

Generative AI and Prompt Crafting

SUBJECT	TEACHER	GRADE	DATE

OVERVIEW

This lesson introduces students to the concept of generative AI, with a focus on ChatGPT, explaining how it works and how to use it effectively in an educational context. Students will also learn how to craft effective prompts to get the most useful and accurate responses from ChatGPT. The lesson includes a hands-on practice session where students interact with the AI, followed by a reflection on how to use AI responsibly and ethically.

OBJECTIVES

By the end of this lesson, students will be able to:

- Understand how generative AI works, with a focus on ChatGPT.
- Learn how to craft clear and effective prompts to get useful responses from AI.
- Use AI responsibly for research, creative tasks, and problem-solving.
- Identify both the strengths and limitations of AI tools like ChatGPT.
- Discuss the ethical implications of using AI in school and society.

MATERIALS

- Whiteboard and markers
- Computers/tablets with internet access for each student (or pair of students)
- Projector (for displaying visuals)
- Access to ChatGPT (via browser or app)
- Quiz handouts

LESSON OUTLINE

1. Introduction to Generative AI (15 minutes)

- **Objective:** Understand what generative AI is and how it works.
- **Activity:**
 - Begin by showing slide 2 (Brainstorming).
 - Ask students if they have used any AI tools like ChatGPT and how. Do they find them useful, and why?
 - Encourage students to speculate on how such tools gather information. Some ideas: Does do they "look up" information from the internet when they answer a question? Where do they store their knowledge? Can they learn new things, or are they limited to what they already know?
 - Slide 3: Introduce the concept of generative AI: AI that generates content (e.g., text, images, music) based on patterns it has learned from large datasets.

- **Key Concepts (Slide 4):**

- *AI Basics:* Computers performing tasks that typically require human intelligence, like understanding language or recognizing images.
- *Generative AI:* A type of AI that creates new content by predicting the next part of a sequence based on its training data. ChatGPT is an example of generative AI focused on text.
- *Language Models:* These models, like ChatGPT, are trained on vast amounts of data (books, websites, etc.) to predict and generate text responses.

- **Demo:**

Either use Slide 5 or do this interactively in class: Show a demo of ChatGPT answering a simple question (e.g., "Who was Albert Einstein?"). Discuss how the AI uses its training data to generate responses that sound human-like.

2. How Generative AI Works (15 minutes)

- **Objective:** Explain the mechanics of how generative AI (like ChatGPT) processes and generates text.
- **Activity:** Show students Slide 6. Explain the process using a simple flowchart.
 - *Input:* User provides a prompt (e.g., a question or task).
 - *Processing:* The AI analyzes the input, looking at patterns in its training data.
 - *Output:* The AI generates a response by predicting what comes next based on its training.
- **Key Concepts (Slide 7):**
 - *Tokens:* How words and phrases are broken down into smaller chunks that the AI understands.
 - *Neural Networks:* The system used by AI to process data and generate text.
 - *Training Data:* The large datasets the AI uses to learn how to respond to different types of input.

- **Demo:**

Ask ChatGPT to explain a simple concept like "photosynthesis". Break down how it generated that explanation. Based on this example, discuss how AI learns from patterns in the data it was trained on.

3. Crafting Effective Prompts for ChatGPT (25 minutes)

- **Objective:** Learn how to write clear, specific prompts to get useful responses from ChatGPT.
- **Introduction to Prompt Crafting:**

Show students Slide 8 and explain each bullet.

- *A good prompt* helps AI understand exactly what you want, resulting in clearer and more accurate responses.
- *Clear and Specific:* The more detail you give, the better the AI can respond.
- *Context:* Providing context helps AI understand the type of response you want (e.g., formal, casual, concise).
- *Experimenting with Prompts:* The way you phrase a question can impact the AI's response.

- **Effective Prompt Examples in an Educational Context:**

Ask students to provide examples of these guidelines based on different school subjects. Write them on the board and discuss why these are (or are not) good prompts. Examples:

- "Explain how the water cycle works."
- "Give me three examples of how water is used in agriculture."
- "List five important technological achievements of the Industrial Revolution."
- "Write a short story about a cat who can talk, but only at night."
- "Summarize the causes of World War I as if you were explaining it to a 12-year-old."

- **Activity:**

In pairs or small groups, students brainstorm different ways to phrase prompts for ChatGPT. Provide students with a list of subjects or tasks (e.g., history, science, creative writing) and have them write down three different prompts for each. For example:

- Science (Biology, Environmental Science, Ecology): photosynthesis. Sample prompts:
 1. "Describe the process of photosynthesis in detail."
 2. "How does photosynthesis benefit plants and humans?"
 3. "Create a fun, kid-friendly poem about photosynthesis."
- History: Industrial Revolution. Sample prompts:
 1. "Give me a summary of the Industrial Revolution in Europe."
 2. "Describe the impact of the Industrial Revolution on cities and urban life."
 3. "Write a letter from a factory owner to a potential investor, explaining why they should invest in a new factory."

- **Activity:**

Share some of the prompts with the class and input them into ChatGPT. Review the responses together and discuss how the prompt affected the answer. Students can then adjust their prompts based on the AI's output.

4. Practice Using ChatGPT (20 minutes)

- **Objective:** Practice using AI in an educational context, refining prompts, and reflecting on the quality of AI responses.

- **Activity:**

- Students now can work individually or in pairs to practice using ChatGPT with the prompts they created. Each student should:
 1. Choose a subject area (e.g., science, history, creative writing).
 2. Use their previously written prompts to interact with ChatGPT.
 3. Refine their prompts if necessary, aiming for more precise or creative responses.
- Example tasks:
 1. Research: "Summarize the key events of the Industrial Revolution."
 2. Creative: "Write a poem about autumn using imagery related to leaves and weather."
 3. Problem-solving: "How do you calculate the area of a triangle?"

- **Reflection:** After using ChatGPT for a few tasks, students can discuss their experiences:
 - Which prompts worked best? Why?
 - What was surprising about the AI's responses?
 - How did refining their prompts impact on the quality of the response?

5. Ethical Considerations and Responsible Use of AI (10 minutes)

- **Objective:** Understand the ethical implications and how to use AI responsibly.
- **Discussion:** Show Slide 9 and discuss the following ethical issues.
 - *Plagiarism:* Can using AI for schoolwork be considered cheating? When is it okay to use AI as a student?
 - *Bias:* AI can sometimes reflect biases in the data it's trained on. How can we ensure fairness in AI-generated content?
 - *Impact on Society:* What are the positive and negative impacts of AI on society?
 - *Limitations:* AI is not perfect. It can sometimes provide incorrect or misleading information.
- **Activity:**

In small groups, students discuss scenarios such as:

- Using ChatGPT to write an essay for school.
- Asking ChatGPT to solve a math problem during a test.
- Using ChatGPT to help brainstorm ideas for a class project.

After discussing, groups share their thoughts with the class.

UNDERSTANDING

- A short quiz based on this lesson can be found [here](#).
- Topics for discussion may include:
 - How can AI be a useful tool in your schoolwork and daily life? Examples: support for homework, help with research, creating writing, brainstorming, language learning, problem solving...
 - Can you think of any other ways AI could help in everyday life outside of schoolwork?
 - What are some tasks you wouldn't want to rely on AI for? Why?