

FAQ

ChatGPT in the Classroom

A practical source of information for college-level instructors struggling to navigate the potential impacts of ChatGPT (and other Large Language Models) in class, and are interested in ways of leveraging the tool to enrich and elevate their teaching.

Please feel free to share. Short link: <https://bit.ly/gptclassfaq>

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ChatGPT

Note on use: These FAQs are a dynamic draft, meaning that they will be updated frequently based on new information. They are divided into broad areas of interest, and are written to be as simple and as practical as possible. Many of them have been developed in collaboration with ChatGPT.

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1. Basics

1.1 What is ChatGPT?

[ChatGPT](#) is a large language model (or LLM) created by OpenAI that can generate human-like text based on large amounts of textual training data. It can be used for a variety of tasks, such as answering questions or generating text based on prompts. It is designed to interface with a human in conversational sessions where later responses reflect information from earlier parts of the session. In other words, its responses not only reflect the large amounts of text information used to train it before the session but also any information shared with it during the entire conversation session (which is lost when the session is closed). Consequently, a human operator can act as an editor whose interactions with the AI writer allow the produced text to be a tailored combination of human–AI co-authorship. Because of the diversity in its training data, it can produce a myriad of different types of outputs, even including executable computer code or mathematical proofs. It is just one of a growing number of LLMs that can provide detailed and often insightful responses to questions written in a conversational style.

1.2 Should students use ChatGPT to complete assignments?

Although students technically can use ChatGPT to complete assignments, it is generally not a good idea unless there are clear guidelines for using ChatGPT. Well-designed assignments are formative exercises that will help students learn or summative exercises to gauge their comprehension, and if students rely on ChatGPT to do the work for them, they risk missing out on an important opportunity to measure and develop their skills and understanding. That said, there may be innovative teaching techniques where using ChatGPT becomes part of the learning process. Individual instructors should be clear up-front about acceptable and unacceptable uses of ChatGPT in class and the consequences of not abiding by these guidelines. To some extent, ChatGPT is conceptually similar to a calculator that can solve equations symbolically or automatically calculate statistical tests from inputted data; these tools can be enablers of higher-order learning for some students who already have the content grammar to not need the low-level practice, but these tools can also be barriers to obtaining that content grammar in the first place.

1.3 What should I do if I suspect a student is using ChatGPT to inappropriately complete an assignment?

If you suspect that a student is using ChatGPT to complete an assignment in a way that contravenes established guidelines, you should follow your institution's academic integrity policies where possible. In some cases though, these may not yet cover the specific case you are dealing with. As the technology is so new, you may want to treat inappropriate use of ChatGPT as a learning experience rather than moving straight to disciplinary action. For instance, you may want to speak with the student directly and ask them to explain their work,



and at the same time reinforce to the student the purpose and learning objectives of assignments in class.

1.4 Should students be able to use ChatGPT for research on assignments?

In many cases it is probably appropriate to allow students to use ChatGPT for research on assignments, but they should still be expected to critically evaluate the information that they find. ChatGPT generates text based on its training data, which may not always be accurate or reliable. Students should be encouraged to verify information from multiple sources and to think critically about the information they are using. In addition, students should be encouraged to be clear when they are working with ChatGPT.

1.5 How can I check whether students have used ChatGPT when they shouldn't?

It can be difficult to determine whether students have used ChatGPT to complete assignments, as the generated text may appear to be their own work. However, there are some signs that may indicate that a student has used ChatGPT, such as inconsistencies in their writing style or the use of technical language they have not previously demonstrated. You can also use plagiarism detection software to check for similarities between a student's work and text generated by ChatGPT.

You can also try using OpenAI's AI classifier for indicating AI-written text ([accessible here](#)). However, it is always worth using multiple approaches to determine if a student may have used ChatGPT inappropriately. And of course, if ChatGPT provides links to sources, or includes citations that a student then incorporates into their work, it's easy to verify these!

1.6 How can I incorporate ChatGPT into the classroom?

ChatGPT can be used in a variety of ways to support teaching and learning. For example, you could use ChatGPT to generate prompts for writing assignments, or to provide automated feedback on student work. You could also use ChatGPT to create interactive learning experiences, such as chatbots that simulate conversations with historical figures or literary characters. However, it's important to consider the potential risks and limitations of using ChatGPT, and to use it in ways that are appropriate for your specific context.

