# Considerations for Integrating AI Within Teaching and Learning

## Executive Summary[1]

**Purpose and Audience:** This resource aims to provide educators at the University of Delaware (UD) with practical and ethical guidance on integrating AI into teaching and learning. Targeting educators across all levels and academic unit leaders, it is designed to initiate, not conclude, discussions about AI in education.

**Context and Scope:** With the advent of generative AI, new ethical, practical, and pedagogic challenges have emerged, necessitating the guidance and considerations included herein. This resource deliberately excludes AI applications unrelated to education, such as self-driving cars, and does not reference specific AI tools to maintain relevance in a rapidly evolving field.

**Reasons for Integrating AI in Education:**

1. **Improvement in Education:** AI can enhance educational priorities by providing immediate feedback, fostering creativity, and enabling critical thinking.
2. **Prevalence in Society:** The growing ubiquity of AI tools in society makes it essential for educators to prepare learners for their ethical and effective use.
3. **Awareness of Risks:** Educators should ensure learners are aware of the risks associated with AI to guide its positive development.

**Key Considerations for AI Integration:**

1. **Human-Centered Approach:** AI should amplify human abilities without replacing the human elements in education. Educators should remain central to and responsible for teaching and decision-making.
2. **Transparency:** Clear expectations regarding AI use should be set, with educators modeling ethical AI usage and appropriate disclosure, especially regarding data privacy.
3. **Ethical Considerations:** Educators should ensure that AI tools are accessible, are used in ways that protect learners' personally identifiable information, and that an examination of possible bias is considered and unpacked in the classroom. Educators should also develop and maintain their own knowledge of these tools.

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[1] Executive summary produced with the assistance of ChatGPT 4.0. All output was evaluated and revised to ensure accuracy of content and preserve the authors' intended meaning of key concepts and terms.

4. **Educational Effectiveness:** AI usage should align with best instructional practices and theories of learning.

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# Introduction

## Purpose

This resource provides educators with guidance regarding ways to utilize AI within teaching and learning in ways that are effective, ethical, and equitable and that will empower educators and learners–both traditional and non-traditional learners–alike.

These are considerations, not requirements. Educators do not *have* to teach with or about AI, but there's good reasons to do so, and should someone wish to, here are some things to consider.

This document is not and cannot be exhaustive. It concerns a very complex set of ideas with details that not only evolve over time, sometimes very quickly, but also have different meanings in different contexts. This university-level document should begin discussions and decisions made by individual educators and groups of educators (e.g., departments, schools, programs), not end them.

## Audience

This resource and the considerations offered here are primarily intended for UD educators responsible for teaching courses at any level, associates through doctoral. A secondary audience includes leaders of academic units (e.g., deans, department chairs, school directors) who may wish to utilize or adapt these considerations when creating unit- or discipline-specific AI-in-education policy documents for their units.

## Context: Generative AI as a catalyst for educational transformation

[The Center for Integrative Research in Computing and Learning Sciences](#) defines AI as:

> "A branch of computer science. AI systems use hardware, algorithms, and data to create 'intelligence' to do things like make decisions, discover patterns, and perform some sort of action. AI is a general term and there are more specific terms used in the field of AI. AI systems can be built in different ways, two of the primary ways are: (1) through the use of rules provided by a human (rule-based systems); or (2) with machine learning algorithms. Many newer AI systems use machine learning…[employing] an algorithm

[that] will identify rules and patterns in the data without a human specifying those rules and patterns. These algorithms build a model for decision making as they go through data. (You will sometimes hear the term machine learning model.) Because they discover their own rules in the data they are given, ML systems can perpetuate biases. Algorithms used in machine learning require massive amounts of data to be trained to make decisions."

While AI has been a focus of scholarship and development since at least the 1950s[2], recent advances in *generative AI* have catalyzed great interest, concern, and activity, particularly in regards to education. Generative AI refers to "AI techniques that learn a representation of artifacts from data and use it to generate unique content (including images, video, music, speech, and text) that preserves a likeness to the original data."[3]

These Considerations are offered in response to the unique ethical, practical, and educational challenges arising from generative AI.

