

# *CRTLE Interactive Session:*



## Using OpenAI ChatGPT to Elevate Thinking and Reasoning through Effective Teaching, Assignments, and Assessments



Center for Research on Teaching  
and Learning Excellence

OFFICE OF THE PROVOST  
Division of Faculty Success

Thursday, October 26

12:00 pm – 1:30 pm/2:00 pm

Trinity Hall 105 or via Microsoft Teams



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# Agenda

1. Welcome and Introductions
2. Session Format - Interactive
3. Overview of OpenAI ChatGPT Spring 2023 Sessions
4. AI/ChatGPT Teaching Strategy Speed Share
5. Open Resources for AI Teaching
6. Breakout Rooms – Teaching Strategy Reviews
7. Breakout Room Report Outs
8. Other Considerations in Using AI
9. Further Discussion Q&A
10. Contact Information and Resources

# Overview of OpenAI ChatGPT Spring 2023 Sessions

CRTLE held three sessions spring 2023, see CRTLE website:

<https://www.uta.edu/administration/crtle/initiatives/ai-in-education>



***We even made the news!***



# + AI Prompts Used in Spring Session +

- - Interactive Brainstorming:  
How might these be used in teaching?

## Prompt: *When was the Women's Suffrage Movement?*

The women's suffrage movement, also known as the campaign for the right to vote for women, began in the mid-19th century and lasted until the early 20th century. The first organized women's suffrage movement began in the United States in 1848 with the Seneca Falls Convention, and the movement quickly spread to other countries such as Great Britain and Australia. In the United States, the 19th Amendment to the Constitution, which granted women the right to vote, was passed by Congress in 1919 and ratified in 1920. Other countries, such as Great Britain, granted women the right to vote in 1918, and others like Canada in 1917. However, in some countries, the movement continued through the early 20th century, and it wasn't until the end of World War II that many countries in Europe and Latin America granted women the right to vote.

**Prompt:** Find the volume of the solid formed by revolving the graph of  $f(x)$  about the  $x$ -axis where  $f'(x) = 2x^2 + \cos(x-1) + 3$  across the domain  $0 < x < 2$

To find the volume of the solid formed by revolving the graph of  $f(x) = \int (2x^2 + \cos(x-1) + 3) dx$  about the  $x$ -axis across the domain  $0 < x < 2$ , we can use the method of cylindrical shells. The volume of the solid is given by the formula:

$$V = 2\pi \int [f(x)] * x dx$$

where  $x$  is in the interval  $[0, 2]$ .

To find the definite integral, we can integrate the function  $f'(x) = 2x^2 + \cos(x-1) + 3$  with respect to  $x$  from 0 to 2. This gives us:

$$\int [f(x)] * x dx = \int (2x^3/3 + \sin(x-1) + x + C) * x dx \text{ from } 0 \text{ to } 2$$

We can evaluate this definite integral using the limits 0 to 2 and simplify it. The definite integral is  $(2/5x^5 + 1/2x^4 \sin(x-1) + (1/2x^2 + C*x))$  from 0 to 2

Note that the constant of integration  $C$  is not important in this case because it will get multiplied by  $x$  and disappear.

Hence, the volume of the solid is  $2\pi * (2/58 + 1/24 \sin(1) + (1/24 + C*2))$

# Prompt: *Write a code for a small 2D game*

```
import pygame

# Initialize pygame and create a window
pygame.init()
screen = pygame.display.set_mode((400, 300))

# Set the title of the window
pygame.display.set_caption("My 2D Game")

# Run the game loop
running = True
while running:
    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            running = False

    # Clear the screen
    screen.fill((0, 0, 0))

    # Draw a rectangle on the screen
    pygame.draw.rect(screen, (255, 0, 0), (50, 50, 100, 75))

    # Update the screen
    pygame.display.flip()

# Exit pygame
pygame.quit()
```

This code sets up a window using Pygame and enters a game loop that will continue running until the player closes the window. Within the loop, it checks for a QUIT event (i.e., the player clicking the 'X' button on the window) and fills the screen with black. It also draws a red rectangle on the screen, and then updates the screen so that the rectangle is visible.

This is a basic example; you can build your game logic and features around this.

Keep in mind that this is a very basic example, and you will need to add more features and functionality to create a full-featured game.