For more information, see the FAQ below on uses of ChatGPT in the classroom



2. Potential concerns over the use of ChatGPT

2.1 What are some of the big concerns instructors have around the use of ChatGPT in the classroom?

- Plagiarism and academic integrity: Instructors may be concerned that students could use ChatGPT to generate content that is not their own and present it as their own work, thereby violating academic integrity.
- Quality of work: Instructors may be concerned that students could rely too heavily on ChatGPT and produce work that does not reflect their own learning or understanding of the material.
- Unequal access: Instructors may be concerned that students who do not have access to ChatGPT or similar tools may be at a disadvantage compared to those who do, leading to an unfair distribution of grades.
- Misuse of time: Instructors may be concerned that students could spend too much time using ChatGPT and not enough time engaging with the course material in other ways.
- Lack of transparency: Instructors may be concerned that students could use ChatGPT without disclosing it, leading to a lack of transparency and making it difficult to evaluate the students' actual learning and understanding.

It's important for instructors to be aware of these concerns and to take steps to address them in their teaching and assessment practices. This may involve providing clear guidelines for using ChatGPT, encouraging transparency and responsible use of the tool, and providing alternative methods for learning and assessment to ensure that all students have an equal opportunity to succeed.

2.2 Why is academic dishonesty a concern with ChatGPT?

There is a danger that students may use ChatGPT to complete assignments or write papers without properly citing the sources or appropriately attributing the ideas to others.

Plagiarism undermines the integrity of the academic work and devalues the degree that the student is working towards. It also violates the ethical principles of scholarship and research. Additionally, instructors may feel that their assessment of a student's learning is compromised if the student has used ChatGPT or other similar tools to complete an assignment or write a paper without engaging with the material.

Furthermore, ChatGPT may provide students with a false sense of security, which can lead them to take risks with academic integrity. The ease and convenience of using a tool like ChatGPT may tempt students to cut corners or take shortcuts, leading to academic misconduct.



To prevent academic dishonesty, instructors can communicate their expectations for original work, provide guidance on how to properly cite sources and attribute ideas, and consider using plagiarism detection software to identify instances of plagiarism. Additionally, discussing the consequences of academic dishonesty with students can help reinforce the importance of academic integrity.

2.3 How could using ChatGPT adversely impact the quality of a student's work?

While ChatGPT can be a helpful tool for generating ideas and providing inspiration for writing assignments, relying too heavily on it can adversely impact the quality of a student's work in several ways.

Firstly, ChatGPT may provide students with generic, cookie-cutter responses that lack originality, creativity, or critical thinking. This can result in work that is formulaic and superficial, rather than thoughtful and insightful.

Secondly, using ChatGPT to generate ideas can limit a student's ability to develop their own ideas and perspectives, which is an important aspect of learning and developing as a writer and thinker.

Thirdly, ChatGPT may not fully understand the assignment prompt, leading to irrelevant or off-topic responses that do not meet the requirements of the assignment.

Finally, ChatGPT may not be able to provide accurate information or reliable sources for the student's research, leading to misinformation and inaccuracies in their work.

In summary, while ChatGPT can be a useful tool for generating ideas and providing inspiration, relying too heavily on it can lead to work that lacks originality, creativity, critical thinking, relevance, accuracy, and reliability.

2.4 How could ChatGPT lead to inequalities in learning within classes?

ChatGPT could potentially lead to inequalities in learning within classes in several ways.

Firstly, students who have access to ChatGPT may have an unfair advantage over those who do not, particularly if assignments are heavily weighted towards writing or research tasks.

Secondly, students who are more familiar with ChatGPT and how to use it effectively may be able to produce higher quality work more efficiently than their peers, which can further widen the gap between high and low achieving students.



Thirdly, students who are using ChatGPT to complete assignments may not be developing the necessary skills, such as critical thinking, research, and writing, that are required for success in higher education and the workforce.

Finally, if students are relying on ChatGPT to complete assignments, they may not be engaging with the course material in a meaningful way, which can result in lower levels of understanding and retention of the content.

Overall, the use of ChatGPT in the classroom could potentially exacerbate existing inequalities in learning, particularly if some students have greater access to technology or are more familiar with how to use it effectively. It is important for instructors to consider these potential impacts when incorporating technology into their courses, and to strive to create a level playing field for all students.

2.5 How could lack of transparency over the use of ChatGPT impact learning?

Lack of transparency over the use of ChatGPT can impact learning in several ways.

Firstly, if students are not transparent about their use of ChatGPT, it can lead to a lack of academic integrity and trust within the learning community. This can create an unfair advantage for those who use ChatGPT, and erode the value of hard work and effort.

Secondly, if students are not transparent about their use of ChatGPT, instructors may not be able to provide appropriate feedback or guidance on assignments. This can result in missed opportunities for students to develop critical thinking, research, and writing skills.

Thirdly, if students are not transparent about their use of ChatGPT, it can be difficult for instructors to assess the effectiveness of the course content and assignments. This can lead to a lack of accountability for both instructors and students, and ultimately impact the quality of the learning experience.

