Before You Prompt: Putting Pedagogy First in AI-Supported Course Design

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When instructors begin exploring generative artificial intelligence (AI), the first question is often, “Where do I begin? Which AI tool should I use?” This is an understandable place to start. New tools promise to generate lesson plans, discussion questions, rubrics, case studies, quizzes, images, and feedback, often within seconds.

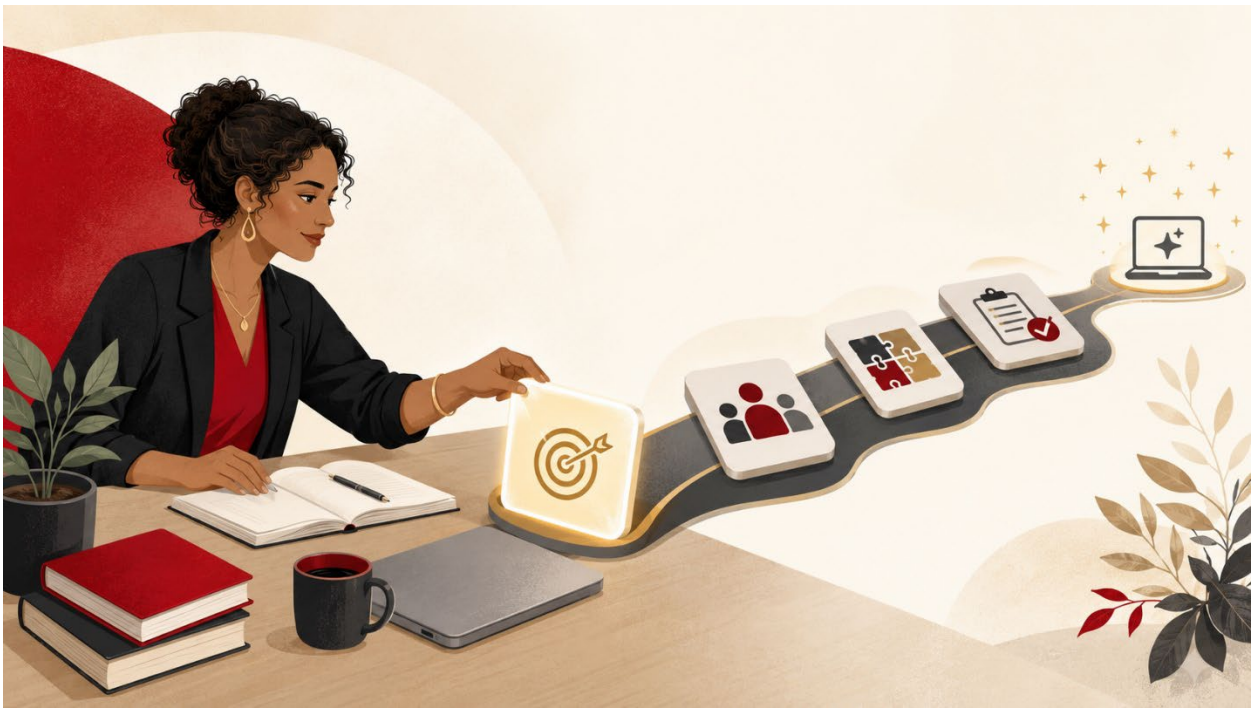


Image note: *Concept developed by the author; image generated with OpenAI’s image-generation tool and reviewed by the author.*

From an instructional design perspective, however, choosing a tool may not be the most useful starting point. Before opening an AI platform or writing a prompt, we should first ask a more fundamental question: ***What learning problem are we trying to solve?***

AI can quickly produce instructional materials, but producing more materials does not necessarily produce better learning. A polished quiz may assess only factual recall. A detailed case study may be interesting but disconnected from the course objectives. A creative activity may engage students without giving them a meaningful opportunity to practice the skills they are expected to develop. In other words, AI can help us produce something quickly, but it cannot independently determine if “something” belongs in our course.

Begin with the learning outcome

A familiar principle of instructional design is *alignment*. Biggs and Tang (2015) describe constructive alignment as connecting the intended learning outcomes, the learning activities

students complete, and the methods used to assess their performance. This principle remains important regardless of whether instructional materials are created by an instructor, an instructional designer, or an AI tool.

Before prompting AI to create an activity, instructors might consider:

- What should students be able to do after completing this lesson?
- What kind of thinking or performance does that outcome require?
- What practice will help students develop that ability?
- What evidence will demonstrate that learning has occurred?
- Where, if anywhere, could AI support this process?

Suppose, for example, an instructor wants students to evaluate competing solutions to an environmental problem. Asking AI to "create a quiz about sustainability" may produce definitions and multiple-choice questions. Those questions might be accurate, but they might not necessarily measure students' ability to evaluate alternatives.

A more purposeful approach would begin with the desired performance. The instructor might ask AI to draft a realistic scenario containing several possible solutions, competing stakeholder priorities, incomplete information, and potential tradeoffs. Students could then recommend and defend a solution using evidence from the course.

In this example, the learning outcome itself, not the capabilities of the tool, determines how AI is used.

Identify where students need support

Once the learning outcome is clear, the next question is where students are likely to struggle. Do they need more examples? Immediate practice? Feedback on misconceptions? An opportunity to consider a different perspective? A low-stakes environment in which they can make and revise a decision?

Generative AI may be useful for brainstorming:

- Multiple examples of a difficult concept
- Common misconceptions students may hold
- Practice scenarios at different levels of complexity
- Alternative explanations or analogies
- Draft feedback for incorrect responses
- Questions that encourage students to explain their reasoning

These possibilities are valuable because they respond to a particular learner need. The focus is no longer “How can I add AI?” but rather “What would help students learn, and can AI assist me in creating it?”

Keep human judgment in the process

Even a well-designed prompt does not guarantee an instructionally sound result. Generative AI may provide inaccurate information, introduce bias, oversimplify disciplinary knowledge, or create assessments that do not measure the intended outcome. Kasneci et al. (2023) identify both educational opportunities and substantial limitations associated with large language models, including concerns about accuracy, bias, transparency, and overreliance.

A recent design case describing the development of an online course provides a useful example. The design team used generative AI for brainstorming, scripting, assessment development, and feedback. However, the team found that many AI-generated assessment questions emphasized simple recall rather than higher-order learning. The designers treated AI as a “co-thinker,” while retaining human responsibility for pedagogical and ethical decisions (Suresh et al., 2025).

That distinction is important. AI can draft, suggest, question, compare, and revise. It cannot assume responsibility for the quality of the learning experience.

A pedagogy-before-prompting framework

Before using AI to create course materials, try answering the following five questions:

1. **Outcome:** What should students be able to do?
2. **Challenge:** Where are students likely to struggle?
3. **Practice:** What should students do to develop the intended knowledge or skill?
4. **Evidence:** How will they demonstrate their learning?
5. **AI’s role:** What specific part of this process could AI support without replacing essential student thinking or instructor judgment?

This process may lead to an AI-supported activity. It may also lead to the conclusion that AI is not needed. Both are legitimate design decisions.

Generative AI gives us new ways to develop instructional materials, but the central questions of teaching remain familiar: What do we want students to learn? What experiences will help them learn it? How will we recognize meaningful learning when it occurs?

The prompt should come ***after*** those questions, not before them.

References

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