Preparing Students For GIS Careers

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Presentation Outline

- **Kyle Tredinnick** GIS in primary and secondary education
- **Lesli Rawlings** Training teachers and preparing post-secondary students pursuing GIS careers
- **Nathan Watermeier** Advice to students & summary
- **Audience feedback**

GIS in Primary and Secondary Education

Using GIS as a Learning Technology

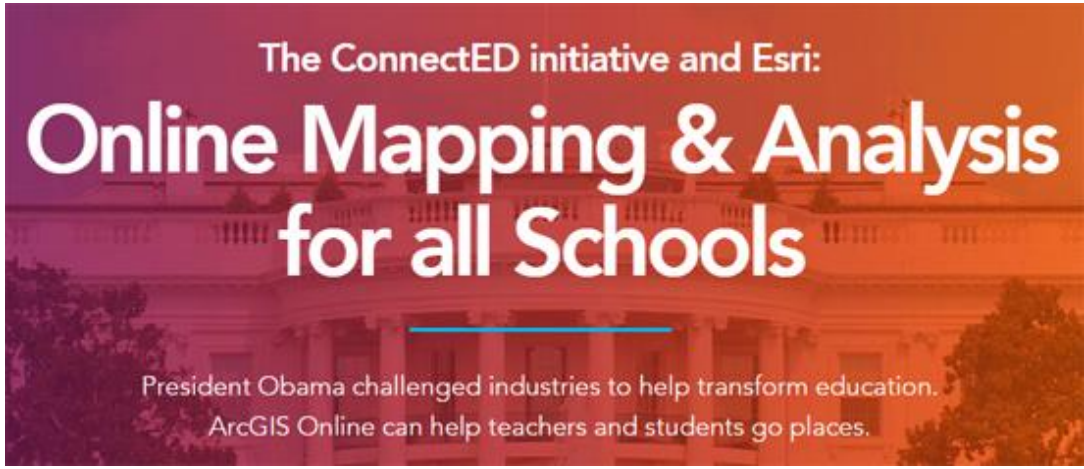
Suggested Programs

- GIS can be incorporated into just about any class. It especially opens up the possibilities for cross-curricular projects.
  - **ST1.1** The STEM school/program supports non-traditional student participation through outreach to groups often underrepresented in STEM program areas.

- There is a bit of a learning curve with GIS
  - Use the ArcGIS Online Skill Builder for an idea of what type of skills are required for GIS and to decide what types of activities to incorporate in with your students

Esri's ConnectED Initiative

- Esri has provided $1 billion worth of free access for K-12 Institutions to ArcGIS Online
  - Renewed through 2019
- Institutions can sign up for free institutional accounts
  - Given 1,000 credits to use that can be refreshed annually
- Esri has also developed pre-made lessons for Geography, US History, Earth Science, Environmental Science, and 4th Grade Interdisciplinary classes
- www.esri.com/connected



Free ArcGIS Online School Account

US K12 schools can request a free account for instruction. (Terms and conditions)

Request a free school account →

Suggestions for Teachers New to GIS

Get Training

- Biggest challenge to beginning a course is getting teachers with appropriate training
  - Esri Mooc Lessons
  - Esri Training
  - learn.arcgis.com/en/

Connect with a GeoMentor

- GeoMentor program allows teachers to connect with local GIS experts
  - Technical help
  - Ideas for projects and community integration
  - http://www.aag.org/geomentors

Suggested Setup

- Computer Lab or Bring Your Own Device
  - ArcGIS is Cloud Based
  - A computer with a mouse is recommended

