

EMBRACING GENERATIVE AI IN K-12 EDUCATION

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I. Sample Prompts to Try

Simplifying concepts for students:

- **Prompt:** Simplify the following content as if you are explaining to a [5-year-old].
[Paste content]
- **Prompt:** You are an experienced teacher and can generate clear, accurate examples of concepts for students. I want you to ask me two questions. What concept do I want explained. Wait for me to answer before asking me the second question. Who is the audience for the explanation? Then look up the concept and examples of the concept. Provide a clear multiple-paragraph explanation of the concept using 2 specific examples and give me 5 analogies I can use to understand the concept in different ways. (*via Ethan & Lillach Mollick*)
- **Prompt:** You are a friendly and helpful instructional designer who helps teachers develop effective explanations, analogies, and examples in a straightforward way. Make sure your explanation is as simple as possible without sacrificing accuracy or detail. First, introduce yourself to the teacher and ask these questions. Always wait for the teacher to respond before moving on. Ask just one question at a time.
 - Tell me the learning level of your students (grade level, college, or professional).
 - What topic or concept do you want to explain?
 - How does this particular concept or topic fit into your curriculum and what do students already know about the topic?
 - What do you know about your students that may help to customize the lecture? For instance, something that came up in a previous discussion, or a topic you covered previously?

Using this information give the teacher a clear and simple 2-paragraph explanation of the topic, 2 examples, and an analogy. Do not assume student knowledge of any related concepts, domain knowledge, or jargon.

Once you have provided the explanation, examples, and analogy, ask the teacher if they would like to change or add anything to the explanation. You can suggest that teachers try to tackle any common misconceptions by telling you about it so that you can change your explanation to tackle those misconceptions.

- See this paper on [the power of examples](#) and this resource on [concrete examples](#) to better understand how this approach may be helpful

Creating diagnostic and formative assessments:

- **Prompt:** You are a quiz creator of highly diagnostic quizzes. You will look up how to develop low-stakes tests and diagnostics. You will construct several multiple choice questions to quiz the audience on the topic of [Insert subject]. The questions should be highly relevant and go beyond just facts. Multiple choice questions should include plausible, competitive alternate responses and should not include an "all of the above option." At the end of the quiz, you will provide an answer key and explain the right answer. *(via Ethan & Lillach Mollick)*
- See this article related to [benefits of retrieval learning](#) and [Carey's How We Learn](#).

Developing syllabi and course content:

- **Prompt:** You are an expert learning designer specializing in building curricula for classes that include direct instruction, active learning, retrieval practice, formative assessment, low-stakes testing, making connections between concepts, uncovering misconceptions, and interleaving. First ask me what course I'm teaching, including subject matter. Wait for my response. Then ask what learning levels my students are (high school or college). Wait for my response. Then ask how many times my students and I will meet (have class) over the course of a semester and what topics I generally cover. Wait for my response. Then design a curriculum that makes sure students learn effectively. *(via Ethan & Lillach Mollick)*
- See also [SMARTIE](#) from the University of Calgary

Using generative AI for student tutoring or independent learning:

- **Prompt:** You are an upbeat, encouraging tutor who helps students understand concepts by explaining ideas and asking students questions. Start by introducing yourself to the student as their AI-Tutor who is happy to help them with any questions. Only ask one question at a time. First, ask them what they would like to learn about. Wait for the response. Then ask them about their learning level: Are you a high school student, a college student or a professional? Wait for their response. Then ask them what they know already about the topic they have chosen. Wait for a response. Given this information, help students understand the topic by providing explanations, examples, analogies. These should be tailored to students' learning level and prior knowledge or what they already know

about the topic. Give students explanations, examples, and analogies about the concept to help them understand. You should guide students in an open-ended way. Do not provide immediate answers or solutions to problems but help students generate their own answers by asking leading questions. Ask students to explain their thinking. If the student is struggling or gets the answer wrong, try asking them to do part of the task or remind the student of their goal and give them a hint. If students improve, then praise them and show excitement. If the student struggles, then be encouraging and give them some ideas to think about. When pushing students for information, try to end your responses with a question so that students have to keep generating ideas. Once a student shows an appropriate level of understanding given their learning level, ask them to explain the concept in their own words; this is the best way to show you know something, or ask them for examples. When a student demonstrates that they know the concept you can move the conversation to a close and tell them you're here to help if they have further questions. (via *Ethan & Lillach Mollick*)

Incremental prompting in ChatGPT (example):

- Basic prompt: I want you to write the outline of a paper about the concept of surveillance in Shakespeare's *Hamlet* ([Results](#))
- Incremental prompting:
 - Tell me about the key theories of Michel Foucault.
 - Tell me more about Foucault's writings on the topic of surveillance.
 - Explain Foucault's theory of the panopticon.
 - I want you to write the outline of a paper about the concept of surveillance in Shakespeare's *Hamlet*. ([Results](#))

Other Prompts to try:

- **Prompt:** Assess the following thesis statement with the rubric provided. Here is the thesis: "High school graduates should be required to take a year off to pursue community service projects before entering college in order to increase their maturity and global awareness." Use this rubric to assess the thesis statement: <https://www.wsfcs.k12.nc.us/cms/lib/NC01001395/Centricity/Domain/1060/Thesis%20Statement%20rubric.pdf>
- **Prompt:** Use your wit, creativity, and observational skills to create [adjective] math problems for [age-level] students. The math problems should involve [math topic] using references to [topics of interest, eg. pop culture]. Use the following student names [name a few students] and/or the teacher's name [teacher name].
- **Prompt:** Create a list of [#] writing prompts for [grade level] based on [topic].
- **Prompt:** Write a 500-character report card comment for a [grade level] student in a [adjective/s] tone. This student is exceeding the expectations for [topic/subject]. This student is [areas of success]. They are especially strong in [top area of strength]. And I'd like to see them [areas to keep working on].
- **Prompt:** Write a 500-character report card comment for a [grade level] student in a [adjective/s] tone. The student could strengthen their [action] of [topics and/or

skills]. Recommend they consider the following: [resources, support options, or types of practice].

- **Prompt:** Create a worksheet for [ability-level] students with a list of sentences, each with a blank space where a vocabulary word is missing. The sentences should be grammatically correct and appropriate for [age-level] students. Provide a set of instructions, list of words, and a sentence containing a blank space where one of the words should be inserted. The student's task is to fill in the blank with the correct word from [provided list OR # of words based on topic].
- **Prompt:** Code a fully working, HTML-based Flappy Bird game that can be run in Replit.
- **Midjourney prompt:** Nature photography, macro shot of Kermit the Frog, extremely detailed, natural light --ar 16:9 --v 5
- **Midjourney prompt:** Drake standing in a dimly lit club, with a bottle of champagne in his hand. He's wearing a black suit and tie, with a group of people partying in the background. hyper-realistic, photo-realistic, extremely detailed --ar 9:16 --upbeta

Resources:

- [AI and Writing Assignments \(from Harvard\)](#)
 - [A crowdsourced list of "awesome ChatGPT prompts."](#)
 - [Free prompt-engineering tips](#)
 - [A spreadsheet of K12 related prompts](#)
 - [A twitter thread on incremental prompting](#)
 - [Midjourney documentation and user guide](#)
 - [How can teachers use AI for good?](#)
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II. Tools/Resources

Tools/Resources:

- [Generative AI at the University of Regina](#)
- [AI Policies and guidelines from other universities \(HESA\)](#)
- List of relevant generative AI tools:
 - [ChatGPT](#)
 - [Microsoft's Copilot](#)
 - [Anthropic's Claude](#) (may not be available in Canada)
 - [Perplexity](#)
 - [AskYourPDF](#)
 - [Tome](#)
 - [Diffit](#)
 - [Dall-E](#)
 - [Midjourney](#)
 - [HeyGen](#)

- [Nolej](#)
 - [Descript](#)
 - [Youtube Summary with ChatGPT/Claude](#)
 - [Speechify](#)
 - [Elicit](#)
 - [Consensus](#)
 - [Research Rabbit](#)
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III. Concerns and Issues

Key Questions and Explorations:

- How do we ensure that students do not become over-reliant on AI tools, maintaining their ability to think critically and creatively?
- How do we ensure privacy and data security for students while utilizing AI in education to prevent potential misuse and exploitation?
- How do we ensure that AI systems do not perpetuate or exacerbate biases in educational content or assessments, disadvantaging certain groups of students?
- How do we ensure equitable access to AI-powered educational tools for socioeconomically disadvantaged students to bridge the digital divide and reduce educational inequality?
- How do we ensure that AI-generated content is accurate, relevant, and appropriate for students' learning needs?
- How do we ensure that the teacher-student relationship remains strong and human interaction is valued, despite the integration of AI in education?
- How do we ensure that AI-based assessment tools accurately and fairly evaluate students' knowledge, skills, and understanding?
- How do we ensure ethical considerations, such as surveillance, consent, and the commodification of education, are addressed when implementing AI in education?
- How do we ensure that educators receive adequate training and support for integrating AI into their teaching practices to maximize effectiveness and minimize potential issues?

Resources:

- [Open source data science: How to reduce bias in AI - World Economic Forum](#)
- [The Problem With Biased AIs \(and How To Make AI Better\) - Forbes](#)
- [Will AI Chatbots Raise Digital Equity Concerns for Students? - Government Technology](#)
- [ChatGPT Is a Blurry JPEG of the Web - The New Yorker](#)
- [Don't Ban ChatGPT in Schools. Teach With It. - The New York Times](#)
- [This 22-year-old is trying to save us from ChatGPT before it changes writing forever - NPR](#)

- [Ethical Considerations When Using Artificial Intelligence-Based Assistive Technologies in Education - Open Education Alberta](#)
- [Opinion: The Pros and Cons of Using AI in Schools - Government Technology](#)
- [AI In The Classroom: Pros, Cons And The Role Of EdTech Companies - Forbes](#)