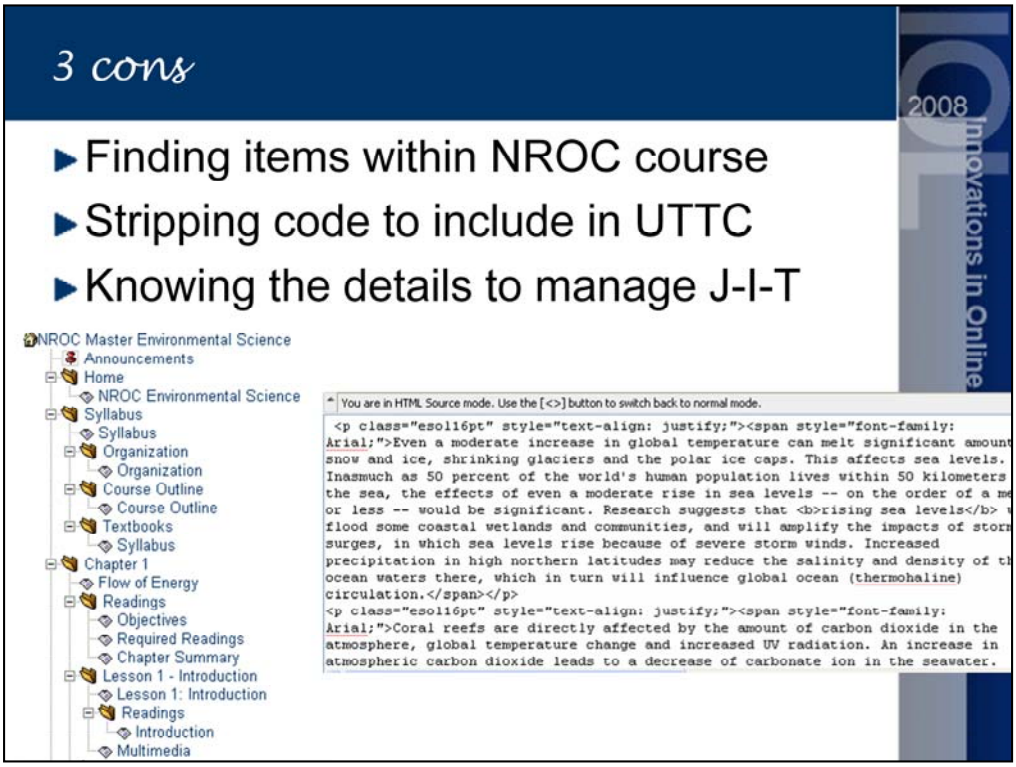
The submissions ranged from the most basic representations…



… to shockingly complex creations with animation and audio in some cases!

Another student posted this: *In my first (maybe in most of my) VTNs I found it hard to express connections with single verb links. In order to stop doing this (I kept getting the same comment from Dr Nix about this!) I ended up adding a lot of new concepts in my VTN; nouns that were not provided in the list but which helped me better organize and express my general understanding of the topic.*