In order to promote transparency and academic integrity, it is important for instructors to clearly communicate expectations and guidelines for the use of ChatGPT, and for students to be honest and forthcoming about their use of technology in completing assignments. This can help create a more open and trustworthy learning environment, and foster a culture of academic honesty and accountability.

2.6 How trustworthy is information provided by ChatGPT

The trustworthiness of information provided by ChatGPT in the context of learning and completing class assignments at the undergraduate level can vary depending on several factors. While ChatGPT can generate coherent and plausible responses to prompts, it is not without limitations and potential biases. It is also flat out wrong sometimes.



One concern is that ChatGPT's responses may be influenced by its training data, which may not be comprehensive or unbiased. Additionally, ChatGPT may not always understand the nuances of a particular assignment prompt or topic, which can result in responses that are off-topic or irrelevant.

Furthermore, ChatGPT does not have the ability to critically evaluate information sources, so it may generate responses based on inaccurate or biased information. This can lead to a lack of credibility and accuracy in the information generated by ChatGPT, which can impact the quality of a student's work.

In order to mitigate these concerns, it is important for students to critically evaluate and fact-check any information generated by ChatGPT, and to use it as a tool for idea generation and refinement rather than a replacement for their own critical thinking and research. Instructors should also be transparent about their expectations for the use of ChatGPT and provide guidance on how to effectively incorporate it into the learning process.

2.7 Are sources and citations provided by ChatGPT reliable and accurate?

No. ChatGPT is a machine learning model that generates text based on patterns it has learned from vast amounts of data. While ChatGPT can provide suggestions for sources and citations, it is important to remember that the accuracy and reliability of these sources cannot be guaranteed. In fact, more often than not, seemingly-authoritative citations provided by ChatGPT are, in fact, fictitious.

It is always best to check and validate sources and citations provided by ChatGPT, and to treat them with suspicion until validated.

2.8 How big of a concern is the authority and persuasiveness of responses provided by ChatGPT?

The authority and persuasiveness of responses provided by ChatGPT can be a concern for some instructors as the platform can craft extremely persuasive and authoritative responses that are wrong. In some cases, errors may be subtle or represent internal bias. In others, they are categorically wrong.

It's important for students to understand that, since ChatGPT is an artificial intelligence model, it does not have the same level of expertise or understanding of a subject matter as a human expert, and it is often unable to check the validity or information provided. Because of this, it is important for students to understand the limitations of ChatGPT and to critically evaluate the information provided to ensure that it is relevant, accurate, and appropriate for their specific assignment or learning objectives.



Instructors may need to provide guidance and resources to help students develop these critical thinking and evaluation skills. They may also want to provide examples of where ChatGPT has provided answers that feel right, but are wrong – or answers that are very clearly wrong.

2.9 Could you give an example of a response from ChatGPT that is very clearly wrong that I can use with my students?

This is an example that is very easily verifiable as wrong from the web links and simple Google searches. Nothing in this response is correct (as can be verified by a simple Google search or following the links):

Question: Hi ChatGPT -- what are the three most interesting papers written by Professor Andrew Maynard? Could you also provide links to them?

Response: Sure, here are three interesting papers written by Professor Andrew Maynard along with links to them:

"Understanding the societal implications of nanotechnology: a perspective on emerging cognitive frameworks." This paper examines the societal implications of nanotechnology and provides insight into the cognitive frameworks that people use to understand the technology. Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2727263/>

"Nanotechnology: the social and ethical issues." In this paper, Maynard explores the social and ethical implications of nanotechnology, including its potential impact on health, the environment, and society as a whole. Link: <https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470057941.ch1>

"Responsible innovation: managing the responsible emergence of science and innovation in society." This paper outlines the concept of responsible innovation and discusses its importance in managing the emergence of new technologies. Link: <https://www.sciencedirect.com/science/article/pii/S0016328712000232>

2.10 Could you give another example of where ChatGPT is authoritatively wrong?

In this example, pretty much everything is wrong, despite the response being stated with such authority. The correct movies are: 1) Jurassic Park. 2) Never Let Me Go. 3) Minority Report. 4) Limitless. 5) Elysium. 6) Ghost in the Shell. 7) Ex Machina. 8) Transcendence. 9) The Man in the White Suit. 10) Inferno. 11) The Day After Tomorrow. 12) Contact.

Question: What are the twelve films that Andrew Maynard writes about in his book Films from the Future?



Response: The twelve films that Andrew Maynard writes about in his book "Films from the Future" are:

1. Gattaca (1997)
2. The Day the Earth Stood Still (1951 and 2008 versions)
3. The Andromeda Strain (1971)
4. The Matrix (1999)
5. The Minority Report (2002)
6. I, Robot (2004)
7. Children of Men (2006)
8. WALL-E (2008)
9. Inception (2010)
10. Her (2013)
11. Ex Machina (2014)
12. Arrival (2016)

Maynard examines the ways in which these films explore emerging technologies and their potential impacts on society, and discusses the ethical and social implications of these technologies.

