**Possible names:**

**What's Cooking in the Kitchen with ChatGPT**

**Or**

**Robot Recipes: Exploring AI-Generated Cooking**

Grades: 7-12

Time: 60–75 minutes

**Lesson Overview**

In this lesson, students will discover how Artificial Intelligence (AI), specifically ChatGPT, can be a powerful tool in the kitchen. They will explore how AI generates recipes, adapts ingredients for dietary needs, and explains the science behind cooking. Through interactive activities, students will compare AI-generated recipes with traditional ones, practice public speaking with fun AI-written scripts, and use AI to plan meals based on available ingredients. By the end of the lesson, students will gain a deeper understanding of how AI processes information, assists with decision-making, and enhances creativity in cooking—all while having fun with food!

**Supplies Needed**

Technology & Tools:

* Computer and projector
* Devices with internet access (one per student or shared in small groups)
* ChatGPT access (free or paid version)

Materials for Activities:

* Paper and writing utensils
* The leader's favorite chocolate chip cookie recipe (not generated by ChatGPT)
* Sample recipes for student comparison
	+ Chef’s Note: The students can bring a cookie recipe from home, or find one on the internet during the activity.

Internet & Software:

* Reliable internet access for ChatGPT usage

Optional if a cooking demonstration is included:

* Ingredients for chocolate chip cookies (flour, vanilla extract, baking soda, baking powder, chocolate chips, eggs, brown sugar, white sugar, salt, butter)
* Cooking supplies (2 sizes of mixing bowls, mixing spoon or spatula, measuring cups and spoons, baking sheet, oven and oven mitts, electric mixer, cooling rack, spoon or cookie scoop, parchment paper)
* Other supplies (cleaning supplies, paper towels, napkins for serving, trash bags and can, apron, recipe printouts for students to take home)

**Teacher Preparation**

* Review the lesson plan and prepare slides (if using).
* Ensure all students have access to ChatGPT and can navigate the interface.
* Print worksheets for each student.
* Test ChatGPT with sample questions related to recipes, food science, and ingredient substitutions to familiarize yourself with AI responses.
* If including a live demonstration, gather any necessary ingredients and tools.
* Optional: Allow students to bring in a favorite cookie recipe from home for comparison.

**Icebreaker:**

**Food Fusion Frenzy**

* Say: "Welcome! Let’s start with a fun challenge. Think for a moment about the strangest, most unusual, or unexpected thing you’ve ever eaten. Maybe it was something you tried on vacation, an unexpected food combo you love, or a weird snack. But don’t share it just yet—keep it a secret for now."
* Pass out the paper. Say: “Write down the weirdest thing you’ve ever eaten. (No peeking at anyone else’s answer yet.)” Allow time for them to write.
* Say: “Pair up with someone and swap papers. Now, take a look at what your partner wrote—this is where it gets fun!” Give them one minute to brainstorm. Encourage them to:
	+ Work together to combine both foods into a brand-new dish.
	+ Give it a fun name.
	+ Describe what it would taste like: Would it be sweet? Savory? Totally disgusting? Surprisingly delicious?
	+ Have fun hyping up your dish—make it sound like the next big food trend or a total disaster.
* Have each pair share their wild food creation with the class.
* After all pairs present, have the class vote on which food combination sounds the most delicious… or the absolute worst! Discuss these questions:
	+ Would you actually try your new dish? Why or why not?
	+ Why do some strange food combinations actually work?
	+ If you had to sell this dish at a restaurant, how would you convince people to try it?
* Wrap-up by saying: "Great job, chefs! You just proved that creativity in the kitchen has no limits. Whether your food combo was a masterpiece or a disaster, you learned that food is all about experimenting, and trying new things!"

**Learn: AI & ChatGPT in the Kitchen**

**Part 1: Cooking with AI**

* Ask: "You probably use Artificial Intelligence, or AI, every day without even realizing it—whether it's in your phone, music apps, or even in your car. But did you know AI can also help in the kitchen? How do you think AI can make cooking easier?" (Pause for student responses.)
* Say: "From suggesting recipes to explaining why bread rises, AI tools like ChatGPT can make cooking easier and more fun! Today, we’re going to explore how AI can assist with recipes and food science."
* Say: "Now, let’s put AI to the test! I’ll ask ChatGPT for a chocolate chip cookie recipe, and we’ll see how well it compares to a classic, human-written recipe." Using your computer and projector, ask ChatGPT to generate a chocolate chip cookie recipe. Display the AI-generated recipe for the class.
* Discussion: Compare the Recipes. Say: "Now, let’s see how the AI recipe stacks up!"
	+ How do the recipes compare?
	+ Are the instructions clear and easy to follow?
	+ Are any steps missing or different from a traditional recipe?
* Say:"AI, like ChatGPT, works by analyzing patterns in data. It learns from thousands of recipes, nutrition facts, and scientific studies to generate answers. AI can be a helpful kitchen assistant, but it’s important to understand what it can do and where it might need human guidance. Since AI generates answers based on data, it’s not always perfect—which is why we need to fact-check its responses."
* Say: "For example, one time, someone asked ChatGPT for a cookie recipe, and it suggested adding 3 cups of salt—yikes! That’s why we always double-check AI-generated recipes before we start baking."
* Ask: "Can you think of other situations where getting the wrong information from AI could be a problem?" Allow students to share ideas. Possible student responses:
	+ Suggesting recipes based on dietary needs or allergies
	+ Finding recipes using ingredients you already have in your fridge
	+ Explaining food science (like why baking soda makes cakes rise)
	+ Converting recipes for different serving sizes or cooking methods

