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Using AI to Build Student Feedback Literacy and Leverage Assessment as a Learning Tool

Leighann Pennington, Ed.D., Michelle Hock, Ed.D.

Author Note

Leighann Pennington, https://orcid.org/0000-0002-5622-5829

Michelle Hock

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Abstract: This conceptual article explores practical ways in which college and university instructors can leverage artificial intelligence (AI) to support assessment as learning and develop students' feedback literacy. Traditional assessment practices often focus on assessment for learning (informing instruction) or of learning (measuring outcomes), while assessment as learning—when students actively monitor and reflect on their own learning—receives less attention. AI can help instructors leverage assessment as a learning tool by generating work samples for student analysis and providing timely, actionable feedback that students can use to revise their work. When combined with instructor modeling, peer dialogue, and scaffolds such as guiding questions or graphic organizers, AI-supported feedback promotes metacognition, self-directed learning, and critical evaluation skills. The article provides practical guidance, including prompts and strategies for using AI to enhance student engagement with feedback, helping instructors create more efficient, effective, and student-centered practices that utilize assessments as learning tools.

Keywords: *assessment as learning, feedback literacy, AI-generated feedback*

Introduction

In coursework or professional development centered on classroom assessment, content typically focuses on assessment for learning and assessment of learning. Generally, instructors are taught to use pre-assessments and formative assessments as methods for collecting data that can inform instructional decision making (assessment for learning), while summative assessments are used to determine whether students have met specific learning goals (assessment of learning). Often overlooked, however, is the use of assessment *as* learning, which refers to instances in which students actively cultivate and apply the skills needed to monitor and reflect on their own progress, thereby using assessment to deepen and extend the learning process (Earl, 2007).

Assessment as learning can take several forms, typically involving the use of metacognitive skills such as self-assessment, self-monitoring, strategy evaluation, sustained reflection, and goal-setting (McMillan, 2018; Yan & Boud, 2021). However, for assessment to serve as a learning tool, students need to have well-developed feedback literacy. Feedback literacy refers to students' abilities to understand, interpret, and use feedback to enhance their learning (Carless & Boud, 2018). To do this, students must have (a) a clear understanding of the learning goals being evaluated by an assessment, (b) an awareness of how to read and apply feedback to improve assessment performance, and (c) the

ability to set goals and engage in self-directed behavior to meet them (Carless & Boud, 2018). Developing student feedback literacy is not an easy process, as it requires students to combine their content understanding and disciplinary learning to improve a process, project, or product. Additionally, students must proactively and willingly receive, process, and apply feedback (Winstone et al., 2017).

There are many competencies (e.g., accurate self-appraisal, the ability to self-regulate, etc.) needed for students to become "feedback literate," which is a precursor for using assessment as learning (Winstone et al., 2017). However, taking the time to develop these competencies is essential if instructors want to implement assessment in ways that will boost student learning and help students develop the transferable, lifelong learning skill of metacognitive thinking.

In this conceptual piece, we explore practical ways in which instructors can begin building assessment as learning into their existing coursework. Knowing that time is of the essence in teaching—whether it is needing to be efficient in lesson planning or needing to have quick turnaround times when providing feedback on student work—we propose leveraging the power of artificial intelligence (AI) to maximize both efficiency and efficacy. For the purposes of this paper, we draw upon Lee and Moore's (2024) definition of AI as a "deep learning model to produce human-like content, such as images and text, in response to complex prompts, including languages, instructions, and questions" (p. 83). We argue that AI can be used to improve educational experiences for instructors and learners, so long as those uses adhere to schools' AI policies and are considerate of the confidentiality of students' work or the intellectual ownership of any materials used when interacting with Generative AI (GenAI). Below, we explain two primary ways in which instructors can use AI for assessment as learning: (1) to generate work samples for student analysis and (2) to encourage students to develop feedback literacy and guide their own work processes.

Using AI-Generated Work Samples to Support Assessment as Learning

Engaging in assessment as learning involves students being able to critically evaluate the work that they (or others) produce relative to a set of predetermined learning goals for the assessment (Yan & Boud, 2021). For instance, a common practice in English literature and composition classrooms is asking students to critique existing essays and give them a "grade" based on rubric criteria that are derived from the essay-writing learning goals. Practicing this evaluation skill not only gives students a better sense for what the rubric criteria look like "in action," but it also gives students the opportunity to examine a range of essays of varying quality so that they can determine how lower-scoring essays could be improved (Carless & Chan, 2017; To et al., 2022). Instructors in other disciplines often use similar instructional strategies (such as evaluating a work product or final project exemplar) when trying to help students understand how to meet success criteria for an assignment.

