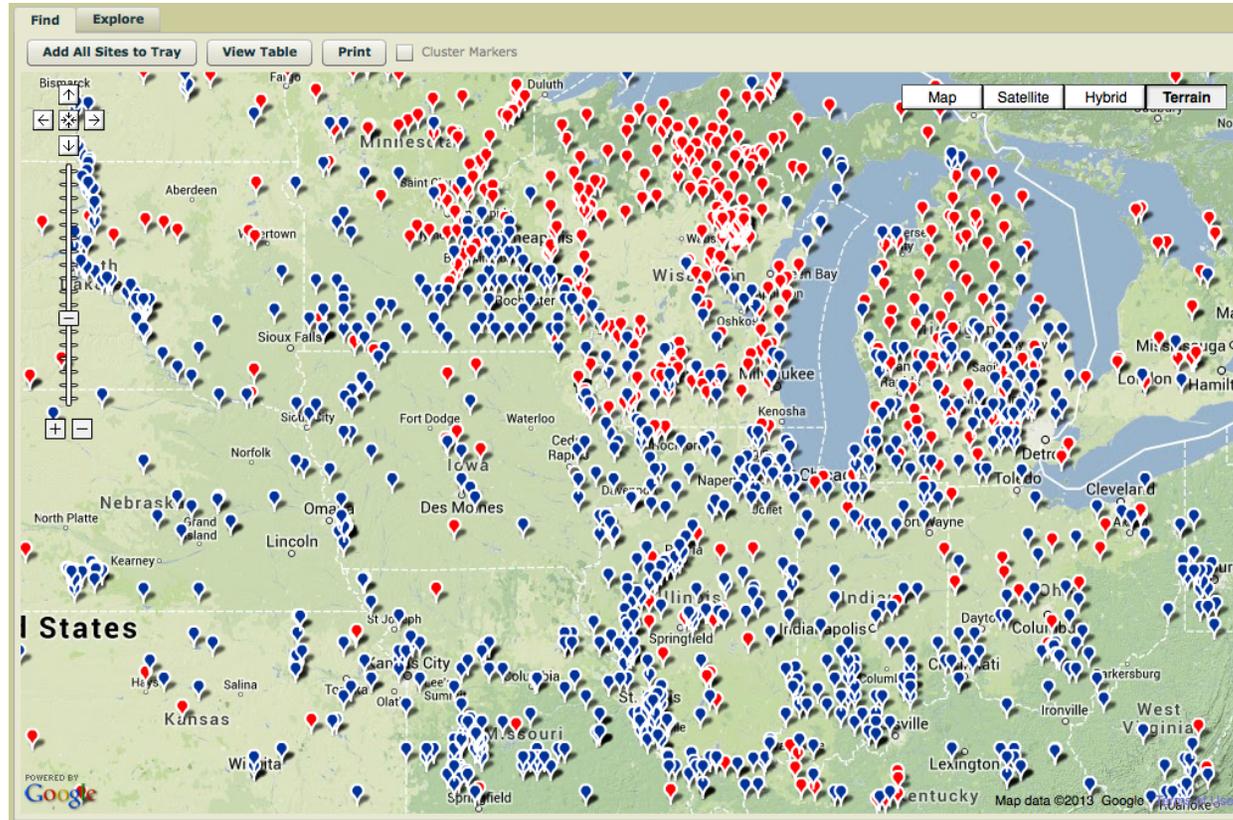


Designing an Effective Teaching Activity



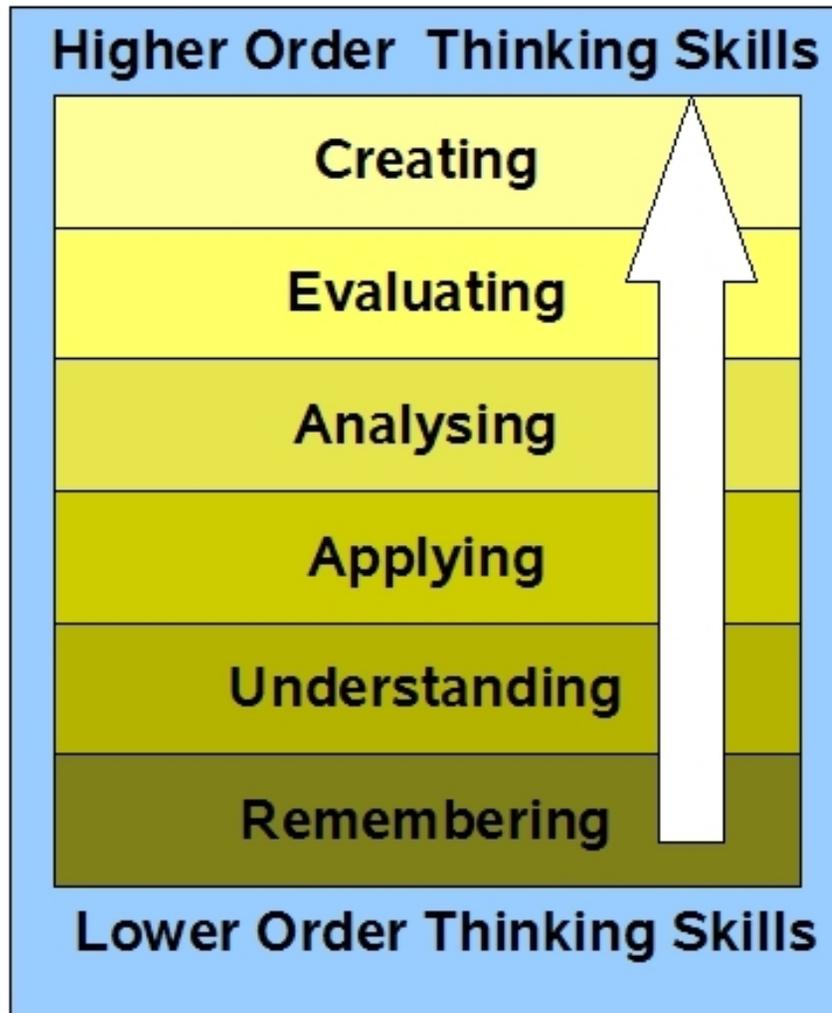
Carol Ormand, SERC, Carleton College
2015 Workshop on Teaching with the Neotoma Database

