Educating the Spatial Thinker

Spatial-Local Forum
Corwin Pavilion
June 6, 2010
What is Spatial Thinking?

• Thinking about space
Using Space to Think

- **Spatial Metaphors:**
  - We climb the corporate ladder
  - Feel down when we are depressed
  - At the end of a relationship we go our separate ways
New Interest Spatial Thinking

spatial intelligence is “not just undersupported but underappreciated, undervalued, and therefore underinstructed” (p. 5)
Evidence for the Importance of Spatial Abilities in Science

- Longitudinal studies of gifted students.
  - Spatial ability predicts participation in science over and above SAT Math and Verbal

- Project Talent data (400,000 randomly sampled students). Spatial ability at age 13 predicts
  - Getting degrees in Math and Science
  - More predictive of higher achievements (Ph.D)
  - Pursuing a scientific occupation

(Shea, Lubinscki & Benbow, 2001; Wai, Lubinski & Benbow, 2009)
Why is Spatial Thinking Important NOW?

The age of “Big Data”
• Sensing spatially-referenced data at a much faster rate than we can consume

The age of “Digital Earth”
• New technologies for visualizing and navigating data, including GIS and virtual environments

New capabilities, but also new challenges
Spatial Thinking in the “STEM” Disciplines

Science
Technology
Engineering
Mathematics
“STEAM” Disciplines

Science
Technology
Engineering
Arts
Mathematics
“STEAHM” Disciplines?

Science
Technology
Engineering
Arts
Humanities
Mathematics

UCSB is Spatial!
Spatial Thinking Across the Curriculum at UCSB

Spatial Studies Minor, Introduced January 2011

• **Students**: (so far) from 12 different departments

• **Approved Courses**: From 26 different departments (e.g., Art Studio, History of Art & Architecture, Economics, Earth Science, Geography, Mathematics, Statistics, Physics, Psychology)

• **Freshman Seminar**: Thinking Spatially in the Arts and Sciences, Fall 2012
Educating the Spatial Thinker

Speakers:

Dr. Kim Kastens, Adjunct Professor of Earth and Environmental Sciences, Lamont-Doherty Earth Observatory, Columbia University

Dr. David Bodenhamer, Professor of History and Adjunct Professor of Informatics Executive Director of the Polis Center, Indiana University – Purdue University

Dr. Krysztof Janowicz, Assistant Professor in Geography, Specialist in Geographic Information Science, University of California, Santa Barbara

Dr. John P. Wilson, Professor Spatial Sciences and Sociology University of Southern California

Discussant

Dr. Michael Goodchild, Professor of Geography, University of California, Santa Barbara