2.11 And how about a third example of where ChatGPT is wrong but in a way that's harder to tell?

This is an example of a response to a question that is wrong because of how the question has been framed, but is harder to verify. To put this in context, President Crow's response to the ChatGPT response was "This logic isn't coming from me, although I can see how it made connections. They are to related ideas, not to specific logic."

Question: Hi ChatGPT -- could you explain why Michael Crow, the President of Arizona State University, is so interested in bees?

Response: Michael Crow, the President of Arizona State University, is an advocate of using the behavior of bees to inspire new ways of thinking about social systems and solving complex problems. He sees bees as an example of how collective intelligence can be harnessed to achieve goals that are difficult or impossible for individuals to accomplish alone. Crow has noted that bees have evolved to cooperate and communicate effectively with each other in order to survive and thrive, and that their behavior could hold important lessons for humans as we seek to tackle global challenges such as climate change and social inequality.

Crow has spearheaded a number of initiatives at Arizona State University that incorporate the principles of collective intelligence and the behavior of bees. For example, he launched the Global Futures Laboratory, which brings together researchers from different fields to collaborate on solutions to major societal challenges, and he has championed the creation



of a "Bee Campus" program that promotes the use of campus landscapes as habitat for bees and other pollinators.

3. Class-specific Guidelines

3.1 What are some suggestions on guidelines for how NOT to use ChatGPT:

- Do not use ChatGPT to complete assignments for you. Use it only to generate ideas or get help with specific questions, and always make sure to properly cite any information generated by ChatGPT.
- Do not rely solely on ChatGPT for research. Use it only as a starting point and always verify any information with additional sources.
- Do not share or post ChatGPT-generated content that is inappropriate, offensive, or violates academic integrity policies.
- Do not use ChatGPT to deceive instructors or other students about the authenticity of your work.
- Do not use ChatGPT to generate content for high-stakes exams or assessments.

3.2 What are some suggestions on guidelines for how to use ChatGPT to enhance learning:

- Use ChatGPT to generate prompts for writing assignments, and use the generated text to inspire new ideas and perspectives.
- Use ChatGPT to get help with specific questions or concepts that are difficult to understand, and use the generated text to clarify your understanding.
- Use ChatGPT to practice writing skills and receive automated feedback on your writing.
- Use ChatGPT to generate interactive learning experiences, such as chatbots or simulations, that allow you to engage with the material in a more immersive and interactive way.
- Use ChatGPT to collaborate with other students, generating text together to explore complex topics or ideas.

For specific guidelines on writing effective prompts, see the FAQ on teaching students to craft more effective prompts.



3.3 What else should I tell my students about the use of ChatGPT in class?

Instructors should also remind students to use ChatGPT responsibly and ethically, and to always consider the potential risks and limitations of using AI-generated content in their academic work.

3.4 What language about ChatGPT would it be useful to include in my syllabus?

There is currently no required boilerplate language for syllabi that covers ChatGPT, and each class is likely to be different in how the tool is used, as well as restrictions on its use. Importantly, because different classes and instructors will use ChatGPT and other AI tools in different ways, there is unlikely to be one effective fit-all policy for syllabi.

When crafting class-specific policies, the following examples may help as starting points:

Example 1:

While ChatGPT can be a useful tool to assist with the writing process, it's important to use it responsibly and in accordance with academic integrity guidelines. Any attempt to use ChatGPT to complete assignments or to plagiarize material and present the work as your own will be considered academic misconduct, and will result in disciplinary action. It's important that you develop your own ideas and understanding of the course material, and use ChatGPT as a supplement to your learning, not a replacement. If you choose to use ChatGPT, please be transparent about it and acknowledge any contributions it makes to your writing. Remember, the goal of this course is to develop your own voice and perspective, and any attempt to use ChatGPT to gain an unfair advantage will not be tolerated.

Example 2:

Throughout the semester, we will be exploring a variety of tools and resources to enhance your learning and understanding of the course material. One of these tools is ChatGPT, an AI-powered language model that can help you generate and refine your ideas for writing assignments. While the use of ChatGPT is not required, it can be a useful tool to assist with the writing process. However, it's important to use ChatGPT responsibly and in accordance with academic integrity guidelines. If you choose to use ChatGPT, please be transparent about it and acknowledge any contributions it makes to your writing. Remember, the goal of this course is to develop your own ideas and understanding, so use ChatGPT as a supplement to your learning, not a replacement."

