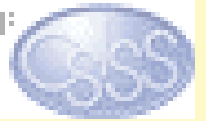




**Spatial Perspectives on Analysis
for Curriculum Enhancement**

Hosted By:



Evaluating Spatial Learning Outcomes

2005 SPACE workshop

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Stacy Rebich



Two types of assessment to think about

- **Student learning assessment**

- both **formative** and **summative**
- How can we create assessment tools that will:
 - enhance learning?
 - make it clear to students what is important and expected?
 - evaluate changes in spatial thinking skills?
 - provide evidence of the effectiveness of a spatial approach to social science?
 - provide feedback necessary for curriculum enhancement?

- **Course assessment/evaluation**

- How can we be sure that our assessment provide the feedback necessary for curriculum enhancement?
- Coordinated assessment and curriculum development are vital for improving learning

Some barriers to learning that can be mitigated through appropriate assessment

- Information is not presented in a format that is compatible with individual's skills.
 - Students who are visual learners will have difficulty if crucial information is presented only in spoken form, and auditory learners will have difficulty when information is presented only visually, etc.
 - Socially-mediated construction of meaning
- Students are not motivated or inappropriately motivated.
 - **Mastery goals** result in the most meaningful learning
 - encouraged by criterion-referenced grading
 - **Performance goals** do result in learning, but often not to the level desired
 - encouraged by norm-referenced grading

How can we minimize some of these barriers to learning?

- **Limited prior knowledge and preconceptions**
 - Formative and ongoing assessment
 - Awareness of most difficult concepts
 - Difficult due to conflict with preconceptions?
 - Watching for synthetic mental models resulting from combination of naïve and scientific models
- **Different learning styles**
 - Multimedia presentation
 - Multimedia and multidimensional assessments
- **Motivation**
 - Building on prior knowledge helps students feel capable
 - Illustration of personal relevance
 - Instruction embedded within a problem/question scenario – illustrates relevance
 - Ownership of learning process – self-direction and self-assessment
 - Insight into the nature of the discipline, the nature of science and measurement

Some useful assessment strategies

- Matrices, pro-con grids, categorizing grids
- Preconception check
- Focused listing
- One minute paper
- Muddiest point
- Concept maps/diagrams
- Analytic memo
- Problem recognition
- Classroom response systems
- Student-generated test questions and answers
- Primary Trait Analysis (rubrics)
- Self-reflection and self-evaluation
- Peer evaluation
- Portfolio assessment
- Project prospectus

See *Classroom Assessment Techniques*
in SPACE library

How can we evaluate students' mastery of spatial concepts and skills?

- Typical learning objective:
 - “Introduce students to spatial concepts and spatial analysis”
 - Can we break this down? Which specific concepts and skills?
 - Once we have identified particular concepts and skills as learning objectives, how can we evaluate whether or not students have reached those objectives?
- **Ideas/suggestions for addressing these questions?**