

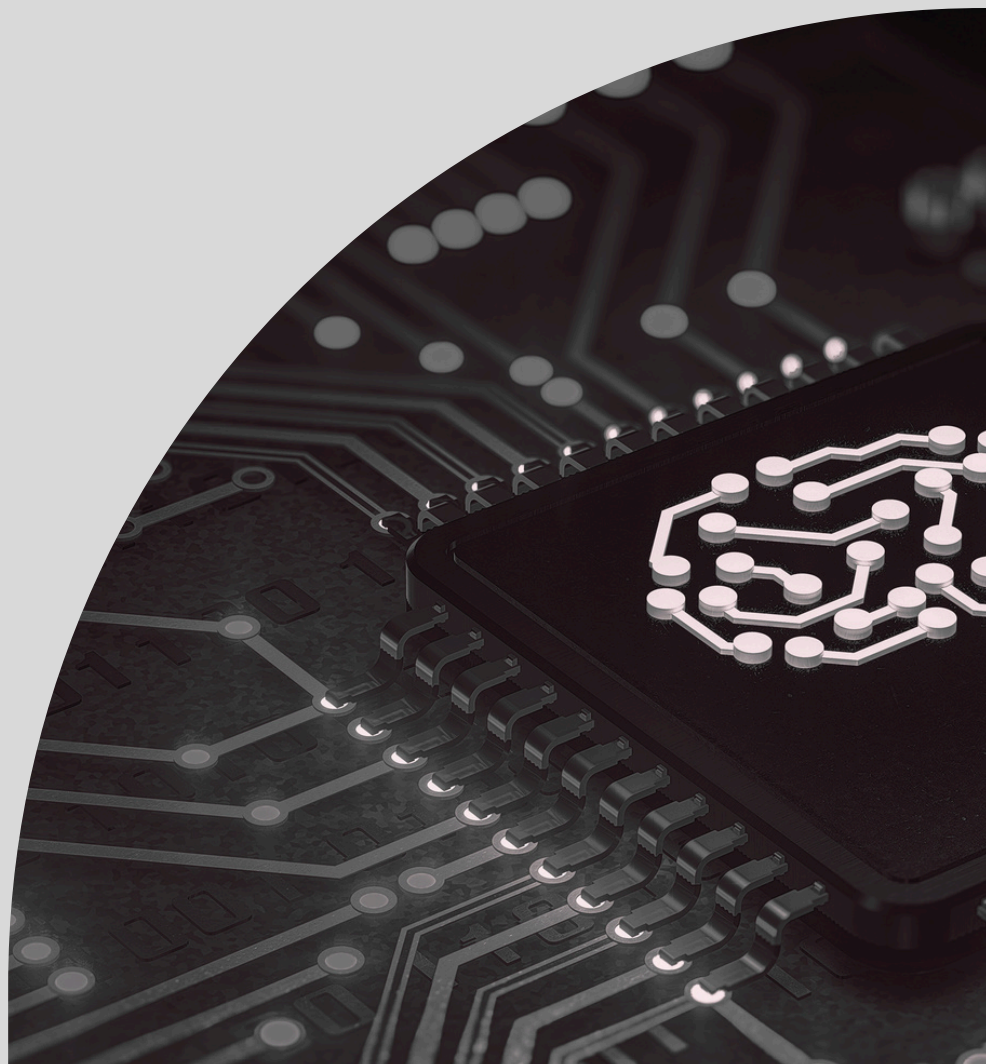
Prompting GenAI to Prompt

Using GenAI to Draft Educator Prompts That Foster Distinctive Human Skills and Deeper Student Engagement Through Bloom's Taxonomy, and Evaluating AI Responses

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Introduction

Education is changing rapidly, and generative AI (GenAI) is becoming a valuable tool to help educators create more engaging and meaningful learning experiences. Beyond saving time on routine tasks, GenAI offers the ability to support teachers in designing activities that encourage distinctive human skills like creativity, critical thinking, collaboration, and emotional intelligence. One exciting application is using GenAI to draft prompts that guide students into deeper levels of thinking and participation. When these prompts are thoughtfully structured around Bloom's Taxonomy; a framework that organizes learning from basic knowledge recall to complex creation; they can help students move beyond surface-level understanding. This essay explores the idea of "Prompting GenAI to Prompt," focusing on how teachers can use AI to develop stronger instructional prompts and how interacting thoughtfully with GenAI can open new possibilities for deeper student engagement.

