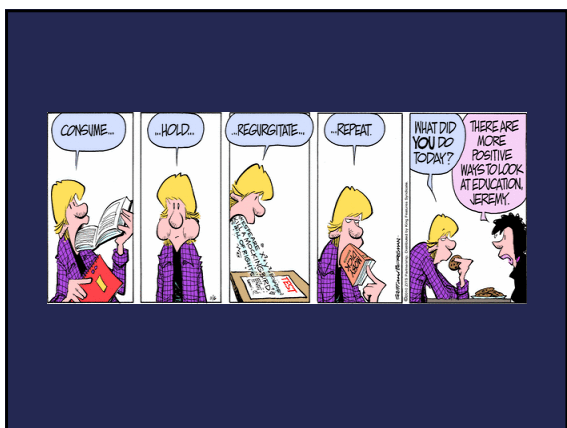


“I have to really think:”
Using Inquiry-Based Learning to Encourage Student Exploration and Discovery

Our Plan for Today

1. Describe Inquiry-Based Learning to a colleague
2. Consider at least one aspect of your teaching that could be more inquiry focused
3. Increase our excitement about teaching

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“Data Splash”

Replicates “knowledge-making”

- Look at some raw data
- Speculate as to its significance

Source: William Roberson and Christine Reimers 2008

Moving to Inquiry-Based Learning

- Convert a procedural question (“Explain how different kinds of stress are involved in breaking objects)...
...to an inquiry (thought experiment): “What will happen and how?”
- **Authentic inquiry:** Student is asked to “set” the problem, judging which factors are likely to be relevant, and what information is missing or has to be assumed.

Source: William Roberson and Christine Reimers 2008

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Inquiry-Based Learning

- The art of teaching and engaging students by asking critical questions that encourage critical thinking.
- An array of classroom practices that promote student learning through guided and, increasingly, independent investigation of questions and problems for which there is no single answer” (Lee, 2004).
- All inductive teaching methods are a form of inquiry-based learning (Prince and Felder, 2007).

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Inquiry made simple

Question <-----> data <-----> significance

Start anywhere:

- What hypothesis can we make to explore the question?
- What data will be generated?
- What does this data signify?
- What question generated this data?
- What kinds of data were used to generate this significance?
- What new questions are generated by this significance?

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The Power of Brainstorming

- Encourages participation
- Share our ideas
- Make predictions
- Follow up with analysis
- Find out what is supported by evidence

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Reading as Inquiry

Read the article and make notes.

What idea is being suggested in this reading?

What questions emerge from the reading?



How do you encourage inquiry through reading?

- What could this imagery mean?
- How is this new detail related to earlier themes/readings?
- How does this new detail affect my thinking?
- What else would you want to know in order to believe the claims that the author makes?
- Where would you want to challenge the author's inferences?
- Where do you see impreciseness of language or information provided?

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Writing as Inquiry

1. Free writing ("I see...I wonder")
2. Think/pair/share
3. Photo essays
4. Illustrations
5. Reflections (Know, Want to know, and Learned)
6. Portfolios
7. Research papers

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Creating Visual Representations

- Evidence matrix
- Concept maps
- Mind maps

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Structured Writing

- Objective: To foster critical thinking by identifying important concepts, synthesizing course material, and engaging yourself and other students with the material.
- Designed to encourage a structured, but insightful inquiry into the course materials
- QCCQ – Quotation, Concept/Idea, Comparison/Relation, and Question
- A detailed grading rubric is provided with an example.

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