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Anchored in the Learner: A Critical Review of AI Discourse in Design Education

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ABSTRACT

Generative AI is moving quickly into design education, universities and design schools have already issued guidelines, frameworks, and curricular advice. Across this work, three concerns stand out. The first is building students' AI literacy, the second is the effect of AI on the design profession, the third is redesigning teaching for the new tools. What receives far less attention are the student's psychological needs, such as the need for autonomy, relatedness, competence when using AI for a design task. We argue that good educational frameworks should be anchored in the learner, not driven by technology. Following a scoping review approach, we read the recent design-education discourse on generative AI from 2022 to 2026 together with the established work on learner experience, psychological needs, and wellbeing in HCI and AI. Together they show a clear pattern. Related works are diverse but pay little attention to what students actually need. When needs do appear, they are used mainly to explain outcomes such as creativity or critical thinking. We argue that students' needs matter on their own, the field should start from what students need when deciding how to use AI in design education. Our contribution is not a new framework but a change of stance that puts the learner's needs first.

Keywords: Generative AI, Design education, Learner-centered, Psychological needs

INTRODUCTION

Generative AI has moved into design education in just a few years, and it is now in everyday use. These tools have spread across the creative industries and education since ChatGPT was released in late 2022 (Smith-Harvey, 2025), and student use is now very common. A recent global survey reports that 86% of university students use AI in their studies (Vendrell and Johnston, 2026). Universities and design schools have responded quickly, issuing guidelines, frameworks, and curricular advice to manage the change (Brezovec et al., 2025).

The questions we ask about AI have shifted as the technology has become increasingly mature. When these tools first appeared, we mostly asked what AI could do. As they grew more capable, we began to ask what we could expect from them. Now that AI is gradually woven into everyday study and work, a third question has become timely. What we need from AI? For learners in design education, this means asking about their psychological needs, the needs that shape how they learn, create, and grow.

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So far, three concerns dominate the discourse. The first is building students' AI literacy (Norris et al., 2025; Botta et al., 2024). The second is the effect of AI on the design profession and the changing role of the designer (Park, 2024; van der Maden et al., 2024b). The third is the redesign of teaching, including courses, assessment, and studio practice (Hu et al., 2025; Zhou et al., 2026; Smith-Harvey, 2025). These are fair and useful questions, but they share a blind spot. In each of them the student appears mainly as a recipient of instruction, a user of tools, or a number to be measured. The discourse rarely asks whether students' basic psychological needs are satisfied when they use AI in a design task, or what patterns of need frustration arise in human-AI co-creation in design education.

We argue that good educational frameworks should be anchored in the learner, not driven by technology. When tools set the curriculum, design education becomes technically responsive but pedagogically hollow. This is not an argument against AI. It is an argument about priorities, and about who sits at the center of the framework. To make this case, we read two bodies of work through a scoping review, and this reveals the gap. The learner-centered view is well developed in the HCI and AI literature, but it is far less visible in the design-education discourse. We take this gap as our starting point and argue that design education should begin from what students need, not from what the tools can do.

METHOD

We follow a scoping review approach, drawing on the method of Arksey and O' Malley (2005) and its update by Levac et al. (2010). A scoping review fits our aim, because we do not try to settle an empirical question but to map how a field frames a problem and to find where a key framing is missing.

We read two bodies of work. One is recent design-education research and guidance on generative AI from 2022 to 2026. The other is the established work on learner and user experience, psychological needs, and wellbeing in HCI and AI, traced through self-determination theory, Maslow's need theory, needs-aware AI, and digital wellbeing. Our sources include design and HCI venues, education and information-technology journals, and psychology journals. We did not aim for a full synthesis or a statistical summary. Our goal was to bring out the framing gap between the two. This is a critical, position-taking review rather than a systematic one, and we state that scope clearly.

FINDINGS

The design-education discourse on generative AI is varied and productive, it tends to frame AI in three recurring ways. AI appears as an instrument, as an effect to be measured, and as an environment to be reformed. Some of this work is explicitly human-centered, and much of it does attend to the student. It examines students' skills, adaptability, self-efficacy, and AI literacy, and how these develop. What it rarely attends to is the student's psychological needs and lived experience. When needs do appear, they are treated as a

means to an end. They serve as a mechanism for producing outcomes such as creativity, critical thinking, and decision making, not as a part of the student's wellbeing and development that education should support for the student's own sake.

AI as an instrument. Generative AI is commonly framed as an instrument, a tool that extends what students can produce. A representative example adopts the double-diamond model as its base framework and integrates ChatGPT and Midjourney into different phases of the design process to strengthen students' creativity and problem-solving (Wu et al., 2024). Empirical studies in this vein report similar gains, finding that AI can accelerate ideation and improve efficiency. They also flag risks such as over-reliance, privacy, and bias, with one noting that heavy reliance can "decrease students' independent learning ability" (Tsai, 2025). Other work turns the tool into a set of teachable skills. A nine-week Midjourney workshop, for example, formulated five core competencies for human–AI co-creation while observing how strongly students lean on the tool (Shou et al., 2024). Another strand probes the tool's limits, arguing that AI lacks the contextual awareness, creativity, and ethical reasoning needed for autonomous decisions, so human supervision must remain central (Park, 2024). This kind of framing stays instrumental. Attention rests on the tool and its effect on output, on what AI can generate, how efficiently, and how well students operate it. The student appears mainly as the operator of the instrument, rather than as a learner whose own experience and needs are in view.