**Part 2: Live Demo: Baking with AI (Optional)**

* The instructor will demonstrate baking chocolate chip cookies using the recipe generated by ChatGPT. While the cookies bake and cool, students can complete the other activities.
* At the end of the lesson, serve the warm cookies and discuss how the AI-generated recipe turned out.

**Do**

**Activity #1: AI Recipe Generator**

* Say: "Let’s put ChatGPT to the test! AI is great at generating recipes, but how does it compare to a real one? Today, we’re going to see if AI can come up with a cookie recipe that you’d actually want to bake!"
* Instructions:
	+ Have students ask ChatGPT for a specific type of cookie recipe, such as gingersnaps, peanut butter, no-bake, or gluten-free. Encourage them to pick something other than chocolate chip cookies, since you've already used that recipe.
	+ Write down the recipe exactly as ChatGPT provides it.
	+ Compare the AI-generated recipe with a real recipe—either a family recipe or one found online.
* Analyze key differences, focusing on:
	+ Ingredients: Does AI use too much or too little of something?
	+ Steps: Are any steps missing or out of order?
	+ Baking times & temperatures: Do they seem accurate?

Discussion Questions:

* What mistakes did AI make in the recipe, and why do you think they happened?
* Can you improve this recipe by making the AI prompt more detailed and accurate?
* Would you actually bake the AI-generated recipe? Why or why not?
* How do human-written recipes differ from AI-generated ones?

**Activity #2: AI-Generated Speech & Presentation**

* Say: "Let’s practice public speaking using AI! You’ll ask ChatGPT to rewrite your cookie recipe instructions in a fun voice."
* Step 1: Choose a Fun Voice!
	+ Pick one of these fun character styles for your recipe:
		- Cowboy
		- Southern Granny
		- Pirate
		- Movie Announcer
		- British Butler
		- Superhero
		- Sports Commentator
		- Medieval Knight
		- Toddler
		- Specific cartoon character (pick your favorite)
		- Haunted Ghost
		- Detective
		- Alien or Martian
* Step 2: Rewrite Your Recipe Instructions with AI
	+ Ask ChatGPT to rewrite your cookie recipe in the voice you chose.
		- Example: "Rewrite my cookie recipe in a cowboy voice."
* Step 3: Turn It into a Speech!
	+ Now, ask ChatGPT: "What prompt could I use to turn this (insert voice and cookie recipe) into a fun and engaging speech to give in front of my class? Also, give me ways to modify the prompt to add more flair. Make sure to organize my speech with a clear introduction and conclusion."
		- Example: "What prompt could I use to turn this cowboy gingersnap recipe into a fun and engaging speech to give in front of my class? Also, give me ways to modify the prompt to add more flair. Make sure to organize my speech with a clear introduction and conclusion."
* Step 4: Edit Your Speech
	+ Modify your speech as needed using prompts ChatGPT came up with.
	+ Keep your speech under 3 minutes.
* Step 5: Public Speaking Basics
	+ Before presenting, discuss what makes a great speech.
		- Optional discussion: Ask students what makes a great speech. Before providing the guidelines, hold a short Q&A session to get their thoughts.
		- Public Speaking Guidelines:
			* Start strong! Have a clear introduction and conclusion
			* Be confident. Stand tall and believe in what you're saying.
			* Speak clearly. Use a steady voice, so everyone can hear.
			* Pace yourself. Don’t rush, but don’t go too slow.
			* Engage your audience. Look up and make eye contact when you can.
			* Bonus Tip: If you feel nervous, take a deep breath, smile, and focus on sharing your message—your audience wants to hear from you!
* Step 6: Present Your Recipe!
	+ Each student will present their cookie recipe to the class using their chosen AI-generated voice while following the public speaking guidelines.
* Have a group discussion. Say: "Well done, everyone! Public speaking isn’t just about reading words—it’s about making a connection with your audience. The more you practice, the more confident you’ll become!"
	+ Ask these Reflection Questions:
		- What was the most fun or surprising part of this activity?
		- Did using a fun voice make it easier or harder to present?
		- How do you think AI could help people who struggle with writing speeches?
* Wrap-up by saying: "Public speaking isn’t just about delivering a message—it’s about connecting with your audience. Whether you’re giving a speech, sharing a story, or even explaining a recipe, the way you present matters! Keep practicing, and you’ll keep improving."

