The genAI Landscape and Public Health Education

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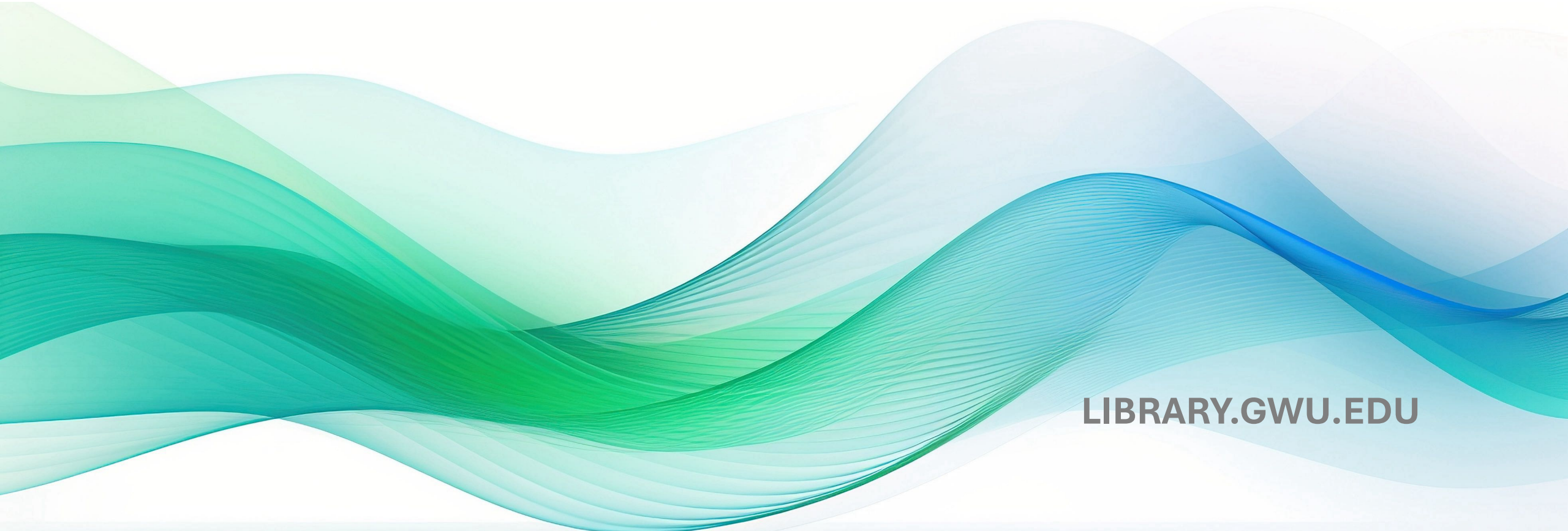

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Nearly 2 years since OpenAI ChatGPT-3

- Fear and anxiety
- Irritation
- Frustration
- Apathy
- Cautiousness
- Curiosity
- Excitement

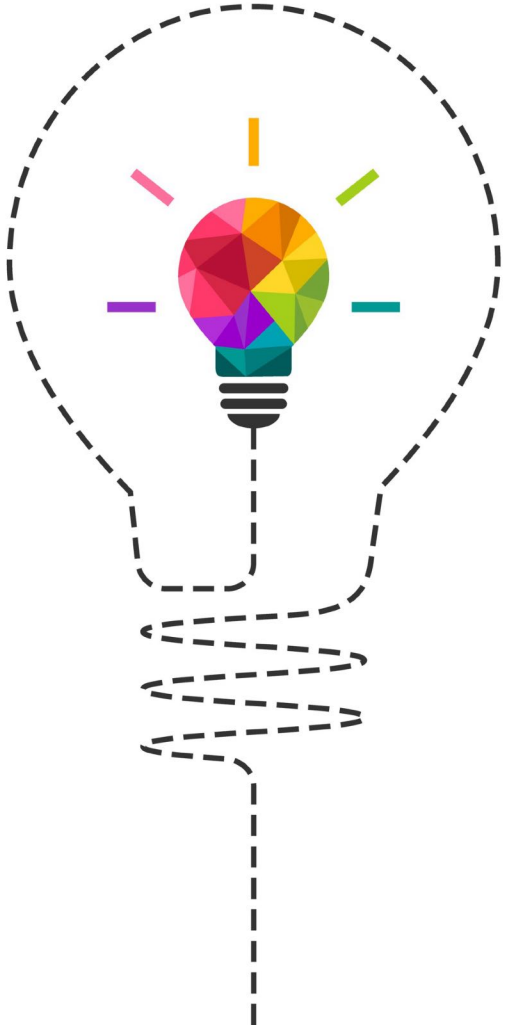
Above all…

Questioning the future of student learning, teaching, and career.

Let me start with a question...

Where I stand (today)

- Human-AI collaboration is the **future** of learning and work.
- AI can help us complete tasks, **discover insight**, and bring some fun.
- I hope for improvements in our **business efficiency**.
- AI is an opportunity to **reimagine** how we teach.
- AI is an opportunity to re-communicate the '**value of learning**'.



Objectives for today

Part 1: Provide a foundation for how to think and work with genAI in teaching.

Part 2: Define and demonstrate communications strategies with genAI tools.

Part 3: Propose ways to use genAI in instructional design.

Part 4: Highlight applications in public health education.

I am assuming that I am providing you a starting point.

Part 1:
A foundation for pedagogy

How to orient yourself to a vision of what genAI may do with you in your teaching practice.

An opportunity to reimagine teaching

Generative AI helps/forces us to critically re-examine how we are teaching and how our students are learning.

GW students are using it. Albeit a bit differently between undergraduate and graduate.

"Revision literally means to "see again", to look at something from a fresh, critical perspective. It is an ongoing process of rethinking the paper: reconsidering your arguments, reviewing your evidence, refining your purpose, reorganizing your presentation, reviving stale prose."