Example 3 (based on an AI Policy formulated by [Ethan Mollick](#)):

I expect you to use AI (including ChatGPT and image generation tools) in this course. In fact, some classes will require it. Learning to use AI is an emerging skill, and appropriate tools and resources will be provided on Canvas to help you. I am happy to meet and help you understand how to use these tools in class or in office hours.



Be aware of the limits of these tools though, especially ChatGPT:

- If you provide minimum effort prompts, you will get low quality results. You will need to refine your prompts to get good outcomes. This will take work.
- Don't trust anything ChatGPT says. If it gives you a number or a fact, assume it is wrong unless you either know the answer or can check it with another source. You will be responsible for any errors or omissions provided by the tool. Using ChatGPT works best for topics you understand.
- AI is a tool, but one that you need to acknowledge using. Please include a paragraph at the end of any assignment that uses ChatGPT or any other form of AI explaining what you used it for and what prompts you used to get the results. Failure to do so will be considered to be a violation of academic integrity policy.
- Be thoughtful about when and how you use ChatGPT and when it is useful. Don't use it if it is not appropriate for the case or circumstance."

(Source: [Ethan Mollick, modified](#))

4. Innovative ways of using ChatGPT

4.1 How can ChatGPT be used to enhance student learning?

ChatGPT can be used to support student learning in a variety of ways, such as generating prompts for writing assignments, providing automated feedback on student work, or creating interactive learning experiences. ChatGPT can also be used to help students explore complex ideas and concepts by generating text that provides additional context or explanations. Furthermore, the design of sequences of prompts for ChatGPT is itself an advanced area referred to as "prompt engineering" (see later FAQ for further information)It is possible that in the future, learning outcomes will support developing the capability to write sophisticated prompts for advanced interactions with ChatGPT – shifting the focus of educational learning outcomes from the text that can be produced by ChatGPT to prompts that are used to guide ChatGPT's text generation itself.

4.2 How can ChatGPT be used to promote critical thinking and creativity?

By using ChatGPT to generate prompts for writing assignments, instructors can encourage students to think critically and creatively about a given topic. For example, asking ChatGPT to "imagine what the world might be like in 100 years" will produce a number of concise possibilities (see screenshot below) that can be used as writing prompts for students to elaborate on.



 imagine what the world might be like in 100 years

 Predicting the future is always difficult, but here are some possible scenarios for what the world might be like in 100 years:  

1. **Climate change:** It's likely that the effects of climate change will continue to worsen, leading to more severe weather events, rising sea levels, and increased food and water shortages. Governments and individuals will need to take drastic action to reduce carbon emissions and adapt to a changing climate.
2. **Technology:** It's safe to assume that technology will continue to advance at a rapid pace, with new innovations transforming the way we live and work. Artificial intelligence, robotics, and biotechnology could bring about major breakthroughs in fields such as healthcare, energy, and transportation.
3. **Demographics:** The world's population is expected to continue to grow, but at a slower rate than in previous decades. Aging populations in many countries could lead to strains on healthcare systems and social services, while younger populations in some regions could face challenges such as high unemployment rates.
4. **Politics:** The world order may shift as some countries rise in power and others decline. International cooperation will be increasingly important as global challenges such as climate change, pandemics, and cybersecurity require coordinated solutions.
5. **Space exploration:** Humans could make significant progress in exploring and colonizing space, with the possibility of establishing permanent settlements on other planets or in orbit around Earth.

Of course, these are just a few possible scenarios, and the future could unfold in many different ways depending on a range of factors. Ultimately, the world of 100 years from now will be shaped by the actions and decisions we make today.

After reading through these possibilities, students (or the classroom collectively) might decide to focus the prompts to a more specific context, as in the case below that specializes the ChatGPT prompt for Mars.

 imagine what Mars might look like in 100 years

 It's difficult to predict with certainty what Mars might look like in 100 years, but here are some possible scenarios based on current plans and technology:  

1. **Human exploration:** There are plans to send humans to Mars in the next decade or so, and by 2123, it's possible that humans could have established a permanent presence on the planet. This could include habitats, research stations, and even small towns.
2. **Terraforming:** Terraforming Mars, or making it more Earth-like, is a long-term goal for some scientists and researchers. This could involve heating up the planet's atmosphere, creating artificial magnetic fields, or genetically engineering plants to thrive in Martian soil.
3. **Infrastructure:** In order to support human settlement, Mars would need significant infrastructure development. This could include power plants, transportation systems, and communication networks.
4. **Environmental changes:** As humans begin to live and work on Mars, they would inevitably leave their mark on the planet's environment. Waste products, greenhouse gas emissions, and other pollutants could affect the Martian landscape and ecosystem.
5. **Scientific discoveries:** Mars has already revealed many fascinating scientific discoveries, such as evidence of past water and the possibility of underground ice. In the next century, new discoveries could be made, shedding light on the planet's geological history and potential for life.