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?



Bloom's Revised (2001) Taxonomy.
From: *A Taxonomy for Learning, Teaching, and Assessing — A Revision of Bloom's Taxonomy of Educational Objectives*; Lorin W. Anderson, David R. Krathwohl, Peter W. Airasian, Kathleen A. Cruikshank, Richard E. Mayer, Paul R. Pintrich, James Rath and Merlin C. Wittrock (Eds.)

Articulate Learning Goals

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

	Cognitive Dimension (version of Bloom's Taxonomy)					
Knowledge Dimension	Remember	Understand	Apply	Analyze	Evaluate	Create
Facts	list	paraphrase	classify	outline	rank	categorize
Concepts	recall	explain	demonstrate	contrast	criticize	modify
Processes	outline	estimate	produce	diagram	defend	design
Procedures	reproduce	give an example	relate	identify	critique	plan
Principles	state	convert	solve	differentiate	conclude	revise
Metacognitive	use	interpret	discover	infer	predict	actualize

Table from <http://www.nwlink.com/~donclark/hrd/bloom.html> using Clark & Chopeta (2004) and Clark & Mayer (2007).

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!



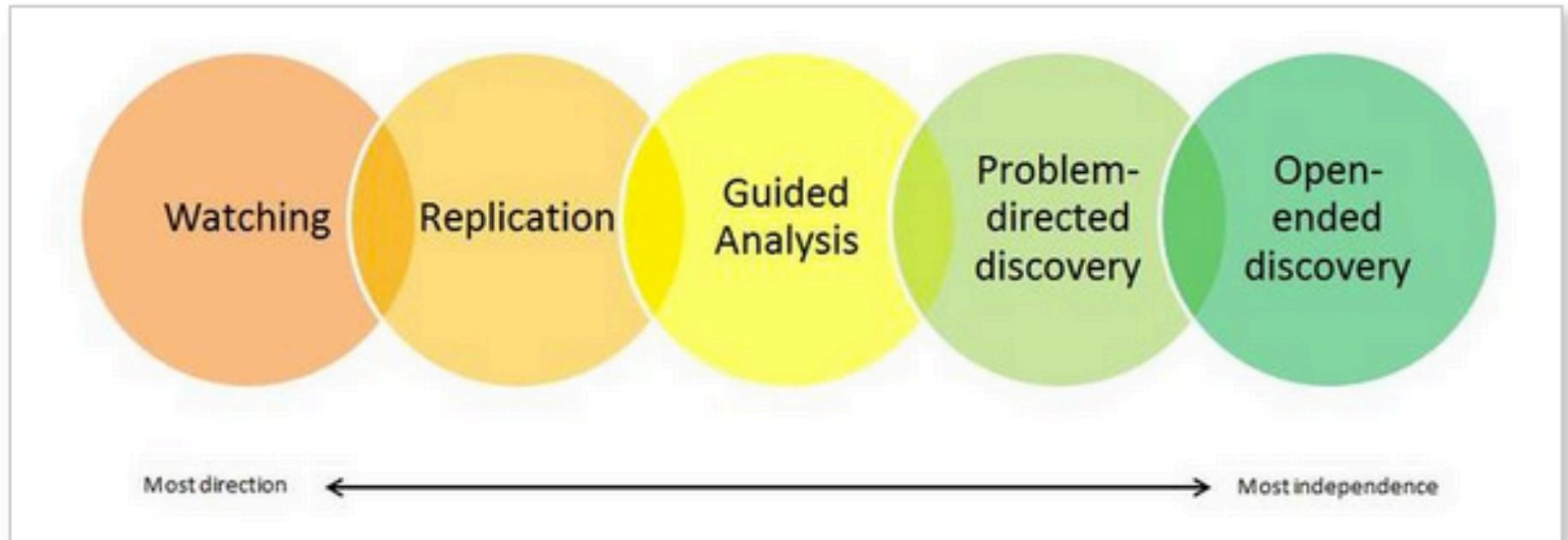
Build on Students' Existing Knowledge and Skills

- 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?



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