University of North Carolina, The Writing Center

https://writingcenter.unc.edu/tips-and-tools/revising-drafts/

While reimagining and revisioning…

Reflect on your literacies – digital and Artificial Intelligence (AI) – and ask yourself:

- When, where, why, and how to use technologies.
- What is available and how is it evolving?
- What are strategies to generate humanistic outputs?
- What are the questions I should be asking?

AI literacy: A conceptual framework

"AI literacy [is] a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace." (Long and Magerko, 2020)

Long, D., & Magerko, B. (2020, April). What is AI literacy? Competencies and design considerations. In Proceedings of the 2020 CHI conference on human factors in computing systems (pp. 1-16).

What is it?

1. Recognizing AI
2. Understanding intelligence
3. Interdisciplinary
4. General vs. narrow

What can AI do?

5. AI's strength and weaknesses
6. Imagine future AI

How does AI work?

Cognitive systems

7. Representations
8. Decision-making

Machine learning

9. Machine learning steps
10. Human role in AI
11. Data literacy
12. Learning from data
13. Critically interpreting data

Robotics

14. Action and reaction
15. Sensors

How should AI be used?

16. Ethics

How do people perceive AI?

17. Programmability

Some useful capabilities

Generative Artificial Intelligence (genAI) can be used to deepen your teaching as well as enhance the learning experience. Think about ways that more time can be allocated to teacher-student and student-student engagement.

On-going challenges in the teacher-student-AI partnership will be revealing effective uses, communicating ethical applications, and critiquing output.

- Provide explanations to (new) concepts.
- (Re-)create assessment rubrics
- Generate outlines and identify resources for presentations
- Generate visuals – creative and realistic
- Generate synthetic data
- Create large question pools for discussions and quizzes
- Explore, interlink, and summarize research articles
- Provide alternative perspectives
- Generate practice questions and scenarios
- Help meet accessibility guidelines
- Assist in creative thinking and instructional design
- Generate instructional media

Example uses in pedagogy

General	Summarizing large amounts of text	Personalized learning with custom GPTs	Map alternative steps to a solution	Identify data visualization strategies
Learning and media design	Draft course and module learning objectives	Generate and/or revise a weekly plan	Brainstorm learning activities	Draft storyboards, visual designs, and scripts
Assessment and discussion design	Draft assessment rubrics	Create discussion and quiz questions	Generate explanation for correct answers	Create counter arguments
Higher order thinking engagement	Propose 2 or more options side-by-side	Iterate and expand on ideas	Interview you, gather information, pose a solution	Generate practice problems and scenarios

Part 2:
Communications strategies with genAI

Ways to imagine effective communications with genAI.

Decide on your relationship with genAI

Partner or collaborator

def: either of a pair of people engaged together in the same activity

def: a person who works jointly on an activity or project; an associate

Assistant

def: a person who ranks below a senior person

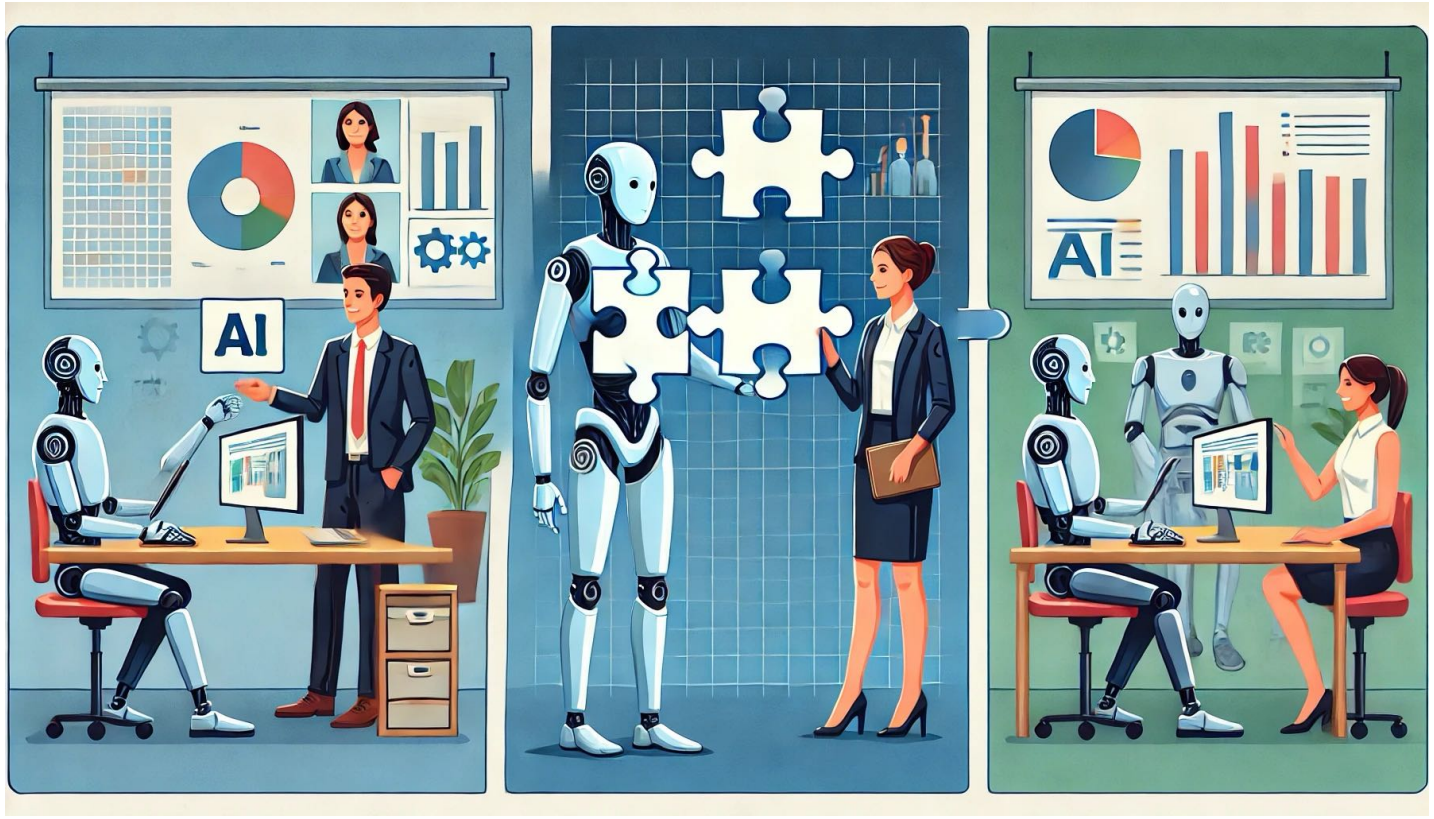
Tool

def: a device or implement, especially one held in the hand, used to carry out a particular function

