Integrating AI into assignments

Main content start

Here we offer strategies and perspectives on integrating AI tools into assignments and activities used to assess student learning.

Creating your course policy on AI

Key points from the previous module

- An effective syllabus works to motivate learning, define goals, explain course structure, and provide support to students as they learn.
- Your course policy on AI in your syllabus should:
  - Be clearly stated and specific
  - Clarify the context or conditions of allowable AI use
  - Explain processes and consequences for non-compliance
  - Have a thoughtful pedagogic rationale in support of student learning
  - Connect to support resources
  - Show support for student well-being

Go to the previous module

Outcomes for this module

In this module, we will analyze activities and assignments used for assessing learning, provide student-centered perspectives, and offer strategies for developing assessment activities and assignments that integrate student use of generative AI chatbots.

After completing this module, you should be able to:

- Describe why your assessment activities are meaningful to learners.
- Identify and clarify the learning objectives of your assessment activities.
- Identify relevant strategies that can be applied to assessment activities in your course.
- Empathize with student perspectives on using AI in course assessment activities.

Warm-up with a metacognitive exercise

As you begin to explore, think about what you already know and the opinions you may already hold about the educational aspects of AI chatbots. This metacognitive exercise can help you identify what you want to explore and what you already understand. Making connections to what you already know can deepen your learning and support your engagement with these modules.

Begin with the prompt, “Describe an assignment or assessment activity that integrated technology in a way that was effective and engaging for your learning,” and respond to the poll below.

Unpacking your assessment activities and assignments

When designing or adapting an activity or assignment used to assess learning, whether you integrate AI or not, we encourage you to consider two questions: why is this meaningful, and what are students supposed to learn from it?

Define why it is meaningful

Students can learn better when they are motivated and can make meaningful connections to coursework (Headden & McKay, 2015). We might assume that students' motivations focus on their grades, but that assumption does not provide the full picture, and when applied in isolation it is not likely to sustain deep learning. Articulating what makes an activity meaningful, motivational, and memorable for students can help you create an engaging activity or assignment that enhances student learning and motivation.

Concerning AI chatbots, perhaps the activity or assignment addresses AI in ways that prepare students for future careers, enhance their social connections, or touch upon broader issues they care about. We encourage you to talk with your students about what they find meaningful to inform the design of your activities and assignments. What leads them to want to engage?

Also, reflect on why the assignment is meaningful to you. Is it simply convenient to implement (and standard in your experience as a student and teacher) or does it connect to something deeper in your pedagogy? Perhaps the assignment reinforces the norms and values that you share with other professionals in your discipline, allows you to connect with students in more meaningful ways, builds foundational skills for other parts of the curricula, or explores emergent opportunities and challenges with AI for your field.

Define what students are intended to learn

Next, identify and clarify the underlying learning objectives of the assignment or activity. The objective should describe the observable skills or behaviors students will have learned to perform after completing the activity. Clearly articulated learning objectives can help you develop activities that support learning and assessments that accurately measure student learning.

When thinking about AI chatbots and how they impact writing, you might ask yourself, "What are the underlying learning objectives being addressed through writing?" Instructors may assign writing tasks to assess how students engage with content. In the past, teachers could assume with good reason that a student producing coherent writing must have engaged with the content to generate writing that makes sense. However, we might also question this assumption about the automatic connection between coherent writing and deep engagement. The advent of generative AI has certainly exacerbated this.

Do you ask your students to write to demonstrate and reinforce content knowledge? Do they write to analyze and critique a position? Do they write to formulate arguments and cite evidence? Do they write as a form of creative expression? When you think about the available options, you can likely develop many ways for students to learn and demonstrate these skills with or without writing. Ultimately, honing in on the underlying learning objectives can help you integrate generative AI tools into an assignment.

Students can benefit from understanding how AI works and the educational opportunities and challenges that it presents. Consider offering the content in the modules in this guide to your students as supplemental reading or as part of a class activity.

Strategies for implementing AI into activities and assignments

As you think through how you might address or integrate AI tools in an assessment activity or assignment, we encourage you to consider a range of possibilities related to the specific aims of your course and the needs of your students. Here we offer a variety of pedagogical strategies for you to consider. We present these strategies in the context of students using AI chatbots, but they also apply to contexts without AI. Remember why your assignment is meaningful in relation to your learning objectives to help you select appropriate strategies.

