Designing an Effective Teaching Activity

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2015 Workshop on Teaching with the Neotoma Database
What are the Characteristics of an Effective Teaching Activity?

• (Tell me)
Articulate Learning Goals

What do you want students to be able to DO at the end of the activity?

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<th>Knowledge Dimension</th>
<th>Cognitive Dimension (version of Bloom’s Taxonomy)</th>
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Articulate Learning Goals

Consider the following goals. Which ones are the best? How could the others be improved?

• Interpret historical climate change based on mammal, ostracode, and pollen data.
• Describe the response of vegetation to climate change during the transition from the last glacial to the present interglacial in North America, 15,000-8,000 B.P.
• Predict how an increase of 3 degrees Celsius would affect the distribution of evergreen forests in the US.
• Estimate and explain the uncertainty associated with ostracode data in the Neotoma database.
Motivate learning

• Why did you choose this particular teaching activity?
• Why is it important for students to learn whatever they are going to learn from it?

Plan to articulate your reasons to your students!
Build on Students’ Existing Knowledge and Skills

• What prior knowledge will the activity assume?
• What skills will it assume?
• What knowledge and skills will need to be taught in the context of the activity?
Engage Students in Constructing Their Own Knowledge

- Description?
- Comparison?
- Modeling?
- How much scaffolding/support will you need to provide?

[Diagram showing transitions from Watching to Open-ended discovery]

Most direction → Most independence
Build in Time for Reflection/Synthesis
Make it Easy (or at least possible) to Assess Student Learning

What do you want students to be able to DO at the end of the activity? How will you know whether they can do it or not?
What are the Characteristics of an Effective Teaching Activity?

- Clear, measurable learning goal(s)
- A “hook” – the reason the activity and its goals are important
- Direct relationship between the activity components and the learning goal(s)
- Well-situated: it builds on (and deepens) students’ current knowledge and skills
- Actively engages students in DOING science, constructing knowledge
- Includes time for reflection/synthesis
- Allows instructor to assess student learning