**Activity #3: AI-Powered Meal Planning**

* Say: "Ever looked in your fridge and thought, ‘What on earth can I make with this?’ AI can help turn your random ingredients into a full meal—let’s give it a try!"
* Instructions:
	+ Each student should select 5–7 ingredients they might have at home and write them down on a piece of paper.
	+ These can be anything—vegetables, proteins, grains, or spices.
* Ask ChatGPT for help. Type this prompt into ChatGPT:
	+ "What recipes can I make with these ingredients: [list your 5–7 ingredients]?"
	+ If needed, adjust the prompt to make it more specific. Here are some suggestions you could use:
		- "Make it kid-friendly."
		- "Use only one pot."
		- "Make it vegetarian."
* Analyze ChatGPT’s suggestions and discuss them. Ask the group questions like:
	+ Would this work in real life?
	+ Are the steps clear and easy to follow?
	+ Are any important ingredients missing?
	+ Does the recipe match the type of meal you wanted? If not, how can you change your prompt to help?
* Say: “Now try adjusting your prompt to make the recipe healthier, faster, or with fewer ingredients. How do the results change?" Allow students to answer.
* Conclude by saying: "AI is a great tool for meal planning, but like any tool, we need to double-check its results. A good chef knows that cooking is more than just following a recipe—it’s about creativity, problem-solving, and adapting to what you have!"

**Activity #4: Applying AI in Your Kitchen**

* Say: "How can AI actually help you in real life? Let’s explore some ways it can make cooking easier, more fun, and even help with grocery shopping. As we discuss, try out these ChatGPT prompts and see what you discover!"
	+ AI can help plan meals for a day, a week, or even a whole month.
		- Example Prompt: "Create a 7-day meal plan with quick and healthy dinners that take under 30 minutes to cook."
	+ AI can estimate costs and help you plan budget-friendly meals.
		- Example Prompt: "Give me a grocery list for making five family dinners, all under $10 per meal."
	+ AI can walk you through recipes like a personal chef.
		- Example Prompt: "Walk me through making homemade pasta, step by step, like you're my personal chef."
	+ AI can explain why certain ingredients work together.
		- Example Prompt: "Why do I need both baking soda and baking powder in a cake recipe?"
	+ AI can simplify recipes and suggest fun, hands-on treats for kids.
		- Example Prompt: "Give me three easy no-bake dessert recipes kids can make by themselves."
	+ AI can help design creative snacks for any occasion.
		- Example Prompt: "Give me three fun snack ideas for a [Halloween, space, jungle, underwater] themed party."
	+ AI can save all your favorite recipes and help you find them when needed.
		- Example Prompt: "I uploaded my recipes to a GPT. How can I find a dessert that uses apples and cinnamon?"
* Ask: "Did ChatGPT give you any ideas you wouldn’t have thought of on your own?"
* Say: "If you were designing your own AI cooking assistant, what features would you want it to have?"
* Conclude by saying: "AI won’t mix the batter or taste the food for you, but it can help make cooking easier, faster, and even more creative! Whether you’re deciding what to make, sticking to a budget, or learning about food science, AI helps you think outside the box. The key is to use it as a guide—but remember, you are the real chef in the kitchen!"

**Reflect & Apply**

Reflect

* What did you learn about public speaking today?
* How did ChatGPT change the way you think about recipes and food science?
* Did AI ever make a mistake or provide confusing information?

Apply

* How could you use AI tools like ChatGPT to help at home in the kitchen?
* How can AI be helpful for people with food allergies or special diets?
* Which AI tool from today’s lesson do you think you’d use the most?
* How might AI be helpful in restaurants or bakeries?
* Imagine you’re helping a friend who has never used AI before. How would you explain how ChatGPT can help in the kitchen?

### **Learning Objectives:**

Through this lesson, students will:

* Understand how AI, like ChatGPT, generates recipes and assists with ingredient substitutions.
* Compare AI-generated recipes to human-written recipes and evaluate their accuracy.
* Use AI to create grocery lists, budget meals, and meal plans for specific dietary needs.
* Practice public speaking skills by presenting AI-generated recipe instructions with creativity and confidence.
* Develop critical thinking skills by fact-checking AI responses and refining prompts for better results.

**References and Resources**

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