Leverage multiple modalities

Consider ways to diversify when and where you assess student learning and the formats students use to express what they've learned.

Use more in-class assignments

Strategies like the flipped classroom model assign lecture content as homework and use the in-class time for learning activities (Lage et al., 2000). You can use this in-class time to integrate more low-stakes assessment activities during which you can better guide students toward using AI in ways that support learning.

Make grading practices clear

Consider ways to clarify for students how they are being graded and what is expected of them.

Require robust citation

Have students learn about and adopt more robust citation practices, especially if they use AI tools for writing. You might begin with conversations about what plagiarism entails and why ethics matter in higher education and your discipline. Then connect students to resources on citation and documentation.

If you and your students decide to use AI tools, you can find style guidelines about citing AI-generated text for APA style and MLA style. These guidelines advise writers to cite the AI tool whenever they paraphrase, quote, or incorporate AI-generated content, acknowledge how they used the tool (for brainstorming, editing, and so on), and vet secondary sources generated by AI. For example, students could include citations for AI in the Works Cited section of their work and also include a statement describing why and how they used AI chatbots.

Assess learning throughout the course

Consider ways to assess student learning throughout your course as opposed to assessing mostly at the end of the course.

Emphasize the process

You may be able to more effectively assess student learning during the different stages of the process as opposed to assessing learning based on their finished work (Xu, Shen, Islam, et al., 2023). Whether or not students use AI tools, they can benefit from segmenting a large project into smaller components with multiple opportunities for feedback and revision. Also, consider how you might adjust grading criteria or grade weights to put more emphasis on the process.

For some steps in the thinking process, such as brainstorming ideas, formulating a position, and outlining a solution, allowing students to use AI tools might benefit their process. For example, you might have students

begin with low-stakes free-writing, such as brainstorming, then use AI chatbots to explore possible areas for further investigation based on the ideas students generate through their exploratory writing. Students might then critique and revise the AI-generated ideas into an outline.

Make assignments more meaningful

Consider how you might make your assignments more relatable and meaningful to your students.

Personalize assessments

When done thoughtfully, connecting assessments to the personal experiences, identities, and concerns of students and their communities can help to motivate and deepen learning (France, 2022). You might also connect assignments to contexts specific to Stanford, your course, or your specific group of students.

With AI, you or your students might generate practice questions on topics that came up during a specific class discussion or generate analogies for complex concepts based on their interests and backgrounds. You might ground an assessment activity in local contexts, such as having your engineering students propose a plan to improve Lake Lagunita.

Assess more advanced learning

Consider ways you might assess more advanced or wider-ranging learning goals and objectives.

Emphasize metacognitive reflection

Metacognitive reflection activities, where students think about what and how they learn, can help students improve their learning (Velzen, 2017). You might use polls, discussion activities, or short writing exercises through which students identify what they already know about the topic, what they learned, what questions remain, and what learning strategies they might use for studying.

AI chatbots can help guide the reflection process like this reflection tool being developed by Leticia Britos Cavagnaro at Stanford d.school. Or perhaps students complete some activities with AI, then reflect on how it benefits or hinders their learning, and what strategies they might use to best leverage AI for learning.

Putting it all together

Here we offer a practical example: first, a typical assignment as usually designed, and then how you could enhance the assignment with some strategies that integrate AI chatbots.

When thinking about your course, start with small changes to one assignment and steadily expand upon them. Try to use AI chatbots for your other work tasks to build your fluency. Talk with students and colleagues about how the changes to your course work out concerning student engagement and learning. When integrating AI into an existing assignment, begin with an assignment that already has clearly defined learning objectives and rationale. Begin by using AI or other technology to supplement existing parts of the process of completing the assignment.

Example of an assignment without AI

Currently, your students in an epidemiology course write essays summarizing the key concepts of an academic article about the socio-determinants of diabetes. This assessment activity has meaning because it

focuses on a foundational concept students need to understand for later public health and epidemiology courses. The learning objective asks students to describe why socio-economic status is a strong predictor for certain diseases. Students write a five-page essay about a disease that can be predicted by socio-economic status including at least three additional citations. Students complete the essay, which counts for 30% of the final grade, before the final exam.