ChatGPT-4o’s idea

Prompt:

“I am working on a presentation for some university faculty who teach public health and want to communicate to them a visual concept of how we work together. I know that some people see you as a tool. And some people see you as an assistant. I however see you as my partner. Will you create an image with 3 panels that shows how we partner together? The left panel should show you and I as partners, the middle panel should show you as an assistant, and the right panel should show you as a tool.”



Partner or collaborator | Assistant | Tool

Seven partnerships

	Framework	How I see it
Mentor	Providing feedback	Providing absent guidance and expertise
Tutor	Direct instruction	Receiving (personalized) instruction
Coach	Prompting metacognition	Managing learning regulation
Teammate	Increase team performance	Providing viewpoints and work assistance
Student	Receive explanations	Assisted self-directed learning
Simulator	Deliberate practice	Practice applying knowledge
Tool	Accomplish tasks	Generating (needed) materials

Mollick, Ethan R. and Mollick, Lilach, Assigning AI: Seven Approaches for Students, with Prompts (September 23, 2023). http://dx.doi.org/10.2139/ssrn.4475995

Examples pedagogical partnerships

Mentor	Research guidance	Career planning
Tutor	Personalized learning paths	Personalized Q&A sessions
Coach	Peer-review and feedback	Goal setting
Teammate	Group problem solving	Collaborative writing projects
Student	Self-assessment	Learning journals
Simulator	Scenario-based learning	Role playing
Tool	Language learning	Idea generation

Guidelines for partnership communication

General

- Speak/write as you would to a human.
- Consider assigning a persona.
- State the topic clearly and give specific context.
- Define the output you expect – quantify if possible.
- Chunk large queries into smaller parts.
- Ask for an explanation.

Reflect and iterate

- Refine and re-ask. Begin with, “How about thinking of ___ this way... <describe>”
- Change your style of asking questions.
- Walk away, restructure ideas, and try again.
- **Try different large language models (LLMs).**

Part 3:
Using genAI in instructional design

Envisioning an effective role of genAI in the learning design process.

Reasons to use genAI in instructional design

Students:

- Look for experiences that are meaningful and authentic.
- Recognize that genAI will be part of their careers.
- See genAI as potentially helping.
- Need to see genAI use demonstrated.

Teachers:

- Can help you refresh content more frequently.
- May introduce new ideas and perspectives.
- Can be a launching pad and time-saver.
- Create opportunity to learn with students.

Only a human can shape and react to a human learning experience.

Recognize genAI limitations

Instructional design **by a human** can…

- Match appropriate theory with human and environmental conditions.
- Analyze existing materials to match with contexts.
- Identify ethical, legal, and bias dimensions.
- Generate human solutions to human learning problems.
- Design to draw out human emotion.

High-level:

Use genAI as thinking partner

Doing ID: Center of the learning environment

- **Learner-centered** – individual information processing
  - How can AI help me plan activities and collaboration?
- **Knowledge-centered** – connecting prior and incoming information
  - How can AI generate activities that activate prior knowledge and bolster knowledge acquisition?
- **Assessment-centered** – acquiring necessary information
  - How can AI provide guidance, create questions, and generate feedback?
- **Community-centered** – sharing of information
  - How can AI help design environments to promote social interactions?

Ref: Designing for Education with AI (July 2024, US Department of Education)

Low-level:

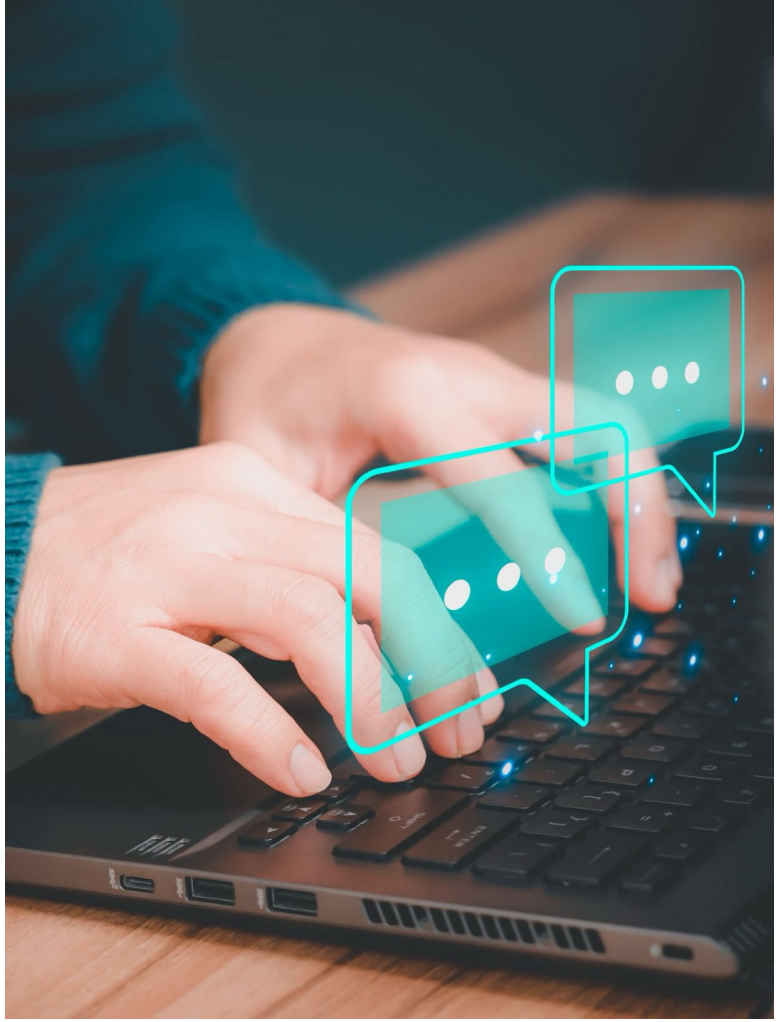
Use genAI as a task-oriented partner

Doing ID: Ways genAI can help

- Assessing student assignments
- Assisting in administrative tasks
- Creating images or visualizations
- Creating simulated or synthetic datasets
- Creating tutoring or student guide resources
- Designing course materials
- Developing personalized lesson plans
- Generating audio for lectures and materials
- (Re-)outlining the week or course ahead

Part 4:
Applications in public health education

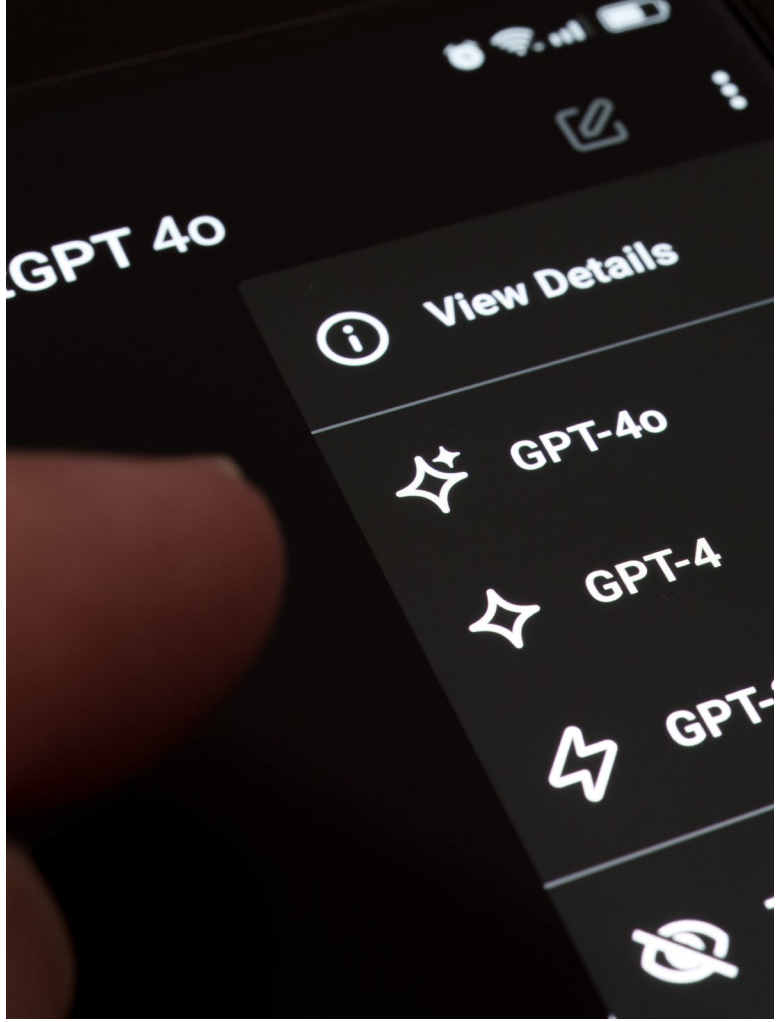
Example uses of genAI in public health teaching.



Orienting myself (1/2)

An example of getting started

“I'm working on a presentation for some faculty in public health in the coming weeks and I need help creating some examples of generative AI use in their field. The title of this presentation is "The genAI landscape and public health education" and it has 4 parts. Part 1 provides a foundation for how to think and work with genAI in teaching. Part 2 defines communications strategies with genAI. Part 3 proposes ways to use genAI in instructional design. And part 4 highlights applications in public health education. I'm stuck on part 4 because it is not my area of expertise. What are some ideas that I may demonstrate as ways faculty in public health may use genAI in their teaching?”



Orienting myself (2/2)

ChatGPT-4o feedback

- Case study simulations
- Personalized learning pathways
- Data analysis interpretation
- Automated feedback on assignments
- Ethical and societal implications and debates
- Virtual health campaigns
- Interactive learning modules
- Role-playing and scenario planning

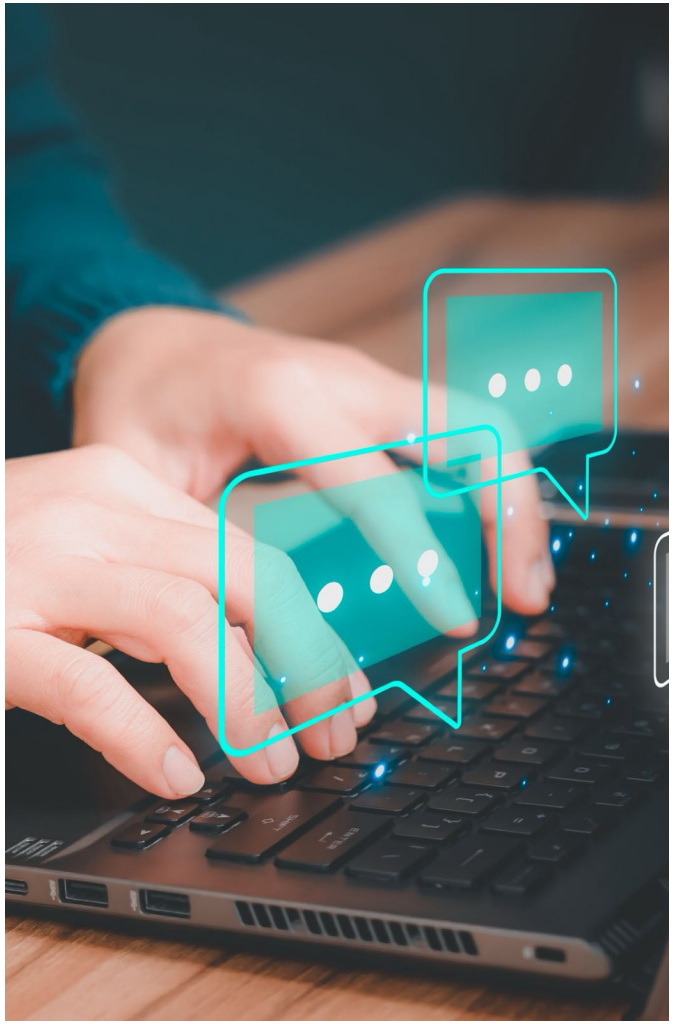
Example 1: Ethical and societal implications and debates