However, instructors often face a major challenge when using this instructional approach: a substantial time investment is required to either (a) generate their own work samples of varying quality for students to analyze, or (b) find samples from previous students (assuming they taught the course or gave the same assignment previously) that represent varying degrees of success relative to the rubric criteria. Instead of spending excessive time on this part of instructional planning, instructors can instead maximize their efficiency by using a large language model (LLM) AI tool (e.g., ChatGPT, or some

other tool whose use is supported by the instructor's academic institution) to generate a spectrum of sample essays for their students to analyze. The process described below can be adapted to any course modality, including traditional in-person settings or online asynchronous environments.

To generate sample essays, instructors can begin using a prompt that tells AI to learn the success criteria for the essay, either by uploading a document containing the success criteria or typing them manually. Then, the instructor can prompt AI to generate several essay samples that range in quality from not meeting the criteria at all, to meeting some criteria partially, to meeting all of the criteria expertly (see Figure 1). From there, instructors can build out lessons focusing on using assessment as learning and building feedback literacy.

Figure 1

Example Prompt to Generate Work Samples

Prompt: I would like you to create 5 different student work samples for an essay on [insert topic name/description here]. The prompt for the essay is: [insert the prompt here exactly as you have given it to students]. Below are the success criteria for the essay, where students can be rated 3, 2, or 1 for their proficiency levels relative to the success criteria (where 3=excellent, 2=proficient, and 1=not yet). [Copy/paste or upload the rubric or listed success criteria as part of the prompt. Make sure that you're clearly showing which criteria are rated a 3, 2, or 1.] With these criteria mind, I want you to produce 5 sample essays that I can use to help my students better understand the success criteria for the essay. Create the following sample essays: One that scores a 3 in all of the rubric categories One that scores a 2 in all of the rubric categories One that scores a 1 in all of the rubric categories One that scores some combination of 3's and 2's across all of the rubric categories One that scores some combination of 2's and 1's across all of the rubric categories

For example, instructors could one day use the gradual release of responsibility instructional model (sometimes called the "I Do-We Do-You Do" method) to demonstrate how one would go about ensuring that they can understand learning goals and critically evaluate the extent to which a work sample meets those goals (Fisher & Frey, 2021). First, the instructor would review the learning goals and rubric success criteria with students, prompting students to explain those criteria in their own words and to ask any clarifying questions. Then, the instructor could use a think-aloud ("I Do") to model how they would go about assessing a sample essay to determine if it met the success criteria. During this think-aloud, the instructor would walk through each individual criterion, noting instances in which the essay does or does not meet it, then determining where the essay would score on the rubric.

The next stage of this process would require students to collaborate with their instructor in analyzing another essay ("We Do"). Here, the instructor would ask questions that guide students in a structured evaluation of the essay that is anchored by the success criteria. Students would supply responses, ask for clarification as needed, and be prompted to provide rationales justifying their decisions about the essay's effectiveness and rubric score. Finally, students would independently evaluate a third sample essay ("You Do") as the instructor circulates throughout the room to field questions and monitor students' work. Once students complete their individual analysis, the instructor can debrief with the whole class, asking questions like "What success criteria were or were not met, and how do you know?" and "What would have to be changed about this essay to improve it, and how would you go about making those recommendations to the person who wrote it?" Throughout all phases of this process, students are evaluating work against specific sets of criteria to detect both errors and successes in the work samples, preparing them to similarly analyze their own work in future tasks. Doing this is essential to the development of feedback literacy, and therefore, to using assessment as a learning tool.

Using AI-Generated Feedback to Support Self-Directed Learning

Generating work samples for student analysis is only one example of how AI can make instructors' work more efficient while simultaneously cultivating students' feedback literacy and metacognitive thinking. Research suggests that receiving high-quality, actionable, timely feedback is one of the most essential classroom practices for supporting students' learning and growth (Tomlinson & Moon, 2012). However, providing extensive or detailed feedback within a short window of time—particularly at the collegiate level, where instructors must often provide feedback for a high volume of students on a regular basis—is an exceptionally challenging task.

