Models of Curriculum Development for Spatial Thinking across the College Curriculum

Spatial @ USC

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Spatial Thinking across the College Curriculum Specialist Meeting
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Institutional setting

- University of Southern California
  - Lofty aspirations
  - $6 billion campaign
  - **Aggressive campaign to hire transformative faculty**

- Responsibility center management
  - Role of central administration & core service units (ITS | Esri campus license)
  - Role of individual schools & deans
  - Sharp separation between rhetoric & action
  - Replication is a popular strategy

Glorya Kaufman gives USC millions to build a dance school

The arts patron's groundbreaking gift for the USC Glorya Kaufman School of Dance will establish the first new endowment-funded school at the university in 40 years
Geography → spatial transition

• Timeline
  ○ Geography Department closed June 2010
  ○ Spatial Sciences Institute created July 2010
  ○ New mission | New people | New facilities

• Guiding principles
  ○ Spatial is cross-cutting (spatial literacy)
  ○ Geographic information science ! Geospatial technologies ! Scientific discovery form a critical scholarly enterprise (cross-disciplinary collaboration)
  ○ Spatial sciences combine fundamental science and enabling technologies (like statistics?)

• Three-pronged approach
  ○ Administration | Faculty | Students
Spatial @ USC

- Three new undergraduate courses
- Ten new graduate courses
- New Minor in Spatial Studies
- New B.S. in GeoDesign
- New Online M.S. & Graduate Certificate Programs in Geographic Information Science & Technology
- New Ph.D. in Population, Health & Place
- Enhanced support for spatially enabled research & teaching across USC
Spatial Pathways for Undergraduate Students

Bite-sized chunks
Multiple entry & exit points
Multiple pathways
Spatial @ USC ...

- **New 2 unit courses**
  "Workshops in Spatial Analysis"
  - GIS for Business
  - GIS for Design
  - GIS for Environment
  - GIS for …

- **New 4 unit courses**
  - The Water Planet
  - Maps & Spatial Reasoning
  - Principles of Geographic Information Science
  - Spatial Sciences Practicum

- GIS help desk

**Continuously build fresh go-to-market strategies**

- What is going on in this trade area?
- What are the general retail trends in this area?
- Where are the competitors?
- Who are those competitors?
- Where is business being generated?
- Where are the highest traffic volumes?
- Where are people living?
- Where are they going to work?
- How are they traveling to work?
Geographic information infrastructure

- Contains knowledge describing natural and human environments on Earth
- Includes multiple components
  - Data
  - Data models that provide structure to the data
  - Models and analytic tools that show predictions or suitability
  - Geospatial workflows
  - Metadata, which describes the aforementioned components, and is key to sharing, discovery and access
- Relies on web & mobile environments to make these ways of thinking about the world more accessible
Spatial Pathways for Graduate Students

Core geographic information science foundation
Enabling geospatial technologies
Multiple applications
Spatial @ USC …

- Core courses
  - Concepts for Spatial Thinking
  - Spatial Databases
  - **GIS/GPS Field Techniques**

- Electives
  - Spatial Analysis & Modeling
  - Geospatial Technology Project Management
  - GIS Programming & Customization
  - Remote Sensing for GIS
  - Cartography & Visualization
  - Web GIS
  - Mobile GIS

- Master’s Thesis
GPS/GIS Field Techniques

Spatial data acquisition

Catalina GPS

Spatial data quality
Typical Catalina workflow …

- Three instructors plus 12-20 students per class
- Travel to island on Monday and leave the following Sunday
- Repeat this class 9-12 times per year
Student projects ... map potential fire hazard severity
The GIST success story …

- Partnership with Embanet-Compass Knowledge Group
- Relies on asynchronous learning model
- Uses virtual desktops & servers for “hands-on” components
Selling spatial ... 

Representation, Pattern, Process

Integration, Synthesis

Spatial literacy, competence, & intelligence!
Questions ...

Project for Public Spaces

Placemaking plans

City-wide strategic plans

Capacity building and cultural change

Placemaking 101
Lighter
Quicker
Cheaper

http://www.pps.org/

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