ChatGPT says:

“Use genAI to simulate debates on ethical issues in public health, such as vaccine mandates or privacy concerns in health data collection. Students can engage with AI as an opponent or supporter of a particular viewpoint, practicing their argumentation and critical thinking skills.”

Example 1: Ethical and societal implications and debates

Brainstorming: COVID-19 mask and vaccine mandates



“Idea #5 on ethical and societal implications debates is very good. This makes me think about the mask and vaccine mandates during the COVID-19 pandemic. As you may know some people vehemently rejected masks and vaccines. Let's say I was working with a faculty member in public health and we decided to use this. I think I would first explore it in a discussion with students, then second I would challenge them to create a plan to overcome this problem. Help me out here. Please give me 5 arguments against mask and vaccine mandates. Ensure you take into account opinions based on science, trust, religion, historical abuse, and political leanings.”

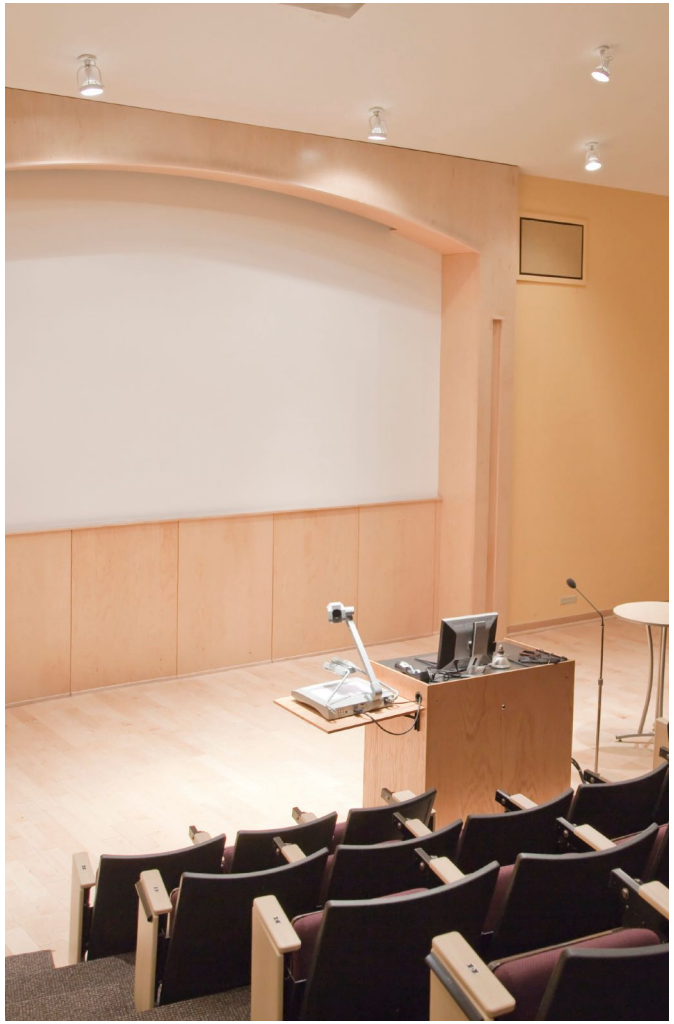
Example 1: Ethical and societal implications and debates

Arguments produced

- Scientific uncertainty and personal health concerns
- Distrust in government and public health institutions
- Religious beliefs and freedom
- Historical abuse and systematic injustice
- Political and ideological opposition

Example 1: Ethical and societal implications and debates

A role for AI



Ideas that you could pursue in your teaching:

- Have students work in opposing groups using AI to formulate arguments.
- Have students argue one-on-one with AI.
- Have AI generate a list of arguments and discussion questions for you.
- Work with AI to craft a scenario where students are the public health official.
- Guide students in using AI to research and write about an argument.

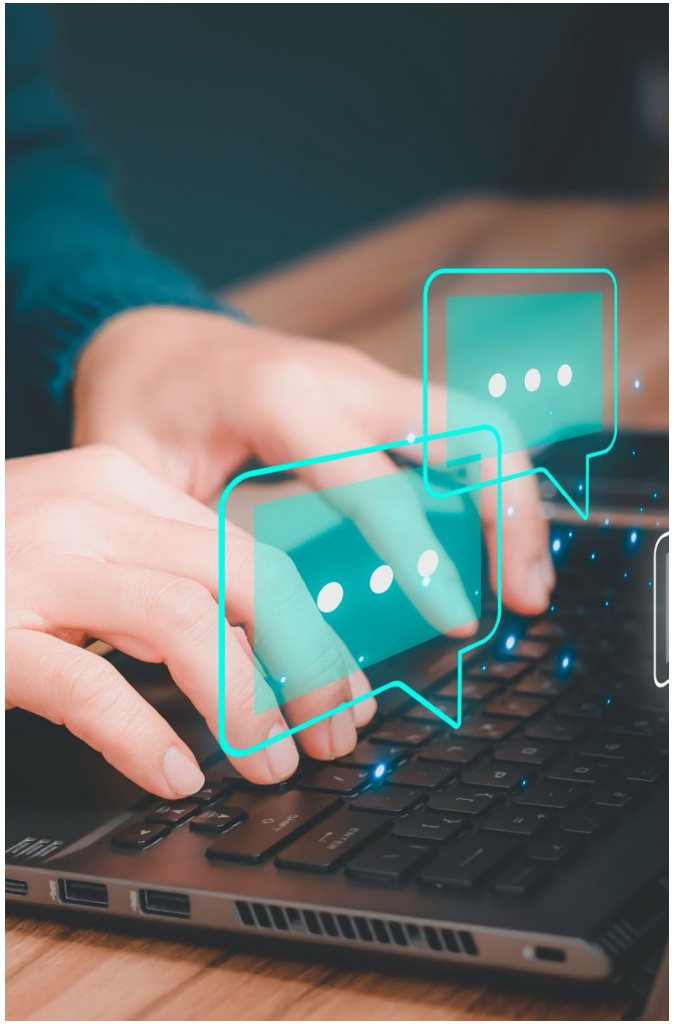
Example 2: Role-playing and scenario planning