An example of an assignment that integrates AI

Using some of the strategies in the above sections, you might redesign this assignment to integrate the use of AI chatbots. Keep in mind that you would likely make small changes to a major assignment over multiple quarters. Consider some of the ideas below.

A meaningful assignment

The redesigned assessment activity carries more meaning to students because they might have personal experience of some communities adversely affected by these kinds of diseases, and public health issues like this intersect with other social injustices that students have expressed concern about.

Learning objectives

The objectives of the assessment activity include that students will be able to:

- Describe how this disease affects particular communities or demographics
- Explain the difference between correlation and causality regarding socioeconomic status and the disease
- Propose a public health intervention that could help to address this issue

Assignment elements with AI

Students generate explanations of medical terminology in the selected articles to aid with reading comprehension. They generate several analogies for the core concept that apply to their own life experiences and communities. Students share these analogies in a Canvas forum graded for participation. Instructors provide general feedback in class.

Informed by the article, students then prompt a chatbot with biographical stories for two fictional characters from communities they care about incorporating differing socio-economic factors. Then they guide the chatbot in generating a dialogue or short story that illustrates how the two characters could have different health outcomes that might correlate with their socio-economic status. Students might use AI image generators for illustrations to accompany their stories. Students submit the work via Canvas for evaluation; the teacher shares exemplars in class.

Using an AI chatbot prompt provided by the instructor, students explore possible ideas for public health interventions. The provided prompt instructs the chatbot only to help students develop their ideas rather than suggesting solutions to them. With the aid of the chatbot, the students develop a public health intervention proposal.

Student-centered perspective on using AI for learning

When thinking about integrating generative AI into a course assignment for students, we should consider some underlying attitudes that we, the authors, hold as educators, informed by our understanding of

educational research on how people learn best. They also align with our values of inclusion, compassion, and student-centered teaching. When thinking through ways to integrate AI into a student assignment, keep the following perspectives in mind.

AI is new to students too

Like many of us, students likely have a wide range of responses to AI. Students may feel excited about how AI can enhance their learning and look for opportunities to engage with it in their classes. They may have questions about course policies related to AI use, concerns about how AI impacts their discipline or career goals, and so on. You can play a valuable role in modeling thoughtful use of AI tools and helping students navigate the complex landscape of AI.

Work with students, not against them

You and your students can work together to navigate these opportunities and challenges. Solicit their perspectives and thoughts about AI. Empower students to have agency over their learning and to think about AI and other technologies they use. Teaching and learning are interconnected and work best in partnership. Approach changes to your teaching and course to empower all students as literate, responsible, independent, and thoughtful technology users.

Look at AI and students in a positive light

Education as a discipline has repeatedly integrated new technologies that may have seemed disruptive at first. Educators and students typically grapple with new technology as they determine how to best leverage its advantages and mitigate its disadvantages. We encourage you to maintain a positive view of student intentions and the potential of AI tools to enhance learning. As we collectively discover and develop effective practices, we encourage you to maintain a positive and hopeful outlook. We should try to avoid assuming that most students would use generative AI in dishonest ways or as a shortcut to doing course assignments just because some students might behave this way.

Assess and reinforce your learning

We offer this activity for you to self-assess and reflect on what you learned in this module.

Stanford affiliates

- Go to the Stanford-only version of this activity
- Use your Stanford-provided Google account to respond.
- You have the option of receiving an email summary of your responses.
- After submitting your responses, you will have the option to view the anonymized responses of other Stanford community members by clicking **Show previous responses**.

Non-Stanford users

- Complete the activity embedded below.
- You have the option of receiving an email summary of your responses.
- Your responses will only be seen by the creators of these modules.

Learn more

- Course and Assignment (Re-)Design, University of Michigan, Information and Technology Services
- ChatGPT Assignments to Use in Your Classroom Today, University of Central Florida

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You've completed all the modules

We hope that you found these modules useful and engaging, and are better able to address AI chatbots in your teaching practice. Please continue to engage by joining or starting dialogues about AI within your communities. You might also take advantage of our peers across campus who are developing resources on this topic.

- Institute for Human-Centered Artificial Intelligence
- Accelerator for Learning

We are continuing to develop more resources and learning experiences for the Teaching Commons on this and other topics. We'd love to get your feedback and are looking for collaborators. We invite you to join the Teaching Commons team.