Bloom's Taxonomy, originally developed by Benjamin Bloom and later revised by Anderson and Krathwohl, provides a powerful framework for promoting higher-order thinking in education.

The revised taxonomy reorganizes learning objectives into six categories: Remember, Understand, Apply, Analyze, Evaluate, and Create (Krathwohl, 2002). This structure helps educators move students beyond simple memorization toward more complex cognitive processes such as critical analysis and original creation (Oregon State University Ecampus, n.d.). By using Bloom's updated framework as a guide, teachers can intentionally design prompts that encourage deeper engagement with content, helping students not just to know information, but to think critically and use knowledge in meaningful ways.

In this exploration, I will assess the prompts generated by GenAI for educators based on Bloom's Taxonomy levels. I aim to see how well the AI understands and applies the framework when

asked to produce a variety of prompts across different cognitive levels. The real value lies not just in accepting AI outputs at face value but in educators thoughtfully reviewing, refining, and adapting them to ensure alignment with student needs and instructional objectives. As Popenici and Kerr (2017) argue, while AI offers promising tools for education, human expertise remains critical for guiding deeper, more meaningful learning experiences that AI systems are not yet capable of independently delivering.

Use Case: Using ChatGPT to generate higher-order thinking prompts for educators based on Bloom's Taxonomy. A sample dialogue with ChatGPT for prompt creation

My prompt: Draft for me a list of prompts and keywords that educators can use to generate lesson plan/or assignment questions that drive more transformational learning outcomes and encourages deeper student engagement. The response should incorporate 7 steps of bloom's taxonomy ensuring what distinctive human skills are and how gen AI can supplement learning.

And, use this for reference

<https://ecampus.oregonstate.edu/faculty/artificial-intelligence-tools/blooms-taxonomy-revisited/>

ChatGPT:

Transformational Learning Prompts for Educators *(Incorporating Bloom's Revised Taxonomy, Human Skills, and Generative AI)*

1. Remembering *(Recall facts and basic concepts)*

Prompt: Create a knowledge map summarizing the key ideas of [topic]. Then, use a generative AI tool to quiz you with 5 questions you might have missed.

Human Skill: Attention to nuance and context.

AI Role: Reinforce memory through personalized quizzes.

Keywords for Inquiry: Identify, list, recall, recognize, retrieve.

2. Understanding (*Explain ideas or concepts*)

Prompt: Explain a concept in your own words. Use AI to generate an alternate explanation. Compare: What did the AI miss or overcomplicate?

Human Skill: Critical comparison, empathy in communication.

AI Role: Offer alternative perspectives for critique.

Keywords for Inquiry: Summarize, interpret, explain, classify, compare.

3. Applying (*Use information in new situations*)

Prompt: Design a real-world scenario where students apply key concepts.

Brainstorm solutions manually first, then prompt an AI tool for additional ideas.

Evaluate which are practical and ethical.

Human Skill: Practical judgment, ethical reasoning.

AI Role: Suggest diverse solutions for evaluation.

Keywords for Inquiry: Implement, carry out, solve, use, execute.

4. Analyzing (*Draw connections among ideas*)

Prompt: Analyze differences between two sources on the same topic. Use AI to generate a comparison chart, but have students find hidden assumptions or biases the AI overlooks.

Human Skill: Pattern recognition, bias detection.

AI Role: Assist structuring comparisons.

Keywords for Inquiry: Differentiate, organize, deconstruct, attribute, compare, contrast.

5. Evaluating (*Justify a decision or course of action*)

Prompt: Present a debate topic. Build arguments using AI-generated evidence for one side, and human-researched evidence for the other. Reflect: Which felt more trustworthy and why?

Human Skill: Value judgment, ethical prioritization.

AI Role: Curate broad content for debate preparation.

Keywords for Inquiry: Critique, judge, defend, argue, validate.

6. Creating (*Produce new or original work*)

Prompt: Design a solution or story addressing a complex issue. Use AI for brainstorming, but ensure final work reflects personal values, creativity, and a human-centered approach.

Human Skill: True originality, emotional resonance.

AI Role: Spark ideas without replacing originality.

Keywords for Inquiry: Design, construct, produce, invent, imagine.

7. Metacognitive Self-Awareness (*Reflect on one's own learning*)

Prompt: Reflect: "How did using AI help or hinder my understanding?" Maintain a journal logging AI usage, thinking patterns, and strategy improvements.

Human Skill: Self-awareness, adaptive learning.