ChatGPT says:

“Use genAI to create role-playing scenarios where students take on the roles of different public health officials during a crisis. AI can simulate the reactions of the public, media, and other stakeholders, providing a comprehensive understanding of crisis management.”

Example 2: Role-playing and scenario planning

Brainstorming: Generating a story



~~“Thank you. I want to continue discussing the role playing and scenario planning idea you had.”~~

“~~You got ahead of me. That's a good scenario though.~~ I want to start with generating a story for a scenario first. To my research, COVID-19 had an r naught between 2.5 and 3.0. Let's suppose there is another severe respiratory virus in the near future (3-5 years) like COVID-19. But this time it has an r naught of 5.0. Like COVID-19 it is spread through air droplets. But unlike COVID-19 it is deadly across all age groups. Please give me a story that sets up the scenario.”

Example 2: Role-playing and scenario planning

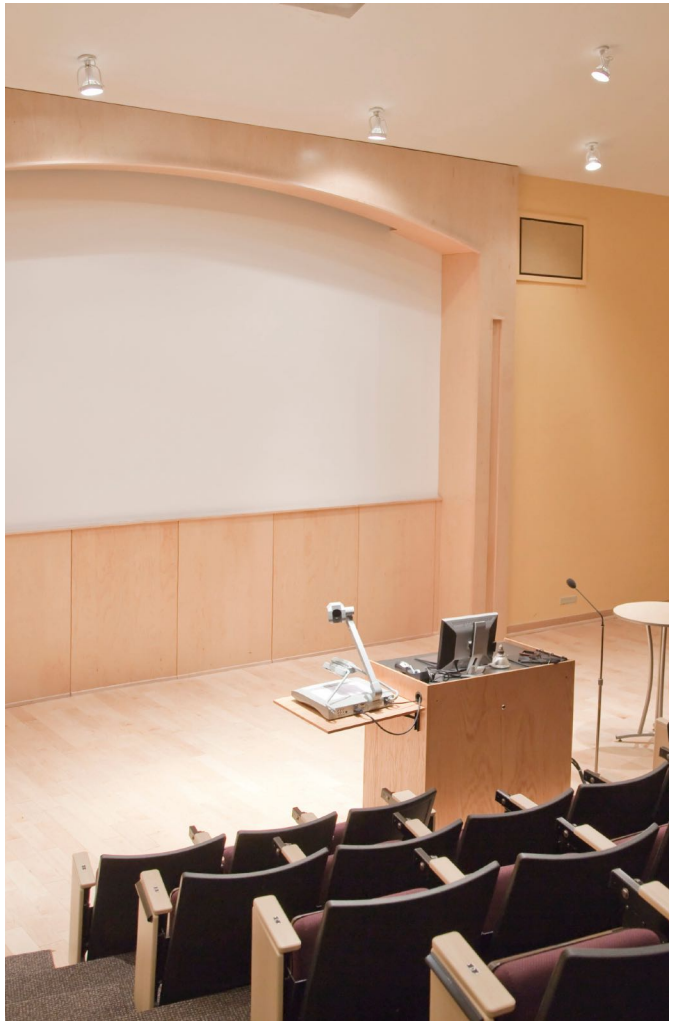
Story produced

Title: The emergence of “VIRUS-X”

- Part 1: The first outbreak
- Part 2: Rapid spread
- Part 3: Global impact
- Part 4: Public response
- Part 5: The call for vaccination
- Part 6: The escalation
- Part 7: The ethical dilemma