AI as an effect to be measured. A second framing is evaluative, treating AI's impact on students as something to measure and count. One quasi-experiment shows a mixed result. AI improves elaboration and fluency but barely improves originality, and students rate their own gains much higher than expert raters do, which points to an optimism bias. In that study only a few students kept full creative control, while most moved back and forth between depending on the tool and feeling lost (Zhang et al., 2025). Other studies measure what drives these outcomes. A survey of 784 design students finds that motivation and self-efficacy matter most for adapting to AI-supported learning (Meng et al., 2026), and related work links a growth mindset to higher AI self-efficacy (Shen and Ma, 2025). A further study looks at the costs, warning that heavy, unstructured use of large language models can weaken students' critical thinking through cognitive offloading (Vendrell and Johnston, 2026). This work does pay attention to students, but it measures them as outcomes, turning their states into scores for creativity, self-efficacy, and adaptability. The student becomes a set of numbers rather than a person with needs and experience.

AI as an environment to be reformed. A third framing is pedagogical. It treats AI as a new condition that the curriculum has to adapt to, so the response is to redesign courses, methods, and assessment. Several studies propose new teaching frameworks for this. They include technical, ethical, and critical pedagogies for first-year designers (Smith-Harvey, 2025), as well as project-based, competence-based, and design-stage frameworks that restructure how courses are built and sequenced (Hu et al., 2025; Zhou et al., 2026; Botta et al., 2024). Other work rethinks the pace and posture of

AI use, treating it as a slow, reflective medium rather than a fast production tool (van der Burg et al., 2026). A further strand reworks classroom practices such as citation, recasting it as a reflective habit that makes students' use of AI visible and accountable (Shukla et al., 2025). This work is careful, it takes students seriously. But its object is mainly the learning environment, the curriculum, the classroom, while the learner's own experience is handled indirectly, as something the reformed environment is expected to improve.

DISCUSSION

The findings show that student needs are treated mainly as a means to other ends. The evidence, however, suggests they are central rather than secondary. One study finds that AI literacy improves students' innovative behavior mainly through the satisfaction of psychological needs, rather than on its own (Ji et al., 2025), and other work shows that supporting needs improves how students learn with AI (Xia et al., 2022; Chiu, 2024). If needs already matter this much when they are treated only as a means, it is worth asking what follows once we treat them as more than that. We make the case in three steps.

Needs are basic, and technology does not define them. Psychological needs such as autonomy, competence, and relatedness are basic to learners, and they do not change with the tools students happen to use. Technology does not create these needs, and it cannot replace them. What it can do is support them or get in their way (Wemmer and Röcker, 2025). For this reason, students' needs should not be shaped to fit AI or any other technology. They come first. This also affects how we see the purpose of design education. Design education is not only about building skills. It is also meant to serve people's wellbeing. This is not a new idea in the field, since design research already argues that AI itself should be designed to support human wellbeing (van der Maden, Lomas, and Hekkert, 2023). When technology is pushed forward without regard for wellbeing, it can create problems of its own, and the AI anxiety now seen among students and teachers can be read as one sign of this, a hint that needs are being overlooked rather than met (Kim et al., 2025).

Needs can anchor how the field understands AI's role. Design education holds more than one view of what AI is and how it should enter the classroom. As the previous section showed, AI is treated as an instrument focused on output, as an effect to be measured, and as an environment to be reformed. These views are useful, but they do not share a common starting point, and each defines AI's place in mostly technical terms. Needs can offer the starting point they lack. If we begin by asking what the learner needs, the role of AI in each view becomes easier to think through and to keep consistent. We should be careful here. Needs in this sense are not a technical guide for using AI, and we do not offer them as a new framework. They are a starting point, a way for the field to decide how AI should serve the learner rather than the other way around.

The learner comes first, and needs should not bend to fit the tool. Finally, this depends on taking the learner's identity seriously. A design student is not yet a professional who designs products for a market. The student is a learner whose own growth is what matters, and who is still working out what it means to be a designer (Maharjan and Ryu, 2026). In this setting, AI should be used to support the learner's growth as a designer, not treated as something the curriculum has to bend around. Using AI for its own sake, or bringing it in simply because it is available, lets the learner's needs give way to the tool's functions. The order should run the other way. Function should answer to needs, not needs to function.

Our contribution is not a new framework but a change of stance. It asks the field to stop letting technology set the curriculum, and to treat the learner's needs as the starting point that any use of AI should answer to.

CONCLUSION

The current discourse on AI in design education keeps tools and teaching in the foreground, while the learner's needs receive insufficient attention. We have argued that these needs are basic to learners and are not set by technology. Needs can anchor how the field understands the role of AI, and they should not be made to bend to the tool's functions. If the earlier question was what AI can do for us, the question worth asking now is what we need from it. In design education, that means starting from the learner's needs, rather than adding them once AI is already in place.

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