# Continuing Advances in AI: Art and Graphics



**OpenAI DALL-E:**

<https://openai.com/dall-e-2>

**Fy! Studio:** <https://www.iamfy.co/studio>

**Prompt, Cartoon style:** *A dog chasing a man with and umbrella in the rain*

**Stable Diffusion:**

<https://stablediffusionweb.com/#demo>

**Prompt, 3d style:** *A female child riding a bicycle on the beach at sunset*

# AI/ChatGPT Teaching Strategy Speed Share

**Use ChatGPT Speed Teaching Template**



**Instructor:** Ann Cavallo

**Course:** EDUC 4333 Multiple Teaching Practices

**Class Size:** 25-30

**Context:** UTeach STEM teacher preparation course. Final senior level course science and mathematics majors in the UTeach program take before student teaching. Course includes a teaching component of their original, inquiry-based learning cycle/5E unit in a local area middle or high school.

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### **AI/ChatGPT Implementation**

**ChatGPT Prompt:** Write a learning cycle 5E lesson on density

#### **Output:**

*Title:* Exploring Density - A 5E Lesson Plan

*Grade Level:* 6-8

*Duration:* 3-4 class periods (45-60 minutes each)

#### **NGSS Standards:**

MS-PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction, and thus mass is conserved.

#### **Materials:**

Various objects of different materials (e.g., wood, metal, plastic)

Graduated cylinders

Balances

Water

Worksheets

Pencils

Whiteboard and markers

**Engage (15 minutes):** Learning Cycles/5E take days not minutes

1. Begin the lesson by **showing** students different objects made of various materials (wood, metal, plastic, etc.). Ask them questions like:
2. Which of these objects feels **heavier**? Misconceptions form here about density being "weight" - it is not.
3. Why do you think some objects feel **heavier** than others? Stop using heavier alone – have to use amount of matter or mass and incorporate space it occupies.
4. Have you ever wondered why some things float in water while others sink? This will stimulate students' curiosity about density. Don't incorporate buoyancy yet, no.

**Explore (20 minutes):**

1. Introduce the concept of density as the amount of matter in a given space. Ask students to predict which object they think is denser, a piece of wood or a piece of metal. WHAT??? Never!
2. Provide students with a balance, a graduated cylinder, and water.
3. Have students measure the **mass** and **volume** of the wooden and metal objects. Instruct them to record their measurements on their worksheets. Mass?  
Volume?
4. Guide students in calculating the density of both objects using the formula:  $\text{Density} = \text{Mass}/\text{Volume}$ . No – Not Yet.

**Explain (15 minutes):**

1. After students have calculated the density, discuss the results as a class.
2. **Explain** that the metal object is denser than the wooden one because it contains more matter (mass) in the same amount of space (volume). Students Explain to you.
3. Introduce the concept that density is a fundamental property of matter, and different materials have different densities. Use the whiteboard to summarize key points.

**Elaborate (20 minutes):**

1. Provide additional objects of varying materials and shapes. What materials?
2. Have students **predict** the density of these objects and test their predictions by measuring their mass and volume. What is the point of predicting, exactly?
3. Encourage students to discuss why some objects **float in water while others sink**. Discuss how density is related to **buoyancy**. No – this would be the next 5E.
4. Extend the discussion to real-life applications, such as ships and submarines, which utilize density principles. No – stick with only density and now work with formula

**Evaluate (20 minutes):**

1. Distribute a worksheet with questions related to density and the activities conducted.
2. Review the answers together as a class, allowing students to ask questions and clarify any misconceptions.
3. Assign a homework task where students research a real-world application of density (e.g., **hot air balloons**) and present it to the class. Not yet - new 5E on Convection

**Assessment:**

- Students critique and make an improved draft learning cycle/5E. Submit both for grade, and feedback on their improved draft.
- Students incorporate feedback and work on improved draft throughout the semester, receiving feedback for each draft and grade.
- Grades are calculated so first draft 25%, next draft 75% continuously until final.

**Expected Educational Impact:**

Students use ChatGPT only as a start for ideas but recognize its flaws; use what we have learned in class to make a far superior 5E learning cycle and have greater confidence in their ability to plan and implement logical and meaningful inquiry-based lessons in teaching. They develop analytical and critical thinking skills, along with decision making skills important for teaching.