Example 2: Role-playing and scenario planning

A role for AI

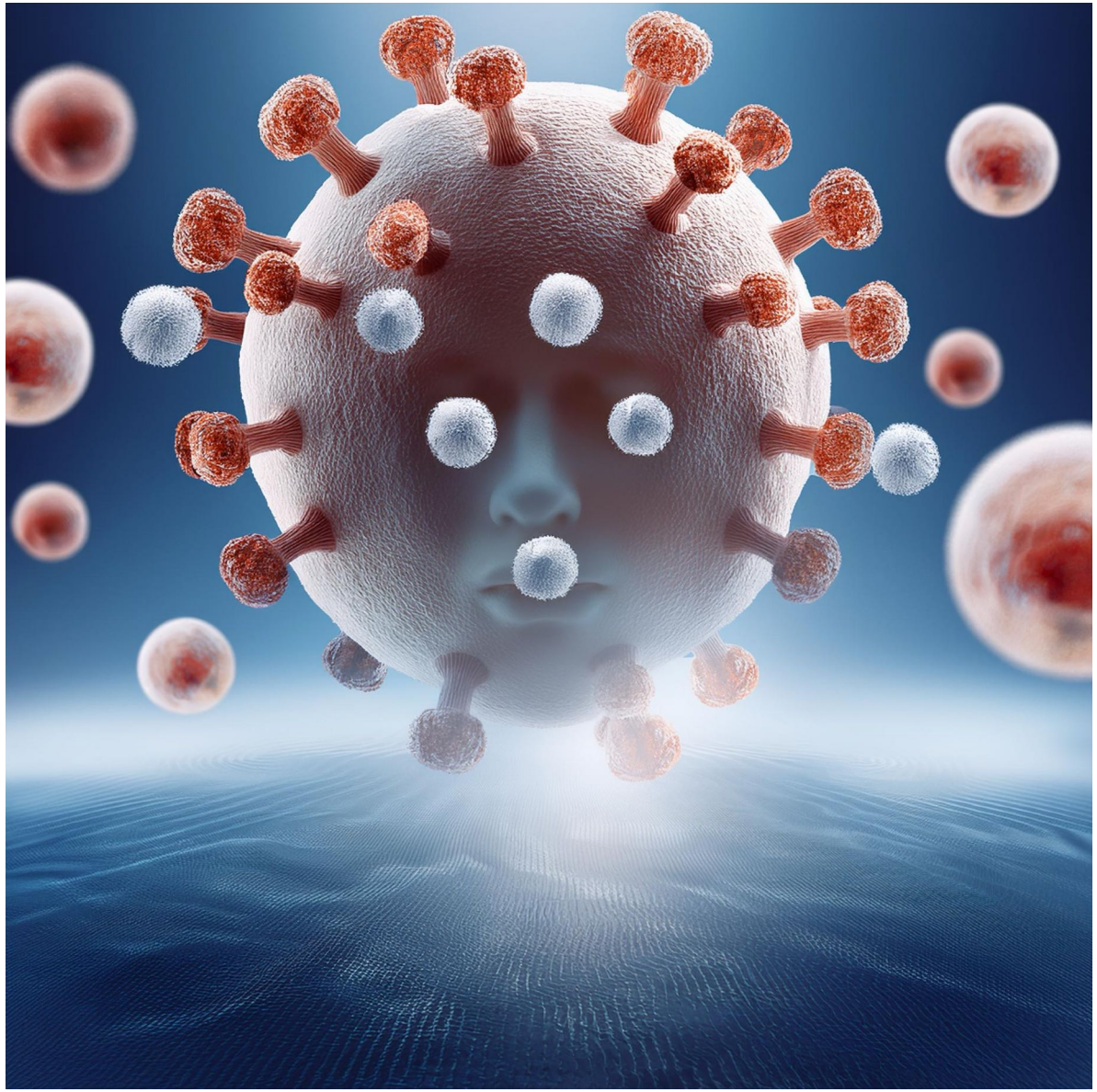


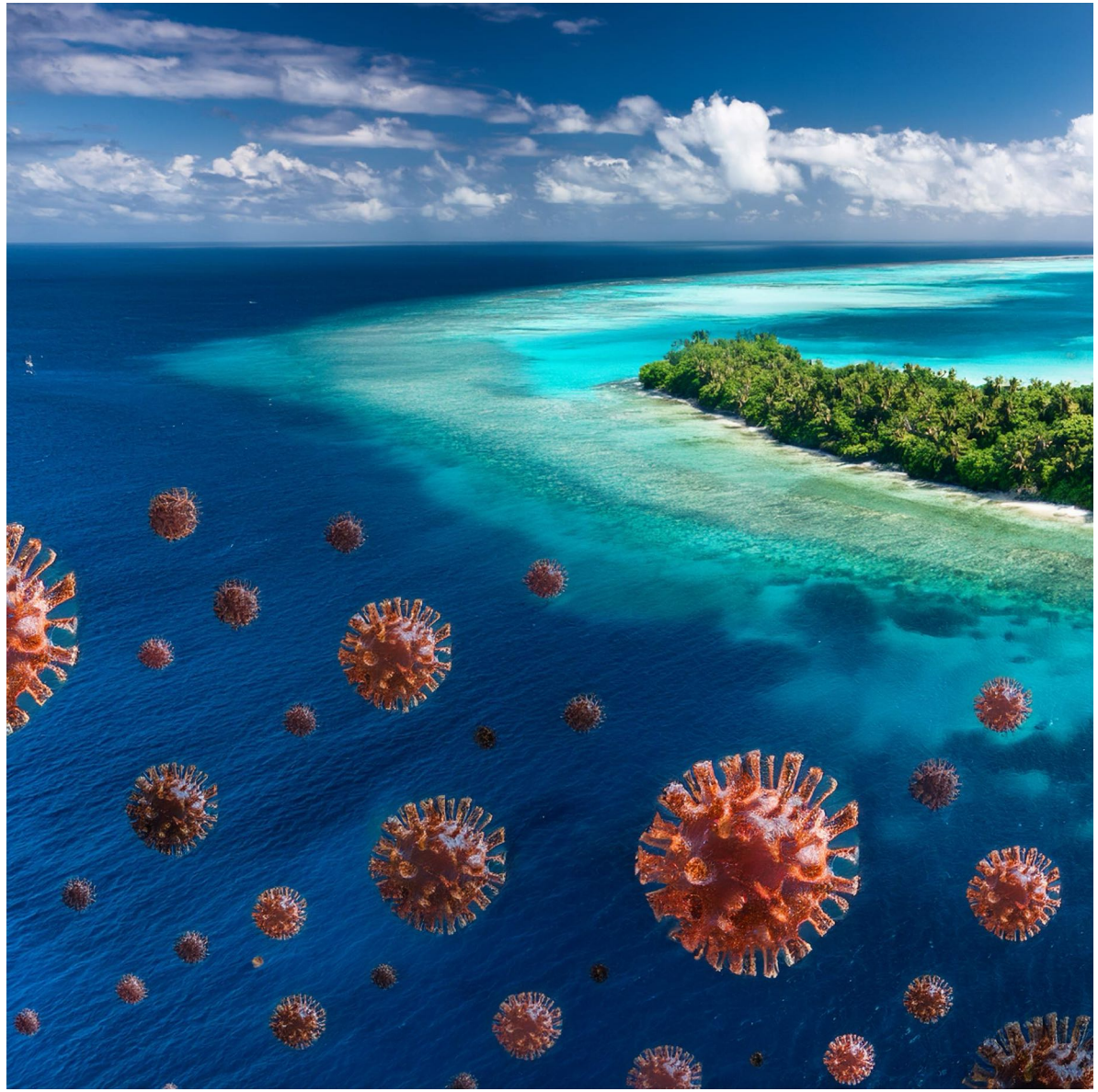
Ideas that you could pursue in your teaching:

- Students use AI to generate a story. Change it, expand on it, and create visuals for it. Present the story. And then exchange the story with another group, do some science, and solve the problem(s).
- You use AI to generate a story. Share it and discuss it with students. Highlight strengths and weaknesses. You modify the story with your expertise, then assign it to each student to solve for.