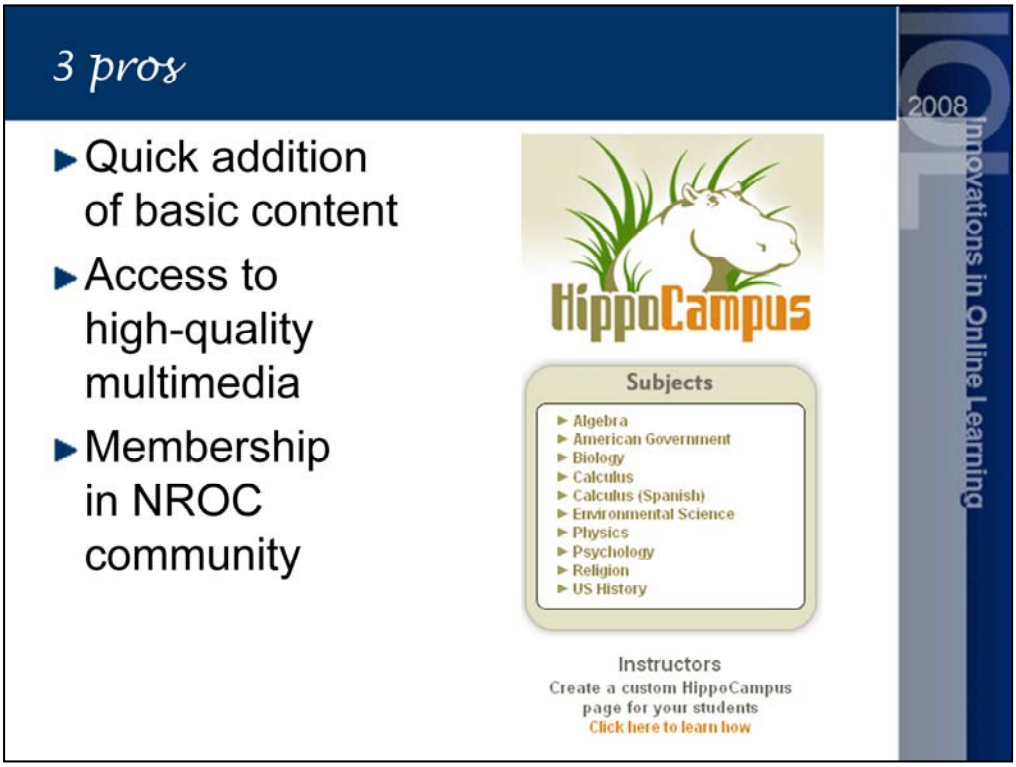
Students took responsibility for their own learning – and transferred that knowledge into their respective classrooms!



In conclusion, the 3 cons I encountered were:

1. Finding items within NROC course (so I marked items I liked on a printed course map),
2. Stripping code to include in UTTC (so I figured out what to globally replace in a notepad), and
3. NOT knowing the details to manage technical issues Just-In-Time (so I let UTTC and NROC do what they do best)!

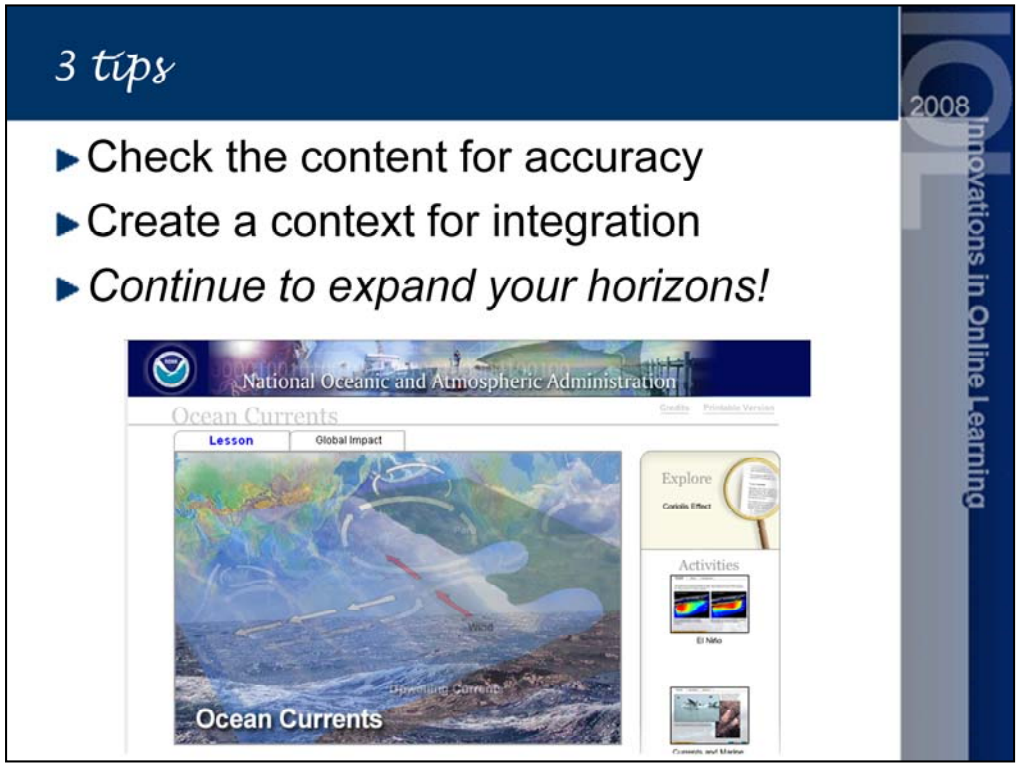
Clearly, these can be overcome with experience and further development of the NROC resources.