AI Role: Mirror information for reflection.

Keywords for Inquiry: Reflect, monitor, self-assess, adapt, plan.

Reminder: AI should act as a "thought partner" to spark, mirror, and gently challenge thinking—while the human experience stays central to transformational learning.

My prompt:

Generate an infographic for the keywords which can be used to draft assignments/lesson plans.

ChatGPT:



My prompt:

Now put this theory to task with an example. An educator is teaching a topic in science about reflection and refraction. Generate prompts for assignments and discussion guided by these 7 bloom's steps to ensure deeper learning and limiting AI's automating assignments. Present it in a format of 2 columns (Bloom's steps and Prompts). Skip steps which are not applicable for this assignment.

ChatGPT:

Example Application: Teaching "Reflection and Refraction" in Science

Bloom's Step	Assignment / Discussion Prompt
Remembering	"List and define key terms: reflection, refraction, angle of incidence, and critical angle. Create hand-written flashcards and quiz a classmate."
Understanding	"Explain how light behaves during reflection and refraction in your own words. Draw a simple real-world analogy (e.g., bouncing a ball for reflection, bending a straw in water for refraction)."
Applying	"Design a simple home experiment to show both reflection and refraction using basic materials. Sketch and label your experiment setup."
Analyzing	"Compare the behavior of light on a mirror vs. on a clear glass of water. Create a T-chart listing similarities and differences and provide your explanation for the observations."

Evaluating	"Evaluate two different explanations for why light bends in water. Choose the explanation you agree with and defend your choice using observations or examples."
Creating	"Invent a device that helps drivers see better in fog using principles of reflection or refraction. Sketch your invention and write a brief description of how it works."
Metacognitive Self-Awareness	"Reflect on your learning: What helped you understand reflection and refraction the most? What learning strategies would you use again or change?"

How ChatGPT Met My Expectations

Throughout my project, I consistently used ChatGPT as a supportive tool for drafting, refining, and verifying content related to Bloom's Taxonomy and fostering distinctive human skills for deeper student engagement. My expectations were largely met in the following ways:

Efficiency and Quality

- **Promising Responses:** ChatGPT provided thoughtful, relevant, and well-organized outputs aligned with my prompts.
- **Source Verification:** I could verify the referenced theories and frameworks it mentioned, confirming accuracy and reliability.
- **Error-Free Information:** Especially when focusing on educational theories like Bloom's Taxonomy and promoting deeper engagement skills, the AI responses were consistently clear, precise, and appropriate for academic use.

Alignment with Educational Goals

- **Assignment Planning Support:** ChatGPT generated valuable ideas for classroom activities, assignments, and discussions that would encourage higher-order thinking among students.
- **Reducing AI Misuse by Students:** It also helped me design assignment prompts that would make it more difficult for students to rely solely on AI-generated answers, promoting authentic learning. Recent research highlights how reimagining assessments can reduce AI misuse among students, with Evangelista (2025) advocating for innovative exam structures and stronger ethical guidelines to address these challenges.

- Responsiveness to Frameworks: The AI accurately followed the Bloom's cognitive levels when explicitly prompted, showing a good understanding of instructional design needs.
- Human-Centric Focus: The responses consistently emphasized human skills such as creativity, evaluation, and critical thinking challenging memorization or surface-level learning.

Surprises Along the Way

While ChatGPT largely met my expectations, it also provided some surprising insights and experiences that extended beyond my initial assumptions:

Unexpected Strengths

- Infographic Generation:

I was pleasantly surprised to discover ChatGPT's ability to suggest designs and structures for educational infographics. This opened questions about the future of creative professions, particularly how graphic designers and content creators might collaborate with AI tools to retain human relevance. Li et al. (2024) critically analyze the evolving role of AI in graphic design, suggesting that while AI enhances efficiency and innovation, it also raises important questions about the future of human relevance in creative industries.

- Depth of Adaptability:

When I broke down my instructions clearly, ChatGPT could adapt its tone, depth, and structure impressively, highlighting the critical importance of effective prompting.

Limitations Noticed

- Dependence on Prompt Quality:

I observed that the quality of AI responses varied significantly based on how well the prompt was crafted. Poorly framed prompts resulted in superficial or slightly off-target responses. Detailed and layered prompts yielded much richer outputs.