Example imagery: Adobe Firefly

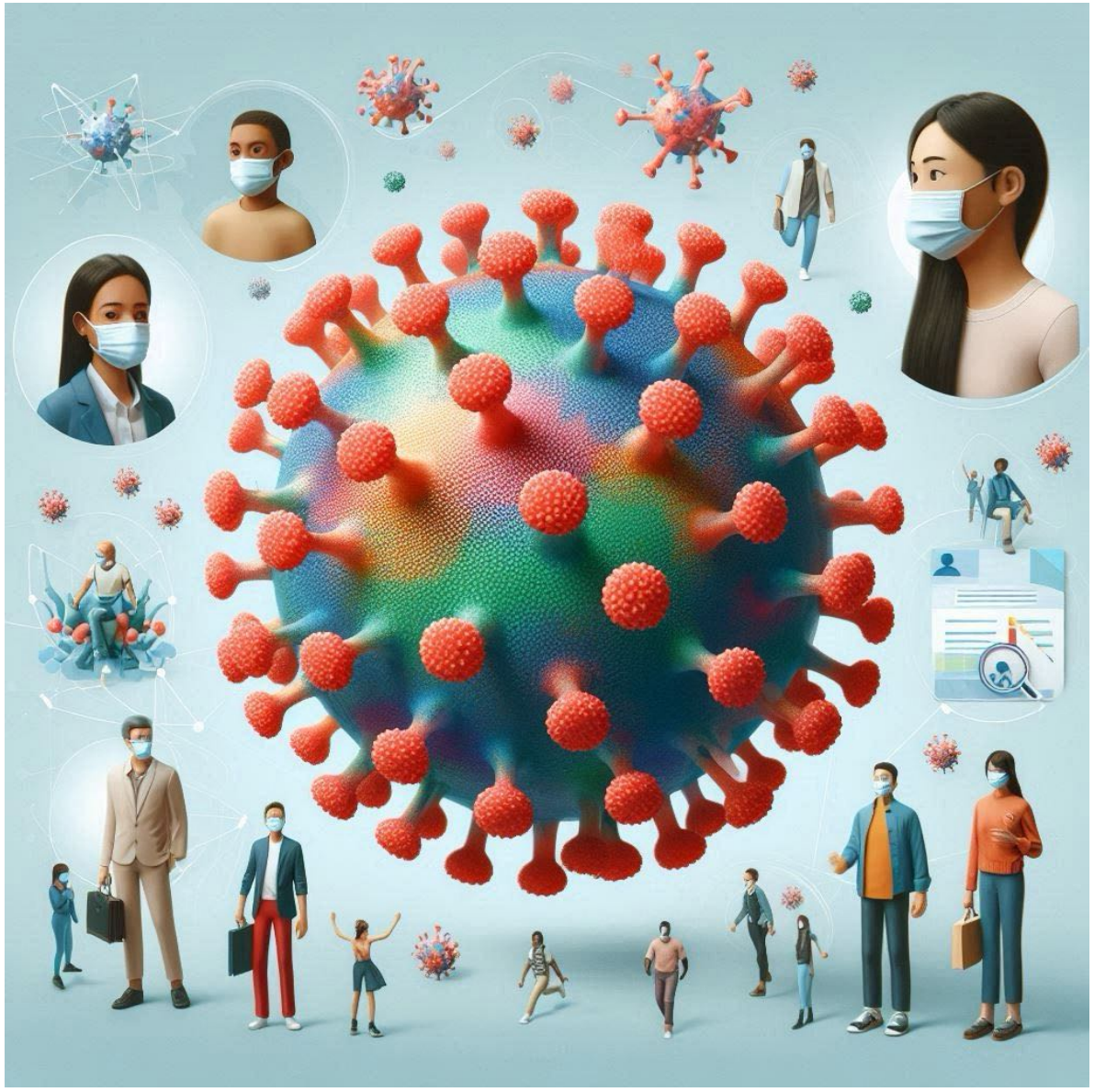
Prompt: “airborne virus affecting humans”





Example imagery: Microsoft Copilot Designer (DALL-E 3)

Prompt: “airborne virus affecting humans”



⚠️ Caution: Watch out in images (Adobe Stock)

In conclusion:
Almost done

Please feel free to contact me at jason_torres@gwu.edu

and/or the Instructional Core at instructioncore@gwu.edu

Going forward

Orientation	Exploration	Enactment
Go experiment and think about what may be too far for your students within your course. Find what is acceptable. Identify needs and tools. Connect with colleagues.	In the next Master Teacher Academy (MTA) workshops, explore use in your discipline and share appropriate uses. Ask questions, reflect, make choices.	Practice using genAI with your colleagues, building it into authentic learning activities. Brainstorm a setting for a learning experience with AI.

Some key topics you all may pursue

- **Motivating academic integrity**
  - Outcome expectancies and values
- **Advancing equity**
  - Finding opportunity for all; using to improve pedagogy
- **Improving pedagogy**
  - Course design, assignment design, learning activities, discussions, assessment
- **Measuring learning**
  - AI-proofing or AI-partnership
- **Supporting student learning**
  - Appropriate student use

Above all, don’t feel like this…