

Retrofit/Redesign Assignments to Acknowledge Generative AI

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Overview

Widespread access to generative AI tools necessitates revisiting assignments to make them at the very least less vulnerable to breaches of academic integrity, but also to find opportunities to transform them into vehicles for promoting better understanding and critical use of these tools by students. Two things are certain:

- There is no silver bullet response. We know that AI detection tools do not work, and may in fact do more harm than good.
- The work of responding to this rapidly changing educational environment will require ongoing discussion and adjustment on the part of instructors as the technology evolves.

With these factors in mind, we offer the following strategies organized in two forms, retrofit or redesign.

Retrofit = These are short term fixes you can employ as you and your students learn more about these tools and how they may be useful or not useful for your subject area.

Redesign = These are longer term strategies for exploring how you can incorporate teaching effective, critical use of AI into your course and/or create assignments that are better ways to assess authentic student learning.

The following recommendations are organized by general types of traditional learning and assessment strategies with some examples. Within these broader categories we offer retrofit and redesign approaches. This is a living document; we will continue to update it to meet the changing landscape of generative AI.

Basic Principles

For all assessments, we recommend following these foundational principles:

- Break down high stakes assignments (anything over 15% of final grade) into graded components. Doing so emphasizes the process of learning over achieving a particular grade and can minimize the temptation or even usefulness of Generative AI. See our detailed guide [📖 Redesigning Grading Schemes](#)
 - Wherever possible, integrate student experience and reflection on their learning into the assessment. For example, you might make 5% of the total grade a reflection paragraph about completing the assignment and another 5% on the degree to which peer or instructor feedback on a draft was incorporated into the final version.
- Articulate what the learning goals are for each assignment, including weight that learning behaviors (pacing work, incorporating feedback, demonstrating particular aspects of critical thought, etc), final product, and mastery of process or concepts have.
- Be explicit about what AI tools are allowed and at what place in the assignment process, particularly paraphrasing, translation, and grammar checker tools and how students are required to disclose their use.
- Use a generative AI engine to create a model response to every major phase in an assessment you create, either for your own understanding of how AI could be used to complete it and/or to share with your students to promote critical thought about the assignment goals.

- When incorporating Generative AI into assignments, consider using a framework like the [4D framework for AI fluency](#) to structure any learning activities focusing on critical thinking.

Essential Components for Both Retrofitters and Redesigners

Avoid/Discourage Essential Activities

Key Practices:

- Explain WHY you want students to avoid AI tools, for example because your class builds fluency in a language or in skills like argumentation, or because course topics are poorly represented in the Large Language Models (LLMs) used to train AI engines. Be prepared to revisit this decision at least once a semester based on changes in AI tools and capabilities.
 - **Generative AI and Research:**
Remind students that Generative AI generates information but it does not retrieve it. Retrieval of information is the job of search engines and databases that take users to sources that they can examine and evaluate. Regular generative AI engines cannot go behind paywalls to access scholarly databases and it cannot take you to a specific source for the information that it creates. It is merely searching its corpus of words and putting together the most frequently used associated terms – GENERATING information. Since the job of research is to retrieve and analyze information, Generative AI can never be the start of any research project except one about the things Generative AI generates.
 - For grammar checkers or polishing tools, consider a compromise, particularly with English language learners: allow their use, with citation, for one assignment or for the final version of a multi-step assignment. Consider requiring learners to submit a reflection on the changes suggested, including noting items to work on to build fluency and errors suggested by the checker tool.
- Emphasize student experience and reflection as much as possible, both in the assignment directions and in the process (eg, reflections on completed assignments to identify learning or growth).
- Generate a model assignment response using a generative AI engine and critique it with the class to show how it does or does not fulfill the assignment's goals.

- Get samples of student work (graded and informal) in person or using browser lockdown
- Emphasize process (eg, having a series of building blocks submitted over time) over product in assignments

Resources

-  **Gen AI Course Policy & Design Support**
-  **Classroom Activities: Gen AI to Promote Critical Thinking**
- [Respondus Lockdown Browser](#)
- [Gradescope for managing handwritten writing samples in large format classes](#)
- [Perusall for replacing discussion boards with annotation assignments](#)
-  Using Annoto to Assess Video Engagement in Brightspace
- [ED STEM platform tools for coding assignments](#)
-  Rubric Resources

Integrate AI Essential Activities

The [4D framework for AI fluency](#) is a nice way to structure any learning activities focusing on critical thinking about Gen AI use:

- **DELEGATION:** Setting goals and deciding whether and how to engage with AI.
 - Example: Identifying what parts of a research assignment AI can help with
- **DESCRIPTION:** Effectively describing goals to prompt useful AI behaviors and outputs.
 - Example: Asking an AI engine for feedback on an essay draft
 - Example: Asking a RAG engine like NotebookLM to locate a topic in a text, video, or audio file
- **DISCERNMENT:** Accurately assessing the usefulness of AI outputs and behaviors.
 - Example: Asking a RAG engine like NotebookLM to create a summary of a source and working backward from the links to the textual passages to determine the accuracy of the summary.
- **DILIGENCE:** Taking responsibility for what we do with AI and how we do it.
 - Example: Writing a reflection on the process of creating an assignment in which AI was used to describe where and how AI assisted in the process and what was learned from that assistance.

We recommend using NotebookLM because it is a “RAG” – retrieval-augmented generation – tool that focuses on the sources you upload and links each statement back to the place in the sources from which it derives. These features allow you to examine how Gen AI works with your students. You can ask it to do simple tasks like summarize or analyze documents and then examine the answers it generates for accuracy. This is a great activity to do in class to teach students about what close reading or critical analysis looks like as a process.

Tools

- NYU Instance of NotebookLM, available through NYU Home
-  Classroom Activities: Gen AI to Promote Critical Thinking
-  DRAFT NotebookLM: Critical AI Literacy for Academic Research

Assignments

Written Argument or Analysis Assignment

Having a [rubric](#) that identifies all of the components of the assignment that will be graded and how much they will count (ie, how much does polished presentation or prose count, how much do original ideas count, how much does interpretation of sources count, etc) is a great place to start both retrofitting and redesigning. This activity will help you express to your students what learning looks like for this work and also help you determine the multiple ways they might demonstrate that learning.

Retrofit

For both avoiding and integrating, it's essential that you begin by testing your argument or analysis prompts in a generative AI tool to see what kinds of output they generate.

Avoid Generative AI: If the output of your AI test generates a passable response try one of these strategies, always being mindful of the need to also create accommodations of students with learning differences:

- Adjust your prompt to incorporate student experiences and opinions that cannot be generated by AI in a valid or interesting way.
- Change from a solely written format to one that includes oral responses or a debate so that students can demonstrate their command of the skills or information in a conversational setting.
- Include in-class writing exercises that are part of the final project
- Include multimedia outputs such as original photos or videos as part of the final project.

Integrate Generative AI:

Have students use generative AI as a writing partner and evaluate its usefulness:

- Input their finished work into a generative AI engine and ask it to produce a counterargument. Have them revise their work based on this feedback and document their process. Have them write a short reflection on what they learned about their writing by using the AI feedback.

Redesign:

As part of your assignments, include any of the following steps. Have students document their process, cite the AI they use, and write a reflection on what they learned and how they might use the AI for similar tasks in the future.

- Use generative AI engine to generate possible topics
- Use generative AI to generate multiple perspectives on the chosen topic
- Input finished work into a generative AI engine and ask it to produce a counterargument. Revise work based on this feedback.
- Ask Generative AI to produce an argument on the chosen topic. Write a counterargument to that response.

Example: Close reading/analysis

Retrofit

Avoid Generative AI: Require students to acknowledge the college and/or course honor code. As part of the close reading instructions, require students to actively reflect on the text of their reading and contextualize within their own experience. Example: “How does the narrative relate to your own experiences with family? How does it differ? Give specific examples. ”

If you have been using a discussion board tool, consider switching to an annotation tool like [Perusall](#). These tools require students to annotate and interact within the content, which can facilitate better engagement. Or have them organize and submit their analysis in a graphic like a presentation or mindmap.

Integrate Generative AI: Have students submit the assignment to a generative AI tool. Have them write a critique/reflection on the generated close reading based on key course concepts. What are the characteristics of the response – is it too general? Inaccurate? Unhelpful for the course? What are the missing elements?

Redesign

Whether or not you integrate generative AI:

Make this type of exercise one that recurs across the semester or is part of a larger assignment sequence so that students can evaluate their development of key skills over

time. Have students write a reflection on the changes between their first and most recent or last assignment in this series.

Example: Writing a summary of reading/video

Note that in addition to the regular Gen AI engines, there are a number of specialized generative AI tools that can do this assignment, including Quillbot and HyperWrite.