- Occasional Hallucinations:

Despite overall reliability, there were moments where ChatGPT appeared to "hallucinate" or overextend ideas particularly fitting for my essay theme ("Prompting GenAI to Prompt"). This happened when my prompt was layered with ideas. Sekli, Godo, and Véliz (2024) highlight that generative AI models can produce hallucinated or inaccurate responses, especially when prompts are complex, layered, or require multi-step reasoning beyond the model's training context.

Prompt Engineering Skill

Working on this project strengthened my understanding of prompt engineering; knowing how to break down complex tasks into smaller, clearer prompts to guide AI outputs effectively. Here is a useful tips with example (Marr, B. 2025)

Tip	Example
Assign a Role to the AI	"Act as a marketing expert specializing in social media campaigns for small businesses."

Start at the End	"Create a weekly social media content calendar for Instagram, including post types, optimal posting times, and engagement strategies."
Break Tasks Down into Manageable Chunks	1. "Outline the key sections of a coffee shop business plan." 2. "For each section, list the essential information to include." 3. "Draft an executive summary for a premium, ethically sourced coffee shop in a busy urban area."
Provide Data It Needs to Make Decisions	"Upload a recent market analysis, strategy documents, a competitor analysis, and a customer feedback analysis before asking it to create a business plan."
Use Examples to Guide Output	"Here's an example of our typical Instagram post: [Insert example]. Create five more posts in a similar style, focusing on our ethically sourced beans."
If You Aren't Sure What It Needs to Know, Ask	"I want to create a marketing plan for my coffee shop. What additional information do you need from me to create an effective plan?"

Reflection

In this project, the use of AI chatbots, particularly ChatGPT, has largely met my expectations. The AI was a useful tool for generating prompts and responses aligned with Bloom's Taxonomy, assisting educators in fostering deeper student engagement. It provided promising and error-free responses in relation to creating prompts that encouraged distinctive human skills in the

classroom. It allowed me to efficiently verify sources, leading to greater confidence in the results.

Regarding mitigating AI risks, such as inaccuracies and potential misinformation, I found that by carefully refining the prompts and verifying AI-generated responses, I could largely avoid issues of errors or hallucinations. While I occasionally encountered hallucinations, especially when my prompts were complex or had multiple layers, I realized the importance of providing clear, specific instructions to minimize such inaccuracies. In cases where hallucination occurred, I broke down my queries further to prompt the AI to give more accurate and relevant answers.

This process also prompted additional reflections on how automated the use case of AI in education can truly be. I explored the middle ground between full human labor and complete automation. For instance, AI could automate much of the prompt generation and instructional planning, but the human touch is indispensable when it comes to understanding emotional nuance, fostering relationships, and interpreting context-specific classroom dynamics. It became clear that while AI can significantly reduce administrative burdens and assist in content creation, educators will still play a crucial role in shaping the learning environment, ensuring the outputs align with pedagogical goals, and addressing individual student needs.

Ultimately, my experience reinforced that AI in education has immense potential but needs to be used thoughtfully and collaboratively with human educators to ensure the highest quality learning experiences.

References

- Evangelista, E. D. (2025). Ensuring academic integrity in the age of ChatGPT: Rethinking exam design, assessment strategies, and ethical AI policies in higher education. *Contemporary Educational Technology, 17*(1), 1–19. [https://doi.org/\[Insert DOI if available\]](https://doi.org/[Insert DOI if available])
- Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice, 41*(4), 212–218. https://doi.org/10.1207/s15430421tip4104_2
- Li, H., Xue, T., Zhang, A., Luo, X., Kong, L., & Huang, G. (2024). The application and impact of artificial intelligence technology in graphic design: A critical interpretive synthesis. *Heliyon, 10*(21), e40037. <https://doi.org/10.1016/j.heliyon.2024.e40037>
- Marr, B. (2025, March 4). The top AI prompt writing tips you must know about [Video]. YouTube. <https://www.youtube.com/watch?v=3sppzK41YS0>
- Oregon State University Ecampus. (n.d.). Bloom's taxonomy revisited. <https://ecampus.oregonstate.edu/faculty/artificial-intelligence-tools/blooms-taxonomy-revisited/>
- Popenici, S. A. D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning, 12*(1), 1–13. <https://doi.org/10.1186/s41039-017-0062-8>
- Sekli, G. F. M., Godo, A., & Véliz, J. C. (2024). Generative AI solutions for faculty and students: A review of literature and roadmap for future research. *Contemporary Educational Technology, 16*(3), Article e446. [https://doi.org/\[Insert DOI if available\]](https://doi.org/[Insert DOI if available])