**Extensions to Other Disciplines:** Any teaching discipline; Nursing or social work.

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# AI/ChatGPT Teaching Strategy Speed Share

- Jeff Witzel
- Peggy Semingson
- Open Forum
  - Raise Hand to Share



Open  
Resources  
for AI  
Teaching

Open Access Book: **101 Creative Ideas to Use AI in Education**

<https://creativehecommunity.wordpress.com/2023/06/23/oa-book-101-creative-ideas-to-use-ai-in-education/>

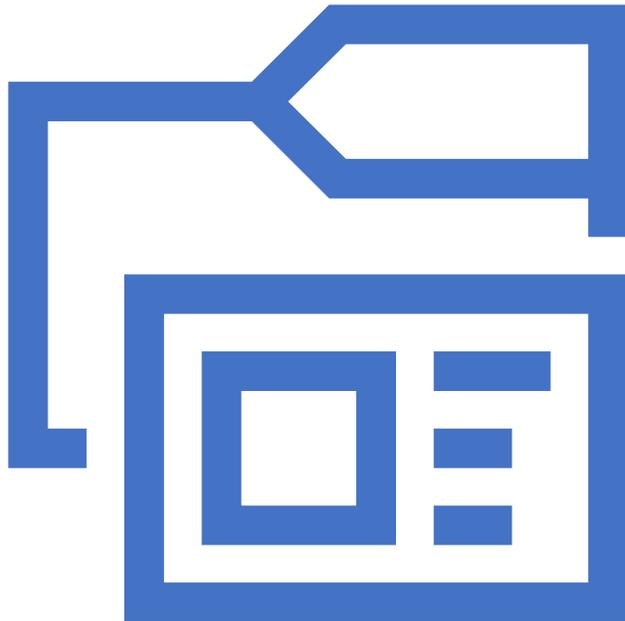
*Shared by Jessica McClean of UTA Libraries*

**60+ Ideas for ChatGPT Assignments**

<https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:7ce8e4a0-646c-3788-bea8-d62da99d5eb7>

● *Shared by Peggy Semington*

# Break Out Rooms



1. Download Open Access Book: ***101 Creative Ideas to Use AI in Education***
2. Select **1-2** AI/ChatGPT teaching strategies that you could use in your classes from the **list provided** taken from the 101 Creative Ideas book
3. Discuss with your group the selected activity or activities and how you would use and/or modify them for use in your course(s)
4. Also feel free to add a critique of the activity as appropriate
5. After the breakout group, discuss your selected activity with the whole group.

# Break Out Room Report Outs



# Other Considerations in Using AI

Sarah Shelton

*How should we discuss AI and writing with your students?*

Bonnie Boardman, Andrew Clark

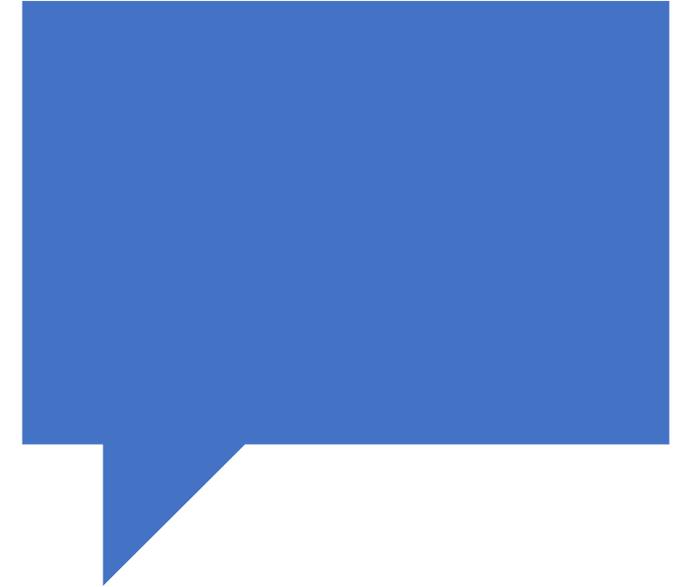
*How will AI change what we teach and how we teach it?*