Whether you retrofit or redesign, you will need to acknowledge the widespread use of generative AI to complete research tasks like this one and you will need to shift the emphasis of assessment from simple summarizing to critical assessments.

Retrofit

Avoid Generative AI:

Instead of summarizing, give students a worksheet that guides their original observations about the video, such as this

 Video Viewing Worksheet Using Cornell Notes format .

Bring the material into [Perusall](#) (texts and video) or [Annoto](#) (video and audio) for students to annotate. As part of the work in these tools, require students to use the record feature to capture them providing a summary of the reading or video

Integrate Generative AI:

- Have students use a RAG engine like NotebookLM to produce a response to the assignment and compare that to using a general engine like Gemini, which is not just referencing their source. Have them compare the difference between the outputs of the two tools. The general engine may pull extraneous or hallucinated details.
- Using NotebookLM, have students use different types of prompts to find information in their source. Have them save the responses as Notes and write an analysis on how changing the language of their prompt gave them more or less useful information.

Redesign:

Whether or not you integrate generative AI:

Make this type of analysis exercise one that recurs across the semester or is part of a larger assignment sequence so that students can evaluate their development of key skills over time. Have students write a reflection on the changes between their first and most recent or last assignment in this series.

Tools

Using Annotto to Assess Video Engagement in Brightspace

Open Note Exam

[Take a look at this Chronicle article in praise of Open Note exams.](#)

For all approaches, it can be very helpful to break down the final exam grade into multiple, graded steps so that students get plenty of feedback on their learning and test-taking abilities. This design de-emphasizes one-time performances and instead values student mastery of concepts.

Example: Exam that is 30% of Final Grade becomes:

- 10% Practice Test
- 10% Exam
- 10% Corrections + Reflection ([Exam Wrapper](#))

Example: Professor Emily Bacetis's Two-Step Exam Assessment Design

 [Balcetis 2024 TIA Project Handout](#)

Retrofit:

Avoid Generative AI:

Use [Respondus LockDown Browser](#) and allow only paper notes (all digital notes will be blocked by the lockdown).

Provide guidance for effective note taking and use of materials: What kinds of notes/materials are students allowed to bring into the exam? What should students do with printed slides? Give students guidance on how to rewrite and organize in class notes and discuss how this process of determining what content is relevant and how it's connected to other content is the actual work of "studying". Consider making an organized notes document for consultation during the exam to be part of the exam grade.

Integrate Generative AI:

Have students use AI as a study partner: Have students use NotebookLM to create several types of organized study guides for course content in the Data Studio panel - incorporate key terms, open-ended questions, diagrams, etc. Use this as a baseline to provide well structured note taking templates for students and instruct them to try one for the exam. Discuss with students, or prompt them to reflect individually, how well the guides worked for them, offer the opportunity to try a different template, or explain why their own study system works better.

Redesign:

Using a RAG engine like NotebookLM loaded with course materials to be covered in the exam, have students have a discussion with the AI about the content as a review session for the exam. Or have the students ask NotebookLM to generate exam questions for the content and practice with their notes. Have students reflect on how well their current note taking system works for them and what they need to improve in preparation for the in-class exam.

Multiple-Step Assessment - Long Term Research Paper or Project

Many of the considerations for written analysis assignments [above](#) are also relevant here. In addition, here are some things pertinent to research skills to think about.

Example: Research paper or essay

It is essential that you test your prompts in a generative AI tool to see what kinds of output they generate so that you can better understand and communicate to your students how useful AI will or will not be in this assignment. Be very specific about which parts it might be useful for and in what ways.

- For all approaches, get a writing sample from every student at the beginning of the semester, either in class or outside of class using a browser lockdown if you prefer. For large format classes, using [Gradescope](#) to collate and store the samples will make it easier. Gradescope recognizes handwritten responses and can group similar types of responses together for faster grading. It also stores responses for consultation later in the semester.
- Remind students that Generative AI can never be the starting point of a research project because it is a tool to generate information, not retrieve it. This quality, generation, is where hallucinations come from. Retrieval of information, on the other hand, is the job of search engines and databases that take users to sources that they can examine and evaluate. Regular generative AI engines cannot go behind paywalls to access scholarly databases and it cannot take you to a specific source for the information that it creates. It is merely searching its corpus of words and putting together the most frequently used associated terms – GENERATING information. The job of a researcher, however, is to retrieve and analyze information. Help them identify what search engines (such as Google Scholar) or library databases they will use to access their primary sources as a starting point.
- Breaking down the final grade into multiple, graded steps across the semester can be helpful in several ways. It models the process of research techniques and

critical analysis for students who are novices in these areas; it creates opportunities for students to get plenty of feedback on their work over the course of the assignment; and it creates a trail of the development of their work. Here's one way you could do this breakdown:

Paper that is 30% of final grade becomes:

- 5% In-class Pre-writings
- 10% Rough Draft
- 5% Peer Review
- 10% Final Draft Incorporating Feedback

Retrofit:

Avoid Generative AI: Require students to acknowledge the college and/or course honor code. Provide a detailed [rubric](#) explaining the assignment learning goals and how they are weighted.

Consider a compromise for grammar checker or polishing tools, particularly with English language learners: allow their use, with citation, for the final version. Consider requiring learners to submit a reflection on the changes suggested, including noting items to work on to build fluency and errors suggested by the checker tool.

Integrate Generative AI: Model the use of a RAG tool like NotebookLM to work with sources to identify support for arguments and organize information (ie, creating graphical representations such as tables from textual information). Discuss your expectations for citing and reflecting on generative AI use in the writing process.

Redesign: Break down components of the research paper writing process into separate and graded deliverables. For example, research paper topic, sources list, outline, draft 1, draft 2, final paper. Consider allowing submissions in different formats besides text.

Example: Group/Individual Project

For all approaches:

- It is essential that you test your prompts in a generative AI tool to see what kinds of output they generate.
- Break down the final grade into multiple, graded steps so that students get plenty of feedback on their writing and there is a trail of the development of their work. Have one step that draws from work generated in class or in groups. Sample:

Project that is 30% of final grade becomes:

- 5% In-class Pre-writings

- 10% Two page proposal
- 5% Peer Feedback
- 10% Final Draft Incorporating Feedback
- To manage peer feedback on group work, use a digital tool such as [Peerceptiv](#), which can automate the review and reflection process and give you items that can be converted into points or credit for a grade. This [Comparison of Peer Review tools](#) can help you select the right tool for your workflow.

Retrofit:

Avoid Generative AI:

Require students to acknowledge the college and/or course honor code.
For presentations, use Google Slides to track student progress.

Integrate Generative AI:

Prompt the AI to provide a project outline based on the assignment instructions and critique the output with students in class.

Redesign:

As part of the project assignment, incorporate local excursions, partner with community organizations, or get students to share their experiences in a reflection portion.

Evaluate the current outcomes for the project and identify opportunities for more creation and critical analysis. Example: For a product proposal, rather than only describing what an app would do, require students to prompt AI to generate basic code for the app.

Math or Other STEM Assignment

Coding or Math Problem Sets

The latest versions of GenAI engines can solve most computational problems, though at this time they often do it in an inefficient or inaccurate way. Similarly, coding solutions are readily available through GenAI engines and specialized tools like Microsoft CoPilot.

Tools

- [ED Lessons](#) provides a “rewind” feature where you can watch how students have solved a problem online.
- [Gradescope](#) recognizes handwritten responses and can group similar types of responses together for faster grading. It also stores responses for consultation later in the semester.

- A reasonably secure testing environment can be created with a configuration like this one: [Using Ed Lessons Deep Links with Brightspace Quizzes & Respo...](#)

Retrofit:

Avoid Generative AI: Use the Respondus lockdown browser for in and out of class online assignments. Use blue books for the most secure in person version of testing. Have students write an explanation for how they solved the problem or make a video of their process. If you require one of these methods, make sure you create a model of what the explanation or reflection or video should look like!

Integrate Generative AI:

Put sample problems into a generative AI engine in class and critique the results. Have students put all of the questions of a problem set into a generative AI engine and explain which answers are correct and which are not correct and how they know. Correct incorrect answers.

Redesign:

Flip the grading scheme so that the majority of credit comes from answers generated on a daily basis through in-class activities.

Consider whether [“edit to mastery”](#) or [Open Note Exams](#) could be a viable approach for this course.

Break down the final grade on assessments into multiple, graded steps so that students get plenty of feedback on their learning and test-taking abilities.

An exam that is 30% of final grade becomes:

10% Practice Test

10% Exam

10% Corrections + Reflection (Exam Wrapper)