Of course, all of these scenarios are dependent on a variety of factors, including political will, technological advancements, and funding. It's also possible that unforeseen events or discoveries could drastically alter the course of Martian exploration and settlement.

At this point, a classroom might break into 5 groups, where each group is tasked with developing a narrative for each of these 5 prompts generated by ChatGPT. This provides enough structure to catalyze creative writing about specific topics. The ability to ask ChatGPT to



revise its recommendations helps students learn to explore tangential ideas that might lead them to more productive directions to explore and write about.

4.3 How can ChatGPT be used to support collaborative learning?

ChatGPT is particularly strong at generating alternative responses for a prompt that are topically related to each other while focusing on a qualitatively different aspect of the prompt. In the two examples in the previous section, ChatGPT answers a broad question by providing five related answers that explore entirely different directions. If these prompts were used in a classroom, the classroom could be subdivided into five groups with each group tasked to further develop one of the ChatGPT-generated prompts. A “jigsaw” style strategy (or similar) could be used to disseminate and integrate ideas developed in one group to other groups. For example, the ultimate goal of the class would be to bring together ideas from each classroom subgroup into a comprehensive narrative. Early in the classroom experience, groups explore directions identified by ChatGPT, and later in the classroom experience, groups share what they learned and further integrate. This encourages students to work together and build on each other’s ideas.

In general, ChatGPT can be used as an interactive and tangible “boundary object” that helps accumulate knowledge and ideas from across students and attempt to synthesize them into cohesive statements that can be further scrutinized by the group. By directing critical thought at the anonymized synthesis provided by ChatGPT, it mitigates personal issues related to the ownership of ideas. Using ChatGPT as an “outgroup” for collective editing by the human students helps to relieve potential conflict between students and encourage further sharing and collaboration.

4.4 Can ChatGPT be used to create interactive learning experiences?

Yes, ChatGPT can be used to create interactive learning experiences that simulate real-world scenarios or conversations. For example, instructors could use ChatGPT to create a chatbot that simulates a conversation with a historical figure or literary character (“Give me answers in the style of a character from a Dickens novel”), allowing students to engage with the material in a more immersive and interactive way. Students may learn new things about the character being “played” by the AI, and students can also practice critical thinking about the “choices” ChatGPT has made in its improvisations. Students may be asked to converse for long enough with a simulated character that they can write a response reviewing the quality of the simulation.

Along those lines, an instructor could start a chat session by prompting ChatGPT with who or what it should pretend to be and then play “20 questions” with the class generating the questions (“Pretend like you are the planet Mars. Let’s play 20 questions. Only answer with yes or no.”). This gives the students an opportunity to use what they have learned in the classroom to construct the most informative questions to help determine what ChatGPT is pretending to be.

At an individual student level, students can use ChatGPT to quickly explore new information in real time, as in the example below. In these cases, it will be important for the students to then go



and verify the correctness of the information they learned. ChatGPT can “hallucinate” statements that sound very plausible but actually are not true. Nevertheless, like other tools like Wikipedia, ChatGPT can be a good place for students to start.

The screenshot shows a conversation with ChatGPT. The user asks, "What is the hottest object in the solar system?" and the AI responds that the Sun is the hottest, with a core temperature of 15 million degrees Celsius. The user then asks, "What about if you exclude the sun?" and the AI provides a list of four candidates: lightning bolts, volcanic eruptions, meteoroid entries, and artificially created objects. The user then asks, "I didn't know there was lightning on Jupiter. Can you tell me more about that?" and the AI provides a detailed explanation of Jupiter's lightning, including its discovery by Voyager 1 and its characteristics compared to Earth's lightning.

What is the hottest object in the solar system?

The hottest object in the solar system is the Sun, which is a massive, glowing ball of gas and plasma at the center of the solar system. The temperature at the core of the Sun is around 15 million degrees Celsius (27 million degrees Fahrenheit), which is hot enough to sustain nuclear fusion reactions that release huge amounts of energy in the form of light and heat. The surface temperature of the Sun is cooler than the core, at around 5,500 degrees Celsius (9,932 degrees Fahrenheit), but it is still extremely hot compared to any other object in the solar system.

What about if you exclude the sun?