While AI-generated feedback should not be a total substitute for instructor-provided feedback, it can complement instructors' efforts, expedite turnaround time, and provide students with additional opportunities to engage in assessment as learning. Research (e.g., Lu et al., 2024) supports this complementary approach, as the combination of teacher- and AI-provided feedback has been shown to improve learning outcomes in college settings. Instructors can model for students how to use specific prompts to teach AI the success criteria for an assignment—whether an essay, project, or portfolio—and show them how to request AI feedback relative to those criteria (see Figure 2 for an example of this prompting). Instructors might also create a handout or screencast to accompany this instruction so students can be reminded of the process and sample prompting language.

With AI-generated feedback in hand, students can critically evaluate their work, identify areas for improvement, and brainstorm ways to edit their work to better meet the success criteria. Instructors should also caution students that AI-generated output may not always be entirely accurate or the most reliable source of guidance; instead, it is best interpreted and evaluated with appropriate instructor- or student-led oversight in order to determine the quality and utility of AI's outputs. For this reason, Farrokhnia et al. (2024) suggest that students must use their own reasoning and judgment to appraise the accuracy of the feedback and decide whether to apply it. When students engage in this process, they can gain access to more frequent, timely feedback and can participate in a feedback cycle multiple times before submitting their work for instructor evaluation. Further, students are able to cultivate

skills in self-assessment, feedback interpretation, judgment of learning, and planning for next steps, each of which represents a facet of feedback literacy (Winstone et al., 2017). This practice ultimately helps students take greater ownership of their work and encourages more self-directed learning – all while saving instructors valuable time for tasks that cannot be automated.

Figure 2

Example Prompt for Student to Use to Generate AI Feedback

Prompt: I am working on a project for my class on [subject]. Below are the directions for the project [insert directions below] as well as the success criteria on my instructor's rubric [insert or upload the rubric or success criteria below]. Based on these directions and the rubric success criteria, provide me with some targeted feedback for the first criterion about [insert specific criterion topic here, e.g., focus, accuracy, etc.]. In the feedback, explain what I've done well and where I have room to improve relative to the criterion about [insert specific criterion here]. However, do not give me feedback that corrects any errors or deficiencies. Instead, help point out some areas that I may want to consider for improvements and provide some suggestions that may help me get started.

Whether feedback comes from an instructor or AI, students must have the feedback literacy needed to make sense of and apply that feedback moving forward. Research indicates that students' feedback literacy improves when they engage in dialogue and processing of the feedback with others (Carless & Boud, 2018; McTighe & Frontier, 2022). Because developing feedback literacy requires frequent, timely feedback, AI-generated feedback can help students practice reviewing and applying feedback more often. Instructors can design meaningful prompts for assignments that shape how AI evaluates work, improving the specificity, relevance, and tone of the feedback students receive. While the instructor may not be providing every piece of feedback, shaping the type and voice of AI feedback helps ensure students receive respectful and meaningful guidance that they are more likely to apply.

Importantly, students need time and support to process feedback, and AI feedback is no exception. Using guiding questions and providing opportunities for peer discussion can help students process AI or instructor feedback more effectively than if they were working alone (Hill & West, 2019). Instructors can also model this process through think-alouds—showing how they elicit feedback from AI, deciding which feedback to apply, and explaining why—so students feel comfortable engaging in similar feedback dialogues themselves. Once this process is modeled, students can follow the process in making their own revisions. Ultimately, using AI as another voice in the feedback process, combined with feedback literacy best practices, may enable students to produce higher-quality work while strengthening their capacity to direct their own learning (Luo & Zhan, 2026). Indeed, Qian (2025) notes that instructor- or peer-provided feedback should not be replaced by AI feedback, calling instead for educators to encourage collaborative, iterative feedback interactions that are ongoing and bi-directional.

Additionally, feedback is only useful if it is understood and applied. To support students in effectively using feedback, we propose the following guiding questions that instructors can share to guide the AI-mediated assessment-as-learning process (see Table 1). These questions were developed based on categories of thinking skills established by Moseley et al. (2005) and on Molloy et al.'s (2020) framework centered on feedback literacy development.