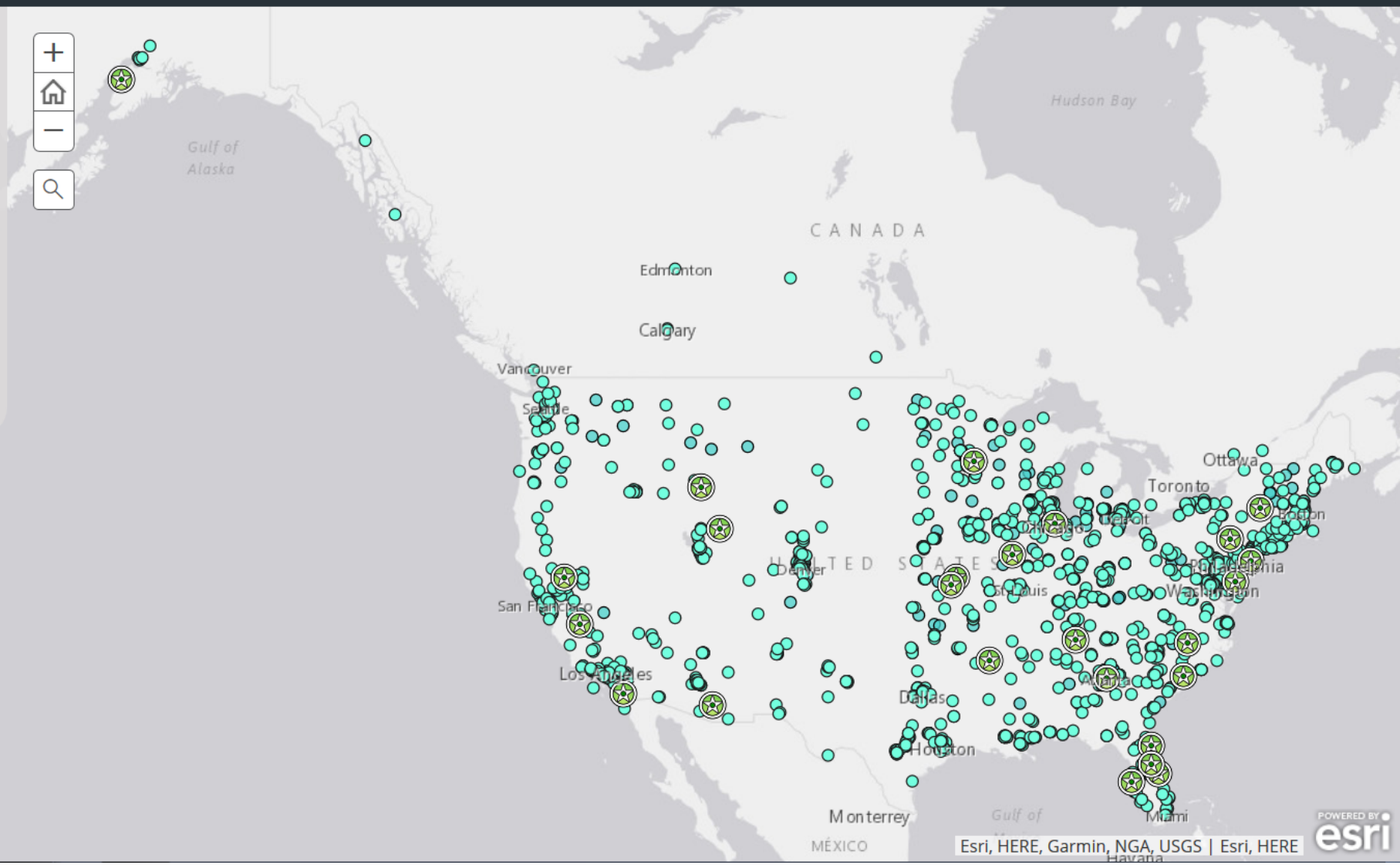
US K12 GIS

GeoMentors Willing to Help Educators

Many GIS professionals want to help educators and youth use GIS, and are willing to be a GeoMentor. These GIS users have provided links for learning about and connecting with them. Zoom in and click for details. Large symbols have **stories** attached.) To list yourself as a GeoMentor, or to enter a mentoring story, see the separate participate page.