If we exclude the Sun, the hottest object in the solar system is likely one of the following:

1. **Lightning Bolts:** Lightning bolts that occur in the atmosphere of planets such as Jupiter can be incredibly hot, reaching temperatures of up to 30,000 kelvins (53,540 degrees Fahrenheit) for a fraction of a second.
2. **Volcanic Eruptions:** Volcanic eruptions on planets such as Venus and Io, one of Jupiter's moons, can produce lava and ash that can reach temperatures of over 1,600 degrees Celsius (2,912 degrees Fahrenheit).
3. **Meteoroid entries:** When a meteoroid enters the atmosphere of a planet, it can heat up due to friction with the air, reaching temperatures of up to 1,650 degrees Celsius (3,002 degrees Fahrenheit) or more.
4. **Artificially created objects:** The re-entry shields on spacecraft during atmospheric entry can get extremely hot, up to several thousand degrees Celsius due to the high-speed friction and compression of air molecules.

It's worth noting that the temperature of an object in space depends on many factors, including its distance from the Sun, its composition, and its exposure to radiation and other sources of heat.

I didn't know there was lightning on Jupiter. Can you tell me more about that?

Yes, Jupiter is known to have some of the most powerful lightning in the solar system. Lightning on Jupiter was first observed by the Voyager 1 spacecraft in 1979 and has been studied in detail by subsequent missions such as the Galileo orbiter and the Juno spacecraft.

Jupiter's lightning is thought to be caused by the same process that produces lightning on Earth, which involves the buildup of electric charge in the atmosphere. However, the lightning on Jupiter is much more powerful than on Earth, with bolts that can be up to 1,000 times more energetic and up to 10 times as frequent. This is thought to be due to the large amount of energy that is generated by the planet's strong magnetic field, which is about 20,000 times stronger than Earth's.

The lightning on Jupiter can be observed both in visible light and in radio waves, which allows scientists to study the storms in detail. The storms on Jupiter can be thousands of kilometers across and can last for weeks or even months. Some of the most famous storms on Jupiter are the Great Red Spot, which has been raging for at least 350 years, and the Oval BA, which formed after three smaller storms merged in 2000.

4.5 How can instructors ensure that the use of ChatGPT in the classroom is ethical and responsible?

It is important for instructors to consider the potential risks and limitations of using ChatGPT, and to use it in ways that are appropriate for their specific context. Instructors should also be transparent with students about the use of ChatGPT in the classroom and provide clear guidelines for its use. Additionally, instructors should ensure that the use of ChatGPT does not compromise the academic integrity of the course or unfairly advantage some students over others. Many of the challenges in using ChatGPT in the classroom are shared with more “classical” Internet-enabled tools, like Wikipedia. In general, ChatGPT should not be portrayed as an authoritative source of information but instead an interactive tool to help focus and guide explorations; ChatGPT helps to fast-track more advanced learning as opposed to being a substitute for it.



5. Dealing with specific scenarios

5.1 I have a student that researched an assignment and then used ChatGPT to write a response based on this research. They were transparent about using ChatGPT. What should I do?

It's important to consider your course policies and the specific context of the assignment when deciding how to handle this situation. However, as clear policies aren't always in place, here are some general considerations to keep in mind:

- Review your academic integrity policies to determine whether the use of ChatGPT in this context is allowed or prohibited. If the use of AI-generated content is allowed and the student was transparent about using ChatGPT, then the student's use of ChatGPT may be permissible.
- Evaluate the quality and originality of the work submitted by the student. If the work submitted is well-written, demonstrates a strong understanding of the topic, and is consistent with the student's previous work, then it may be reasonable to accept it as a valid submission.
- Consider whether the student's use of ChatGPT was appropriate for the assignment. For example, if the assignment required the student to demonstrate their own understanding of a topic, then the use of ChatGPT may not be appropriate. However, if the assignment required the student to synthesize and summarize information from a variety of sources, then the use of ChatGPT may be more appropriate.
- Use this as a teachable moment. If you have concerns about the student's use of ChatGPT, discuss these concerns with the student and use this as an opportunity to talk about responsible and ethical use of AI-generated content. Additionally, consider providing guidance to students on how to use ChatGPT effectively and responsibly in the context of your course.

Ultimately, the decision on how to handle the situation will depend on your course policies, the specifics of the assignment, and your evaluation of the student's work.

5.2 I think that a student's essay was written by ChatGPT. I can't prove this but the writing and the quality of the ideas are more advanced than I would expect from this student. What should I do?

If you suspect that a student's essay was written by ChatGPT but cannot prove it, there are several steps you can take to investigate the matter:



- Review the student's previous work to determine if the quality and style of the writing is consistent with the suspected essay. If there is a significant discrepancy, it may be worth further investigation.
- Consider the nature of the assignment and the student's previous work. If the essay is significantly more advanced than the student's previous work and there is no clear explanation for this improvement, it may be worth investigating further.
- Look for signs of plagiarism or other academic integrity violations. If there are portions of the essay that are copied from other sources or are inconsistent with the student's previous work, this may be a sign that the essay was not written by the student.
- If you still have concerns, you can meet with the student to discuss the essay and ask them questions about their writing process and how they came up with the ideas presented in the essay. While this may not definitively prove whether the essay was written by the student or ChatGPT, it may provide additional insights that can help inform your decision.

