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Building a Framework for Indiana Geospatial Education

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Building a Framework for Indiana GeoSpatial Education

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I. Purpose of Discussion
II. Higher Level Goals
III. Detailed Justification for GIS/GeoSpatial Learning
IV. Major Action Steps
V. Action Step 1 & 2: Survey Draft Participation ? Mapping Learning Objectives and Geospatial Data
I. PURPOSE

Why an Indiana geospatial technologies K-12 educational framework?
   To address state GIS workforce capacity and innovation, and to
   elevate Indiana as a prominent national leader in spatial data education:
   knowledge, skills, applications, research, and provider.

Why are we having a state GIS Conference?

What critical skills are we seeing here at our conference that
   • may be transferable to the K-12 arena,
   • are seen as vital, and
   • are measured in terms of math, science, or social sciences learning?

What funds ---- that are already utilized in geospatial technology fields for a
variety of data acquisition, management, and research ---- could reduce learning
costs for K-12 students and educators in regards to professional development
and curriculum creation?
II. HIGHER LEVEL GOALS

1. Making K-12 GIS/geospatial learning sustainable
2. Effective teacher training
3. Identifying geospatial data champions
4. Identifying Indiana state government spatial data advocates
5. Identifying university K-12 educational advocates
6. Intentional K-12 acknowledgement of GIS use and learning collaboration on spatial data in terms of math, science, reading and social sciences learning
Challenges to adding GIS or geospatial learning to the existing K-12 curriculum:

- Lack of time: school day and school year
- Lack of funding for professional development
- Lack of funding to create dynamic and appropriate curriculum materials
- Energy to make it sustainable
- Need geospatial data champions at local, city, and state levels
- Indiana state government spatial data advocates... Where are they?
- University geospatial advocates to support K-12 education transfer
- Need MORE K-12 learning collaboration regarding spatial data in terms of math, science, reading/writing, and social studies/sciences learning

Paradigm shift >>> changes that the state political machinery might not be ready to address and citizens might not understand ... Connecting real, 21st Century employment knowledge, skills, applications, and research to the K-12 curriculum.
Everyone Benefits from a geospatial technologies perspective from a data learning perspective

- Agricultural community
- Business
- Economics
- Employee pipeline
- STEM education pipeline
- Local, City/County, State, Federal Government
- Citizens

Now is the time to grow the cause of purposeful and intentional K-12 geospatial technologies education in Indiana!
Next biggest issues in Geospatial Learning ...

- Drones as learning and data dissemination tools
- Using public spatial data to build a greater spatial literacy
- Educator training and educational acceptance of spatial cognition

Assets already available ...

- GIO, IGIC, INView, IGS, IN Spatial Data Portal, INMap, Polis Center, GENI, ICSS, ICEE, IESTA, HASTI and more
- K-12 curriculum inclusion - IN and national (Social Studies/Geography, English/Language Arts, Science, Technology): late '90's to present
- GeoSpatial Technologies for IN Educators and Students website: http://www.iupui.edu/~gst
- Curriculum
- IN/ESRI Statewide Site License for K-12 Purposes
- Amazing research and applications at post-secondary institutions and within government and private businesses: DNR, IGS, IDoT, ISDH...
- YOU, YOU, YOU
IV. MAJOR ACTION STEPS

- A survey that connects educators to the Indiana geospatial workforce √
- Crowd sourced research effort with Purdue, IUPUI & other to promote GIS/geospatial learning on a long-term basis √
- Establish a network for university, state agency, and education stakeholders for more in-depth action in the next year √
- Utilize area GIS Days to disseminate geospatial teacher training or summer data science engagement opportunities √
- A collaboration to map learning objectives to geospatial data √
- An educational recognition of spatial cognition as learning modality via the National Academy of Sciences ≈

√ = doable working together
≈ = challenging to improve networking

To share ideas and become engaged, contact Dewayne Branch at bbranch@purdue.edu

THANK YOU!
Do you want to assist with

1. creating (or participating in) a short survey to capture information about connecting educators & IN geospatial technology specialists?
2. collaborating to map IN learning objectives/academic standards to geospatial technologies?
Framework for GeoSpatial Technologies Integration: GIS Resource Specialist as Facilitator, Purdue University as a Model

- **Researchers**
  - Ag, Engineering
  - Education, Economics
  - Atmospheric Physics
  - (Larry Biehl – MultiSpec)

- **Developers & Creators**
  - software/applications, students, faculty, projects, colleagues
  - (Jinha Jung – LiDAR & Google)

- **IN Geographic Information Officer**
  - local, city, county, state, federal, Governor, elected officials
  - (Daniels, Biehl)

- **ESRI**
  - SAVI
  - INMap

- **Geospatial Tools**
  - professionals

- **GIS Resource Specialist**
  - (Branch)

- **Educators**
  - professional development, curricula creation, connect to faculty & research, bridge between h.s. students & university
  - (McCutcheon High School)

- **Elected officials & decision-makers**
  - Daniels, Klinker

- **Students**
  - middle & high schools, post-secondary, classroom experiences, field work, visits to/from university access to opportunities
  - (Steve Smith – IESTA)

- **Education Outreach Organizations**
  - GENI, ICEE, IESTA, HASTI, ICSS, (Sanson, Smith, Branch, Jones)