Geoethics in GIScience education

Why teach ethics?

- Raising geo-awareness and the use of geotechnologies in society.
- Rising concerns about AI, mapping, and society.

Ethics is too important to be relegated to the end of a course.

Ethics should be integrated into any course that asks "where" and where communication matters.

How to teach ethics effectively?

In interesting, practical ways through examining data through hands-on activities, inquiry, reflections, discussions, and presentations.

- Is your map true, helpful, inspiring, necessary, or kind?
- Show a bad map
- Data quality and accuracy
  - Imagery must also be viewed critically—it could be intentionally offset from vectors or selectively offset from vectors or selectively remove items, such as moving vehicles.
  - Key information may be left out of the metadata can only be resolved by talking to the data creator with an old-fashioned call.
- Fake geographies
  - Creating weather is possible in ArcGIS 3D Scenes.

Resources for teaching ethics in GIS

- [GISEthics.org | Case studies (psu.edu)](#) (David DiBiase)
- [Dara Seidl | EthicalGEO](#) (Geoprivacy video series)
- Gigapixel images
- [GISCI > Ethics > Code of Ethics](#) (GIS certification Institute)
- [A white paper on locational information and the public interest](#) (AAG GeoEthics)
- [A vision for Equitable Data](#) (The White House)
- [SciDataCon](#) (Data Ethics and the UNESCO Recommendation on Open Science)

Critical thinking activities

- Assign students different search engines to research the same topic.
- Choose different countries and discuss the stereotypes they discover, how often they appear in searches, and how they are related to cultural, economic, and historical forces.

- Have students use Google Earth, Bing Maps, Google Maps Street View, or a similar tool to find images that document where a celebrity, politician, or public figure lives or works.
- Is my map "right"? Justify the method used for map making.
- Is it fair to turn the world into data? Is GIS the way to help? (not necessarily "solve")

Enhancing Qualitative Social Science Research with GIS

Case studies

- [The Voices of Grand Canyon (arcgis.com)](#) (a story map)
- [Attitudes and Experiences with Electric Vehicles (arcgis.com)](#) (a story map)
- [Atlascine (concordia.ca)](#) (Sébastien Caquard)

Research articles

- [Full article: Cartographic Design as Visual Storytelling: Synthesis and Review of Map-Based Narratives, Genres, and Tropes (tandfonline.com)](#) (The Cartographic Journal, 2020)
- [Framing the Days: Place and Narrative in Cartography: Cartography and Geographic Information Science: Vol 35, No 1 (tandfonline.com)](#) (CaGIS, 2013)

Activities

- [Map meaningful places in your community | Learn ArcGIS](#) (ArcGIS Online)
- [Crowdsource student hangouts | Learn ArcGIS](#) (ArcGIS Online)
- [Social Science Resources | Maps for Social Science Research (esri.com)](#)
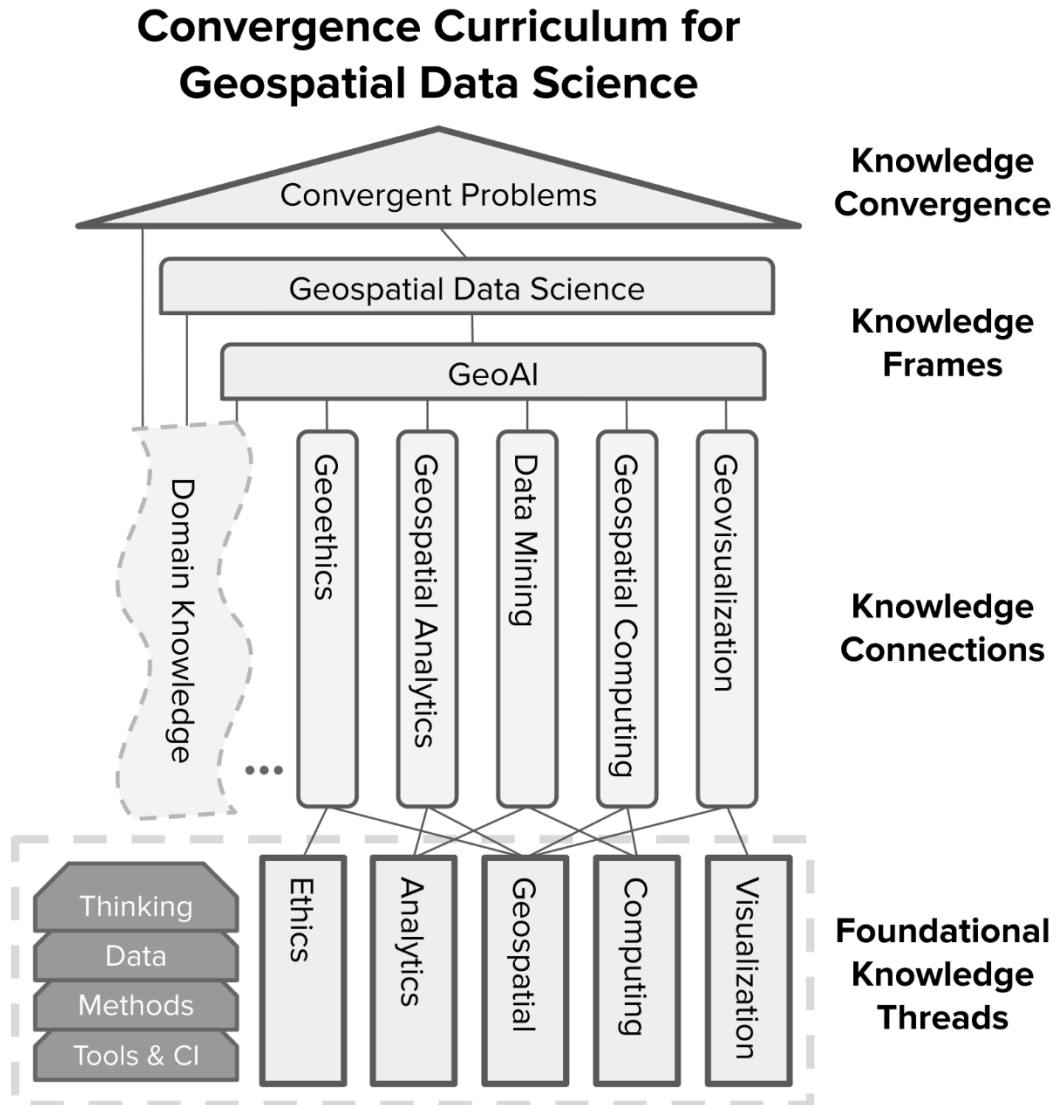- Draw childhood neighbourhood maps