Table 1

Guiding Questions to Support Feedback Literacy Development

Thinking Skill Category	Guiding Questions
Understand	• Do I need to ask any follow-up questions to better understand or apply the feedback? • Should I pose a follow-up question or prompt for the AI tool to better clarify the feedback received?
Organize	• How can I organize this feedback into steps so I can apply it? • What is my first step for applying this feedback?
Analyze	• Do I agree or disagree with the feedback? Why or why not? • Can I fully apply this feedback to my work? Why or why not? • Should I ask for more details from the AI source about my feedback?
Self-Direct	• What type of support do I need from my instructor or peers to apply the feedback? • Do I need to research or consult resources to apply the feedback?

Recommendations

Make AI Feedback Part of the Routine

Receiving and applying feedback regularly helps students normalize feedback engagement and see it as a routine part of the learning process (Yan & Boud, 2021). AI tools can make this possible by giving students immediate, low-stakes opportunities to check their work before turning in drafts. Instructors can encourage students to use AI feedback at multiple points in the drafting process (perhaps as a first-pass check) so that peer, instructor, and AI feedback together become part of a continuous improvement cycle.

Ensure that Feedback is Timely

To maximize impact, feedback should be given soon after students submit initial versions of their work and should help them solve a concrete problem (e.g., how to revise their next draft) (McMillan, 2018). AI can provide just-in-time feedback almost instantly, even outside of class hours, which makes it easier for students to act on feedback while their thinking is still fresh. In class, instructors can reserve time for students to review their AI-generated feedback, discuss it with peers, and make revisions right away, making the feedback actionable and integrated into the learning process. In this way,

assessment can be used as a learning tool for increasing the likelihood that students will truly engage with feedback to improve their work.

Scaffold and Support Feedback Use

Students often need help making sense of feedback (Yan & Boud, 2021), whether from AI or a instructor. Providing scaffolds like guiding questions, reflection prompts, and graphic organizers helps students critically evaluate AI feedback and decide which suggestions to apply. For example, instructors could give students a chart where they list AI feedback, their decision about whether to apply it, and their reasoning. This encourages students to engage in "meta-dialogues" about feedback, improving metacognition and helping them recognize that AI feedback should be thoughtfully considered rather than automatically accepted (Carless & Boud, 2018).

Conclusion

Integrating AI into classroom assessment practices offers instructors an unprecedented opportunity to make assessment as learning more practical, timely, and impactful. By using AI to generate work samples and provide feedback, instructors can save valuable preparation time, increase the frequency and immediacy of feedback students receive, and create more opportunities for students to engage meaningfully with success criteria, while students develop their feedback literacy and application skills. the goal is not to replace instructor feedback but to expand its reach and effectiveness by combining AI-generated input with instructor modeling, peer dialogue, and guided practice.

However, the uses of AI described in this article have potential limitations to consider, and additional research in this realm is likely warranted. For instance, one drawback to AI use is the possibility that not all students have access to the same versions of AI tools (for example, to paid versus unpaid version of AI resources). To circumvent this potential limitation, we recommend that instructors build AI use in their classrooms around whichever tools are provided by their institution so that students all have identical access levels. Additionally, we urge instructors to try these AI processes in small quantities before scaling up. Doing so will allow instructors to apply their professional knowledge to various teaching scenarios to determine whether the use of AI is impeding or supporting students' learning. To the extent possible, instructors are encouraged to methodically evaluate the efficacy of these AI practices and engage in self-study that can be shared more broadly with colleagues, in papers, or at conferences. We believe that working collectively as educators and sharing our "lessons learned" with AI use is essential in this ever-changing technological landscape and that any study of these uses—ranging from small-scale work centered on one's own classrooms to larger-scale work evaluating broader, more generalizable trends—is critical for improving higher education pedagogy (Allman & Leary, 2024).

Despite the cautions described above, we contend that AI, when used intentionally and accompanied by scaffolds that help students evaluate and apply feedback critically, can become a powerful partner in cultivating students' ability to monitor, assess, and direct their own learning, all of which are skills that will serve them well beyond a single assignment or course.

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About the Authors

Leighann Pennington, Assistant Professor of Education, Sweet Briar College, Leighann.pennington@gmail.com

Michelle Hock, Cohort Manager, School of Education and Human Development, University of Virginia, mlh9er@virginia.edu