Nali Kim, Ann Cavallo

*What about ChatGPT detectors – should we use them?*

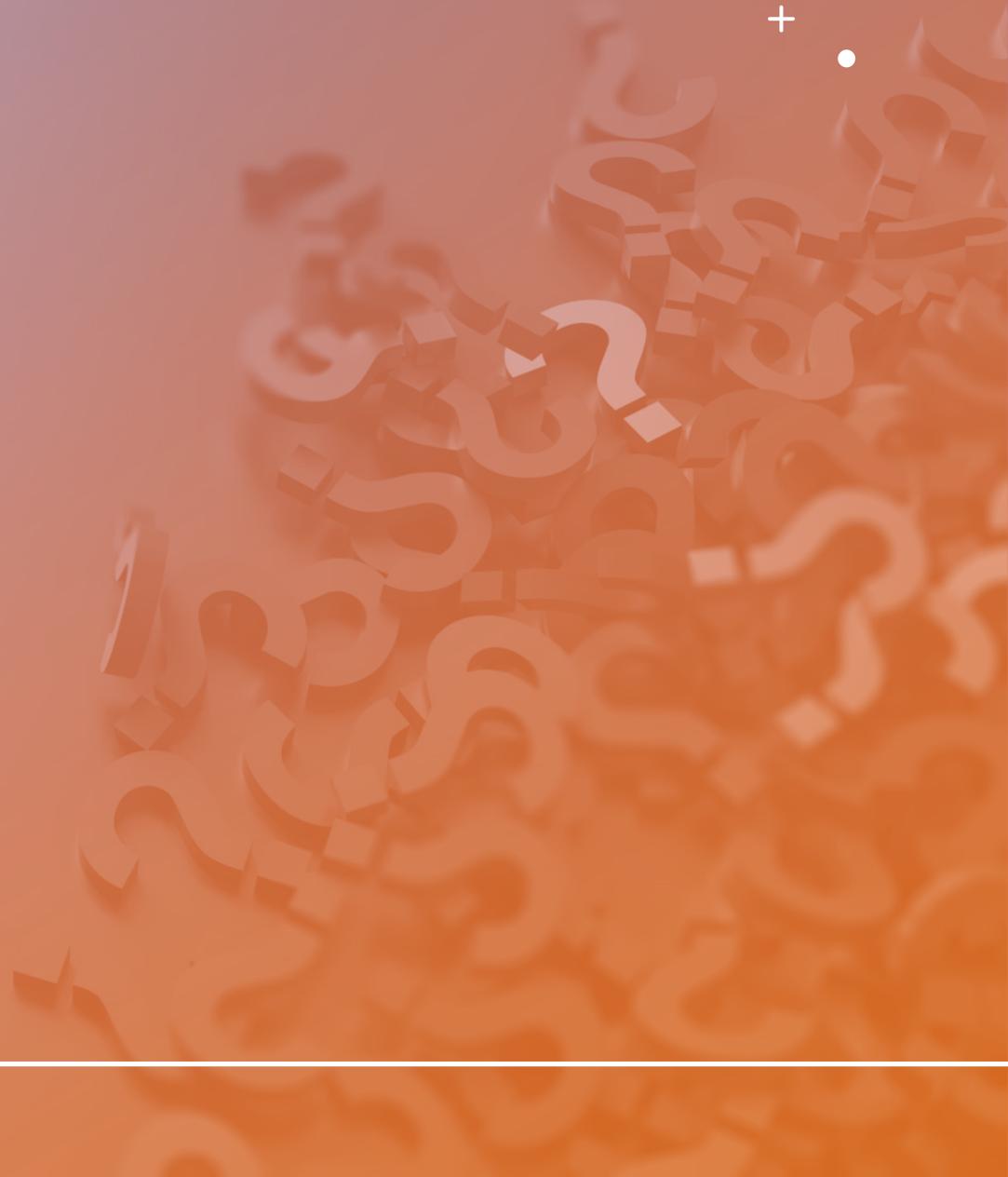
Andrew Clark, Ann Cavallo, Beth Fleener

*What about having a syllabus statement about ChatGPT?*



# Further Discussion and Q&A

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# Contact Information and Resources

## CRTLE Website:

<https://www.uta.edu/crtle> or QR Code:



## CRTLE Email:

[CRTLE@uta.edu](mailto:CRTLE@uta.edu)

## CRTLE Social Media:

Twitter: @CRTLE\_uta

Facebook: @CRTLEUTA

Instagram: @CRTLE\_uta

YouTube: CRTLE UTA

*Support, innovate, and  
advance teaching excellence  
at UTA!*