The 3 pros I'd taut are:

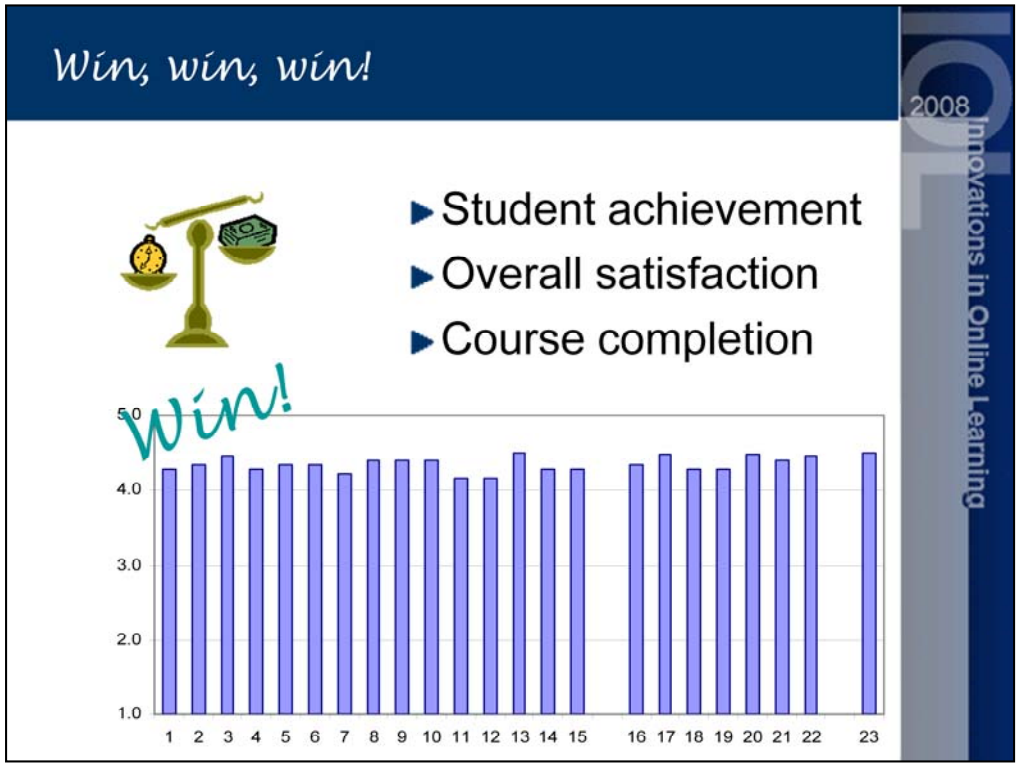
1. Quick addition of basic content
2. Access to high-quality multimedia
3. Membership in NROC community

I participated in several webinars throughout the semester. And I'm happy that my students can use many of these resources in their own classes through MITE's HippoCampus.



When you're ready to give it a try for yourself, please keep these 3 tips in mind:

1. Check the content for accuracy,
2. Create a context for integration, and
3. Continue to expand your horizons *with whatever works for you!*