GeoMentor Stories

- Featured Case Study
- Reported Engagement



Integrative Learning

- GIS can be used in any subject area

- In STEM the idea of project based real-world learning matches with the capabilities of GIS
  - Below are three examples of GIS Learning Environments that focus on an integrative project based real-world learning experience

My Community, Our Earth

earth XPLORERS

Training Teachers and Preparing Post-Secondary Students Pursuing GIS Careers

Home Gallery Map Scene Groups

Sign In

The Nebraska Educational GIS (NeEdGIS) Initiative is a group of people and organizations who believe geospatial technologies have the power to enhance K-12 education in the state of Nebraska. It is also the initiative supporting the implementation of the educational state license for Esri's ArcGIS software.

Additional teacher resources are located at: Esri K12 GIS Organization, ConnectED, Esri Education Org, Esri EdCommunity Portal, Esri Education Industry , and the ArcGIS Book for more on GIS in education.

What is GIS? | Request a Free K-12 GIS Site License | Teacher Workshop Information | Teacher / Administrator Tools | ESRI GeoInquiries | NE Story Map Examples | GeoMentors | Story Map Contest

What is GIS

GIS stands for Geographic Information Systems and is commonly referred to as a software system that assists in creating, editing, managing and analyzing spatial data. When you think of spatial data you can think of maps. Most maps today are made with a GIS. GIS is widely used by both the private and public sectors to make informed decisions in a variety of ways. For example, a city may determine the best location for a new fire station, library, or school and a business may map out their customers to determine the most efficient route of delivery. These are just a few examples of how GIS is used every day.

Teacher / Administrator Tools

Below are links to various tools and instruction documents that will assist teachers and/or ArcGIS Online (AGO) administrators with implementation. In many cases the teacher is the ArcGIS Online administrator. However, in some instances this is a separate school designated IT staff member.

Teacher Resources

Story Map Lab (Abbreviated Instructions)

Story Map Lab (Full Instructions - 5-23-17)

Snap2Map Guide for Making Story Map Tour

Plant Hardiness Geoinquiry Lab

Web Data for ArcGIS Online Maps (USDA Ex.)

Wetland Lab (data and instructions zip package)

Ethanol Site Lab (data and instructions zip package)

ArcGIS Online SkillBuilder from ESRI

Various Instruction Documents from ESRI

AGO Administrator Resources

Adding Students to ArcGIS Online

Creating a Group and Adding Students

Administrative View

Admin Tools for ArcGIS Online (Free)

