Using AI in Non-Writing Courses: Practical Strategies for Faculty

The use of artificial intelligence (AI) in teaching is not limited to writing-intensive disciplines. Faculty across STEM, social sciences, education, health sciences, and the arts can integrate AI to support student engagement, conceptual learning, and inclusivity. This handout offers practical, evidence-based strategies for using AI in non-writing courses.

1. Scaffolding Concept Mastery

AI tools like ChatGPT, WolframAlpha, and Elicit can function as on-demand tutors, helping students explore difficult topics.

- *Example*: In chemistry, students can ask ChatGPT to explain acid-base reactions and compare responses to textbook definitions.
- *Why it works*: Encourages active learning and metacognitive reflection.

"AI-enabled tools can support self-regulated learning by offering instant feedback, rephrased explanations, and step-by-step guidance." (Luckin et al., 2016)

2. Generating Practice Problems and Custom Exercises

AI can dynamically generate practice questions, visual analogies, and mock datasets.

- *Example*: In statistics, ChatGPT can generate unique data sets or quiz questions for students to analyze.
- *Why it works*: Reinforces retrieval practice and differentiated instruction.

3. Simulating Real-World Scenarios

AI can simulate decision-making or role-play activities for applied learning.

- *Example*: In counseling, AI-generated client transcripts allow students to evaluate or practice responses.
- *Why it works*: Enables low-cost experiential learning with customizable complexity.

4. Enhancing Visual and Conceptual Thinking

Visual AI tools like DALL·E or mind-mapping generators help students conceptualize difficult material.

- *Example*: In public health, students generate infographics about disease transmission pathways.
- *Why it works*: Supports dual coding (visual + verbal) for stronger comprehension.

5. Promoting Equity and Differentiation

AI tools can support students with language needs, disabilities, or diverse learning preferences.

- *Example*: Students use AI to translate concepts into accessible formats or generate analogies.
- *Why it works*: Enhances inclusion by enabling personalized access to core content.

As Mollick and Mollick (2023) note, "Generative AI offers the potential to differentiate instruction in ways that meet learners where they are."

Best Practices

- Encourage students to critically evaluate AI responses.
- Ask students to document and reflect on how they used AI.
- Design assignments where process matters more than product.

Recommended Tools

Tool	Use Case
ChatGPT	Concept explanations, quiz generation, lab support
WolframAlpha	Math and computation-heavy courses
DALL·E / Bing Image Creator	Visual representation of concepts
Elicit	Research design and experimental planning
BoodleBox	AI documentation and collaborative student reflection

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