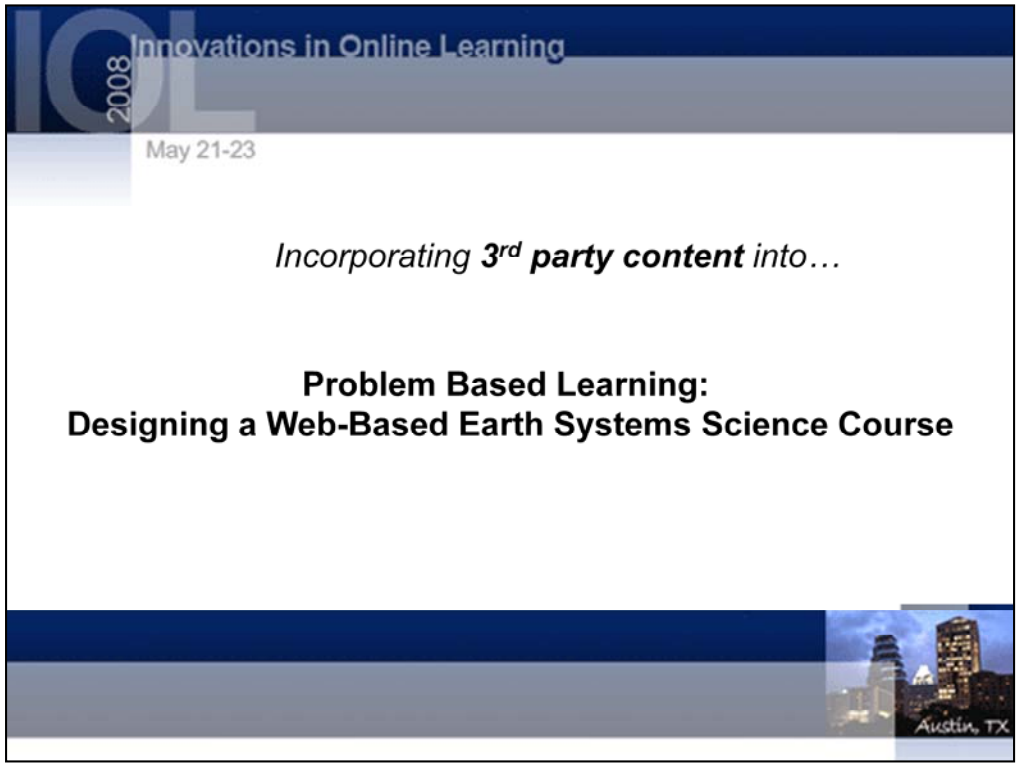


As finally evidenced in the high ratings on the end-of-course survey, all in all, incorporating 3rd party content into SCI 5325 was a great success in terms of:

1. Student achievement
2. Overall satisfaction
3. Course completion

Now that I'm empowered to teach soundly online, I can go to the mountains whenever!

Just let me know if you have questions or want to see more of the course later.



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2008 Innovations in Online Learning

Problem-Based Learning

- Problem-based learning (PBL) is an instructional method that challenges students to think critically by analyzing an ill-structured scenario that reflects a real-world problem.
- Students work cooperatively in groups to search for solutions, using appropriate learning resources and sample investigations to find solutions.

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Problem-Based Learning (2)

- The PBL method is incorporated into the design of a web-based, integrated Earth System Science lecture/Advanced Earth Systems Science lab. It is a conceptually-based course that focuses on an interdisciplinary view of the Earth and emphasizes the manner in which all systems of the Earth control and influence each other.
- Licensed third party content from the National Repository of Online Course (NROC) will be used as sample resources and investigations in the PBL lessons.

Example - Hurricanes and Global Climate Change

- In this PBL lesson, students will conduct an Earth systems science analysis (atmosphere, hydrosphere, lithosphere, and biosphere) of hurricanes and global warming.
- Students will also examine the causes and effects of hurricanes and global warming, the connection or lack of connection between hurricanes and global warming, and the cyclical nature of hurricanes within Earth's weather patterns.

Goals

Goals for this PBL lesson include the following:

- Experience problem-based learning by examining your prior knowledge and personal understandings about hurricanes and global warming;
- Build knowledge about hurricanes and global warming with your group members by determining "what you need to know" and developing a problem statement that looks at recommendations and solutions;

Goals (2)

- Build an Earth Systems Science (ESS) model that looks at ESS relationship statements (e.g., Hurricane Event to Sphere Interactions, Sphere to Sphere Interactions, and the effects of multiple spheres and the event in causal chains);
- Create a cohesive summary that details your group's recommendations/solutions about the connection between global climate change and recent hurricane intensity/frequency.