It's important to note that if you do not have concrete evidence that the essay was written by ChatGPT or another AI tool, it may not be appropriate to accuse the student of academic misconduct. Instead, use this as an opportunity to provide guidance on how to properly use AI-generated content and how to improve their writing skills.

5.3 I have a class where we do a lot of writing assignments to develop ideas and demonstrate understanding of those ideas. A few weeks into the course around 20% of the students suddenly started getting straight A's each time. I think that some students are using ChatGPT to develop and refine their ideas while others are not, and this is skewing the class grades. What should I do?

If you suspect that some students are using ChatGPT to develop and refine their ideas while others are not, and this is leading to an unfair distribution of grades, there are several steps you can take to address the issue:

- Consider whether you have provided clear guidelines and expectations for each assignment. If some students are able to use ChatGPT to improve their work while others are not, this may be a sign that the guidelines or expectations are unclear or too vague.
- Communicate your concerns to the class and provide guidance on how to use ChatGPT effectively and responsibly. Encourage students to use ChatGPT as a tool to supplement their learning and writing, rather than a way to shortcut the process.
- Consider adjusting the grading criteria to account for the use of ChatGPT. For example, you could require students to submit a brief summary of how they used ChatGPT and how it influenced their writing, or you could assign additional work to students who are not using ChatGPT to help them catch up.



- Use this as an opportunity to discuss academic integrity and responsible use of technology in the classroom. Encourage students to think critically about the sources they use and the methods they use to develop their ideas.
- Finally, consider seeking assistance from your institution's academic integrity office or technology support team. They may be able to provide additional guidance or resources to help address the issue.

Ultimately, the goal should be to create a fair and equitable learning environment for all students while providing opportunities for students to use technology in a responsible and effective way.

6. Resources

6.1 Where can I find more information on the use and misuse of ChatGPT in the classroom?

- OpenAI's Educator Considerations for ChatGPT [\[Link\]](#)
- An open AI & ChatGPT reading list curated by staff and faculty at Arizona State University [\[Link\]](#)
- A collection of resources on Generative AI (GPT) in Higher Ed, maintained by Ray Schroeder, UPCEA Senior Fellow [\[Link\]](#)
- ChatGPT as a teaching tool, not a cheating tool (Times Higher Education, February 21, 2023) [\[Link\]](#)
- Artificial Education: A Practical Guide for Teachers (LinkedIn, Sian Lovegrove) [\[Link\]](#)
- Developing Sample Computational Thinking Lessons with ChatGPT (CIRCLS: Center for Integrative Research in Computing and Learning Sciences) [\[Link\]](#)
- ChatGPT and Education (Torrey Trust, UMass Amhurst) [\[Link\]](#)

6.2 Where can I find more information on innovative ways of using ChatGPT in my classroom?

- Three creative ways to use ChatGPT in class (Times Higher Education, February 24, 2023) [\[Link\]](#)
- My class required AI. Here's what I've learned so far. (Ethan Mollick, February 17, 2023) [\[Link\]](#)
- 19 Ways to Use ChatGPT in Your Classroom (Education Week, January 18, 2023) [\[Link\]](#)



6.3 How can I teach my students to craft more effective prompts for ChatGPT?

Prompt engineering for ChatGPT involves crafting prompts or questions that will yield the desired type of response from the language model. Here are some basic steps that are useful to follow when engineering prompts for ChatGPT:

- **Define your objective:** Before creating your prompt, you should be clear on what you are trying to accomplish. Are you looking for a straightforward answer to a question, or are you hoping to generate a more creative or nuanced response? Understanding your objective will help you craft an appropriate prompt.
- **Be clear and specific:** When crafting your prompt, be as clear and specific as possible. Avoid vague or open-ended questions that could lead to irrelevant or unhelpful responses. Instead, use precise language and give ChatGPT specific parameters to work within.
- **Use relevant keywords:** Including relevant keywords in your prompt can help ChatGPT better understand the context and generate a more accurate response. Use words that are closely related to your topic or question, and consider including specific phrases or jargon that are commonly used in your field.
- **Experiment and iterate:** Prompt engineering is an iterative process, and you may need to try several different prompts before finding one that yields the desired result. Experiment with different phrasings, structures, and keywords, and be willing to adjust your approach as you learn more about how ChatGPT responds.

By following these basic principles of prompt engineering, you can create effective prompts that help you get the most out of ChatGPT.

[This key to successful prompt writing](#), written by Ethan Mollick, is also a useful resource.

