

Using AI for Brainstorming

If you're just dipping your toe into incorporating AI into assignments or classwork, using it as a brainstorming tool with your students can be a great place to start – with caveats. As with any use of a generative AI tool, work within the parameters of your institution's policies on AI use, and remind students of these terms as well. Remember, and remind students, that AI tools use whatever they input to further train their model, and that information they input is not confidential.

If you're setting up a brainstorming assignment that uses AI, consider developing an alternative assignment with similar learning outcomes so students can opt out if they do not want to use these tools. With that said, it can be a valuable way to open a conversation with students about the possibilities and pitfalls of using AI, and to think critically both about the topics they want to explore and about AI tools in general. Because brainstorming happens early in the research process, it's a more flexible time to explore ideas and research tools. Let's take a closer look:

Brainstorming with AI is open ended: To begin with, using AI for this early stage of the research process avoids many (though not all!) of the most problematic aspects of AI use for in-depth research or writing. The brainstorming phase of a project is more open ended, and there are typically fewer restrictions on where a student can turn to come up with ideas to explore more in depth. In other words, they would not yet be at a point in their research process where they needed to zero in on specific sources, or where they need to synthesize or analyze ideas, form arguments, or make conclusions. If a student is looking for ideas for a paper, they might do a Google search, browse through some textbooks or other reference sources on the subject, or speak with friends or an instructor about avenues they are interested in exploring. To this toolkit of resources for brainstorming, they can add AI.

Clarify for yourself and your students what your ultimate learning outcomes are in this research process – allowing students to use AI as a brainstorming tool likely won't compromise them. Because it's so early in their process, there is time to catch problematic outputs of AI – hallucinated ideas, overly vague suggestions, and other less than ideal results – before they go too far down a research path, especially if you build reflection into their AI brainstorming exercises. (We'll talk more about how brainstorming with AI can be an exercise in encountering and understanding some of AI's weaknesses later in this article.)

Using AI as a brainstorming tool gives students practice in strategic searching: You've probably worked with students to generate keywords and design searches to return relevant results in search engines or databases. Though writing prompts for AI is different from putting keywords into a search engine, there are similarities in the skills involved. Both tasks require students to be thoughtful about the information they need, how their choice of language will

influence the nature of their results, and the importance of iteration as they refine their ideas or see the need for different approaches. Talk with your students about best practices for writing prompts effectively for brainstorming.

It's helpful to provide AI with a role (or context) such as "you are a high school history student" Students should also provide the model they are using with a description of their brainstorming task, such as "brainstorm three ideas for the research paper that explore black communities in early America." Additional detail is helpful, especially if a student already has some initial ideas of their own. For example: "brainstorm three ideas for the research paper that explore black communities in early America, emphasizing the role of women."

Adding in additional scope or requirements, such as the desired length of the eventual research paper, or the form the ideas should be returned in (paragraphs, outline, bullets, etc.), will also help guide the model. Understanding these tips will not only help students get more relevant responses to their brainstorming query, going through the process of refining their language and revising prompts based on the responses they get is also an important way for them to learn by doing the importance of their language choices. This has ramifications far beyond brainstorming, AI use, or even research in general; it is a critical thinking and communication skill that they can apply in many realms of their academic, professional, and personal lives.

Using AI for brainstorming can highlight both its strengths and weaknesses as a tool:

Once students have done a few rounds of prompting AI as part of their brainstorming process, ask them to reflect on how it has gone. This reflection will open up the opportunity for students to share their observations on how generative AI has been helpful or disappointing as a tool for helping develop ideas or focus on a topic. Ask students to compare the ideas and suggestions they received from using generative AI to ideas they developed using other techniques. Have students work in pairs or small groups to critique the ideas generated by AI. Here are some guiding questions you may want to use:

- Was generative AI helpful in suggesting initial areas of exploration?
- Did you find the responses that AI provided to be interesting or original? Describe.
- Were AI responses sufficiently specific enough to take the next steps into research, or were they overly generic or vague?
 - Did revising prompts and adding follow up questions produce better answers?
- Did the models suggest any topic ideas that were hallucinated or otherwise inaccurate? (In order to answer this question, students will need to use outside trusted sources to verify whether a topic suggested by AI is indeed a realistic research subject.)

As students begin to ask these questions and think critically about them, they will develop additional insight into the ways in which generative AI can be used effectively, and where it should be combined with other tools, or not utilized at all.

By facilitating this reflection, you will learn a lot about your students' learning processes as well. You may find that some students were greatly helped by initial suggestions for research areas from AI – starting with a “blank page” can be overwhelming for some students. Others may have found that it took them so long to write and revise prompts to get AI to generate ideas they found worth pursuing that they preferred to use other methods. Students who are English language learners may find using AI as a brainstorming tool to be an effective way to articulate their ideas more smoothly in their non-native language. These lessons for your students are also lessons for you as you consider other areas of lesson planning, assignment design, classroom discussions, and more.

Sources and Suggested Resources

<https://learnprompting.org/>

Johnson, S.M., Coley, M., Bandy, J., Bradley, J., Molvig, O. (2023). *Teaching in the Age of AI*. Vanderbilt University Center for Teaching.

<https://cft.vanderbilt.edu/guides-sub-pages/teaching-in-the-age-of-ai/>.