Highlights from chat during Dec 5, 2025 webinar Generative AI and the Geoscience Classroom

https://serc.carleton.edu/geo_ai/webinar_dec_2025

Quotes extracted and clustered using Gemini 3.0

Part 1: Learnings from Breakout Sessions

Participants shared what they learned regarding the use of AI tools in their teaching.

Accessibility & Inclusivity

- "I just found out that AI can put text to your images in .ppt for visually impaired students."
- "AI making draft alt-text for images"
- "Can't wait to try out PowerPoint slide check"
- "Using AI for alt-text for images is another suggestion that I see I will try!"

Course Preparation & Content Generation

- "Gen AI is helpful for brainstorming ideas for courses, topics, and classes."
- "Using it for creating ideas for an AI-proof assignment."
- "AI has helped Neil find Canadian examples to supplement his course."
- "I learned about using AI to brainstorm topics for lecture, particularly when developing a new course"
- "Using AI to help create additional examples that may be more relevant to a specific location"
- "I learned that AI is useful to find your words to address difference audiences"
- "Want to try loading my own PowerPoints/Assignments to see how clear the information is."
- "How to use AI to create effective assignments"

Data Analysis & Coding Support

- "Use AI to assist with and enhance pattern recognition routines to analyze images such as thin sections, SEM/EDS elemental maps, LiDAR landscape images, etc."

- "One member mentioned AI data pattern recognition such as lidar. That might interesting to have intro students do to help them get started with landscape analysis."
- "I was intrigued by the ways gen AI was being used to help students unfamiliar with coding to generate and troubleshoot code."
- "I was just thinking about a messy data set i have and how to get students to think about how to use it and have that prompt the conversations around ethics and appropriate uses…"
- "Use of AI to support inquiry and discovery-based class projects. In my case, this would be accessing large petrologic and geochemical databases to understand magmatic processes, petrogenesis, etc."
- "I learnt how to use AI to create a simple and worktable of piad software for data analysis"

Strategy & Institutional Approaches

- "I thought it was interesting talking about how different institutions are approaching AI - NMT is not currently being very intentional about it, but another person in my group was in a department that was doing book clubs etc. and approaching it more intentionally"
- "how to use AI effectively and beneficially for students"
- "We discussed the need for fundamental skills before students (or we) can assess AI output (ex for coding)"
- "AI should be seen as a means and not an end. As we manage humans (as human capital development) in our workspace, we also need to learn to manage AI tools on daily basis, starting from using right prompts, analysising the response before usage."

Part 2: Learnings from Discussion on AI & Students (Approx. 65 Minutes)

Participants shared learnings and strategies regarding student interaction with AI and assignment design.

Fieldwork & Hands-On Activities (The "Unreplicatable")

- "Hands-on activities in-person presentation of their findings"
- "AI can’t replicate actual field trips or field work."
- "We were discussing about focusing on more hands-on activities and perhaps flipped classrooms"
- "independent student research projects that are place based are harder for AI to replicate"

- "For now, maybe not never, field teaching still needs to be hands on. GenAI is not great at understanding field relationships (yet)."
- "Field skills can't yet be replicated by AI"
- "Thinking about how place-based CUREs affords both a reason for wanting to collect their own data and that gen-ai wouldn't really be that useful of a tool for that process even if it can be used in other ways around the project perhaps intentionally…."
- "AI cannot replace field-based learning. AI cannot replace fostering and importance of relations and interactions among students."
- "Yes field and hands on also can't use AI when you're in person and actually collecting data"

Critical Evaluation & Reflection

- "Critiquing AI generated answers."
- "Have students explicitly use AI in multiple ways as part of an assignment but then also reflect on that us. In particular, how did the use of AI affect their learning and did it save them time."
- "What AI can't do well: critically evaluate outcomes. I would want my students to take a step back and look critically at any AI generated outcome and ask "Does this make sense" in the context of what is known (about earth)"
- "I modified an assignment to require that students use AI and reflect on its impact on their learning, as well as its impact on content quality and effort/labor. This assignment forced students to engage with learning outcomes as well as the content."
- "AI results can be a good springboard for teaching/reinforcing critical thinking"

Assignment Design & Assessments

- "I learned some cool strategies for in-class assessments besides testing"
- "A major assignment was changed so that students would work in pairs and they found the students were less likely to use AI in that situation"
- "Heard about strategy of prep assignment outside of f2f with AI permitted, but then in person sans tech to discuss materials for that session."
- "The struggle with finding alternatives for discussion boards for online courses to promote interaction between students and not generative AI responses"

Student Support

- "Have non-native English speakers students use AI to help with summarizing dense papers for easier understanding and to edit/critique their own writing"

“Best Practices Guide”

(presented exactly as generated by Gemini 3.0 from the information above)

Based on the discussion transcript, here is a summary of best practices for integrating AI into geoscience education, categorized by key areas of teaching and learning.

1. Enhancing Accessibility and Inclusivity

- **Generate Alt-Text:** Use AI tools to create draft alternative text for images to support visually impaired students.
- **Check Clarity:** Load PowerPoint slides or assignments into AI tools to check how clear the information is for different audiences.
- **Support Language Learners:** Allow students who are not native English speakers/writers to use AI to scaffold their writing, summarize dense papers, or edit their own work.

2. Course Preparation and Content Generation

- **Brainstorming:** Utilize generative AI to brainstorm ideas for course topics, classes, and "AI-proof" assignments.
- **Localizing Content:** Use AI to find specific, relevant examples for your region (e.g., finding Canadian geologic examples to supplement US-centric textbooks).
- **Creating Data Workflows:** Use AI to create simple workflows or tables for paid software to assist in data analysis.

3. Designing "AI-Resilient" Assessments

- **The "Sandwich" Method:** Assign preparation work where AI is permitted, followed by in-person, tech-free discussions or assessments based on that material.
- **Reflective Assignments:** Require students to explicitly use AI for a task but mandate a reflection on how it affected their learning, the quality of the content, and the effort required.
- **Process Over Product:** Shift focus from final outputs (like discussion boards, which are easily generated) to interactive or scaffolded tasks.
- **Pair Work:** Assign collaborative work in pairs, which may reduce the likelihood of students relying solely on AI.

4. Fostering Critical AI Literacy

- **Critique and Verify:** Teach students to critically evaluate AI-generated answers, asking "Does this make sense?" in the context of known geological facts.
- **Pattern Recognition:** Use AI to assist students with pattern recognition in data sets like LiDAR, thin sections, or SEM/EDS maps to help them get started with analysis.
- **Code Support:** Encourage students unfamiliar with coding to use AI to generate and troubleshoot code for data analysis.
- **Manage Tools:** Teach students to manage AI as a tool by focusing on using the right prompts and analyzing responses before usage.

5. Emphasizing the "Unreplicatable" Human Element

- **Prioritize Field Work:** Lean into field trips and hands-on data collection, as AI cannot currently replicate field relationships or the physical act of collecting data.
- **Place-Based Projects:** Utilize independent, place-based student research projects (such as CUREs) where students collect their own data, making generic AI output less useful.
- **Human Connection:** Focus on fostering relationships and interactions among students, something AI cannot replace.