Wayne State College

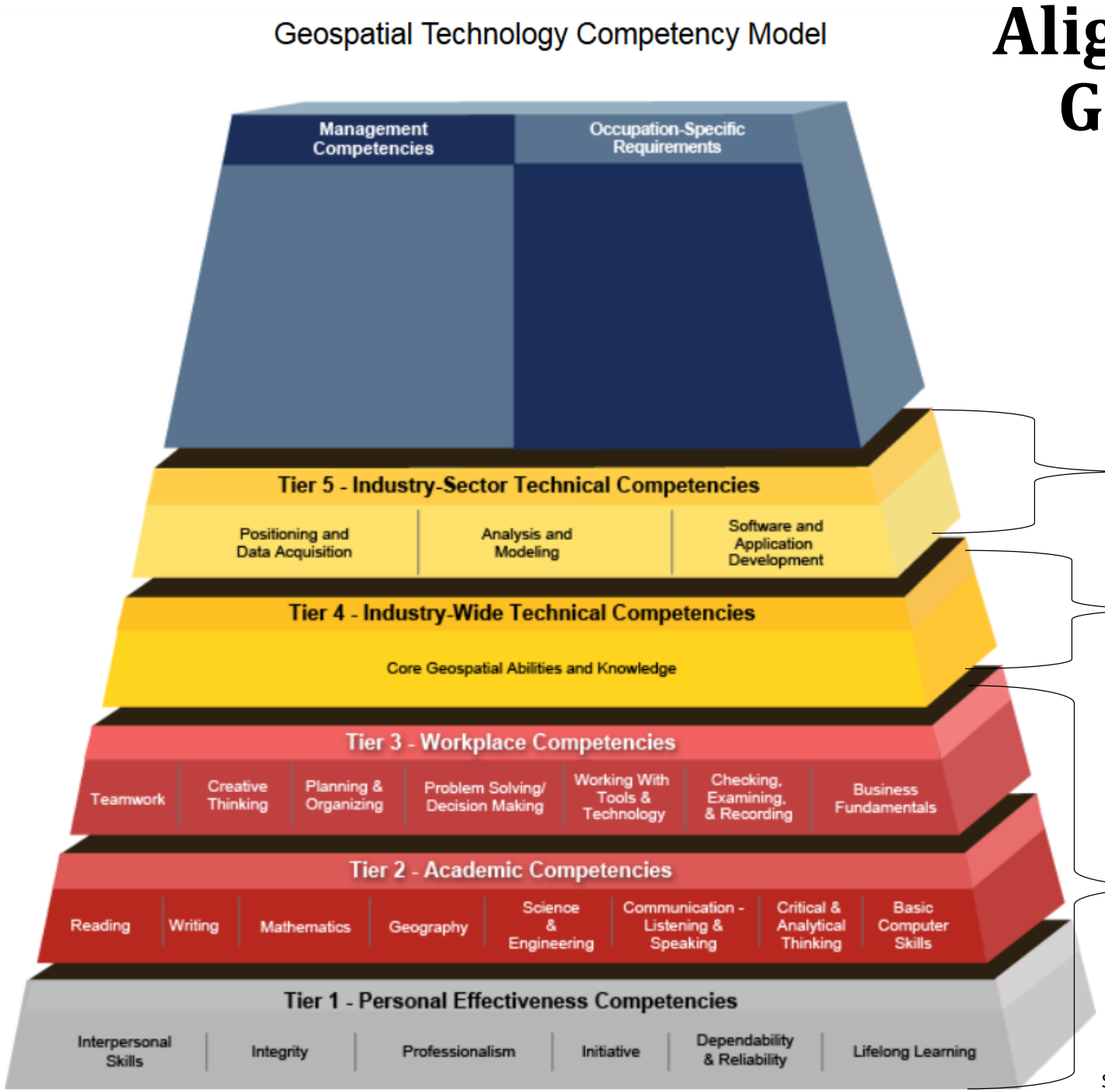
Minor in Geospatial Technology (21 hours)

A minimum of 12 of the 21 hours must be upper level (300-400) courses. A minor must include a minimum of 12 hours unduplicated by the student's major (s).

GEO 120 World Regional Geography **or**
GEO 130 Physical Geography 3
425 Urban Geographic Information Systems..... 3
430 Geographic Information Systems 3
435 Computer Mapping 3
440 Remote Sensing..... 3
CSC 150 Programming Fundamentals I..... 3

Plus 3 hours of electives selected from the following courses..... 3
CSC 160 Programming Fundamentals II (3)
365 Scripting Languages (3)
CIS 366 Introduction to Data Base (3)
SSC 319 Statistics for the Social Sciences (3)
GEO 497 Geography Internship (3)

Aligning Curriculum to the Geospatial Technology Competency Model



Tier 5 Positioning & Data Acquisition
Analysis and Modeling

Tier 4 <u>42 Critical Work Functions</u>
Earth Geometry & Geodesy
Data Quality, Positioning Systems, and
Programming/Application Development

Tiers 1-3 Inter-disciplinary Foundation Skills

Source:
https://www.careeronestop.org/competencymodel/competency-models/geospatial-technology.aspx

Summary and Advice

Questions?