Convergence Curriculum for Geospatial Data Science

Link: [Convergence Curriculum for Geospatial Data Science : I-GUIDE](#)

Discussion

- What changes should we be embracing for geospatial data science? (programmatic, audience, skills, knowledge bases, data types)
- "Introduction to GIS" has been the bedrock of our field since it's formation. Should it be for geospatial data science?

- How to bridge the gap between domain knowledge and GeoAI methods?

Convergence Curriculum for Geospatial Data Science

Convergent Problems — **Knowledge Convergence**

Geospatial Data Science

GeoAI — **Knowledge Frames**

Domain Knowledge ... | Geoethics | Geospatial Analytics | Data Mining | Geospatial Computing | Geovisualization — **Knowledge Connections**

Thinking | Data | Methods | Tools & CI | Ethics | Analytics | Geospatial | Computing | Visualization — **Foundational Knowledge Threads**

Other topics

The Future of University Cartography Labs: Challenges, Opportunities, and Collaborations

https://aag.secure-platform.com/aag2024/solicitations/57/sessiongallery/7599

- Collaborate on proposals
- Workstations, desks for students
- Host workshops, mapathons

- Develop long-term financial support

Learning and growing as an effective teacher

- [Teaching at Its Best: A Research-Based Resource for College Instructors, 5th Edition | Wiley](#)
- [Small Teaching: Everyday Lessons from the Science of Learning, 2nd Edition | Wiley](#)
- [Make it Stick: The Science of Successful Learning – Retrieval Practice](#)
- [How Learning Works: Eight Research-Based Principles for Smart Teaching, 2nd Edition | Wiley](#)
- [Engaged Teaching: A Handbook for College Faculty - The K. Patricia Cross Academy (kpcrossacademy.org)](#)

Discussion

- Which textbook(s) do you use in your GIS courses?
    - [GIS Fundamentals](#)
    - [Making Maps: Third Edition: A Visual Guide to Map Design for GIS (guilford.com)](#)
    - [How to Lie with Maps, Third Edition, Monmonier (uchicago.edu)](#)
    - [GIS: A Computing Perspective - 3rd Edition - Matt Duckham - Qian (Chay (routledge.com)](#)
- How can we effectively teach geoethics? How can we incorporate geoethics throughout our GIS courses, rather than just at the end?
- When should we introduce open-source solutions like QGIS and R in our GIS courses?
- What about ArcGIS Online and the dashboard?
- At which level would it be appropriate to introduce project-based learning in GIS courses? Are projects suitable for intro GIS courses?
- What regional datasets do you use, and how to incorporate those into student projects?

References

[My workshops and presentations at the 2024 AAG Geography Annual Meeting - Joseph Kerski, Ph.D. - GeographerJoseph Kerski, Ph.D. – Geographer](#)

[Spatial Reserves | Spatial Reserves (wordpress.com)](#)

[Home | EthicalGEO](#)

Chris McMorran, Using technology to promote critical thinking in the classroom (AAG 2024)

[Convergence Curriculum for Geospatial Data Science : I-GUIDE](#)

[Welcome to GEOG 486 - Cartography and Visualization](#)