## Scope

Given that AI is a broad topic, this resource is necessarily limited in scope, specifically to that of the use of AI and automation within teaching and learning. For example, while AI has been leveraged in the application of self-driving cars, that application of AI is outside the scope of this resource.

Also, the field of AI - including generative AI - is constantly evolving and doing so rapidly. Considerations are thus offered without reference to specific AI applications (e.g., ChatGPT, DallE), retaining the focus on those considerations that would plausibly generalize to whichever tool or application may be used.

Finally, as the field of AI advances, new considerations will emerge. Thus, this resource is offered as a starting point, meant to begin and not end conversations around this important topic.

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[2] O'Regan, G. (2021). History of Artificial Intelligence. In: A Brief History of Computing. Springer, Cham. https://doi-org.udel.idm.oclc.org/10.1007/978-3-030-66599-9_22

[3] Generative AI," Information Technology Glossary, Gartner Glossary, Gartner. https://www.gartner.com/en/information-technology/glossary/generative-ai

# Reasons to Consider AI in Teaching and Learning

## AI Can Improve Education

AI can help educators achieve educational priorities in ways that can easily be used with many learners and can be widely accessible. For instance, AI has the potential to provide opportunities for immediate and substantive feedback, appraising growth and progress, and exercising creativity and critical thinking.[4]

## AI is Increasingly Prevalent

These tools are becoming widely available and used throughout modern society. Educators have an obligation to provide opportunities for learners to learn about AI to ensure learners are prepared to use AI and automation systems effectively and ethically within employment and society more generally as engaged and informed citizens.

Many learners are already using AI tools[5], and for educators to consider AI in their own classrooms allows them to better set expectations for how learners can and should use AI in their courses.

## AI Raises a Number of Concerns and Risks

Although AI is increasingly being used throughout society, there are risks associated with AI. Educators have a responsibility of ensuring that learners are cognizant of those risks to ensure that learners use AI safely, ethically, and effectively. In this way, educators may help shape the future of AI in a positive direction.

# Considerations for Integrating AI Within Teaching and Learning

University of Delaware educators contemplating the use of artificial intelligence (AI) tools and models should weigh and prioritize the following considerations. These considerations are

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[4] Lodge, J. M., Yang, S., Furze, L., & Dawson, P. (2023). It's not like a calculator, so what is the relationship between learners and generative artificial intelligence? *Learning: Research and Practice, 9*(2), 117–124. https://doi.org/10.1080/23735082.2023.2261106

[5] Coffey, Lauren. (2023, October 31). Learners Outrunning Faculty in AI Use. *Inside Higher Ed,* https://www.insidehighered.com/news/tech-innovation/artificial-intelligence/2023/10/31/most-learners-outrunning-faculty-ai-use

offered with the goal of ensuring that using AI preserves – even strengthens – but never diminishes the value and [values of a UD education](#).

The integration of AI within teaching and learning should be:

# Human-centered

1. AI within teaching and learning should be "human centered"
    a. To be human-centered means that the goal of implementing AI should be to "increase human self-efficacy, creativity, responsibility, and social connections"[6] and to "amplify human abilities, empowering people in remarkable ways while ensuring human control."[7]
    b. Accordingly, the human-centered application of AI within teaching and learning should facilitate educators to focus more on what they are uniquely capable of and facilitate learners to engage in higher levels of thinking[8]. Importantly, the application of AI should not reduce the energy directed at teaching and learning, rather it should create a productive division of labor, shifting the focus towards new, more innovative, and higher levels of critical engagement.
2. Educators should be "in the loop," remaining responsible for teaching and educational decision making
    a. While AI can streamline tasks like feedback, assessment creation, grading, and material development, saving time and effort, it's crucial that educators actively supervise and confirm the validity of AI outputs. Ultimately, the responsibility for instruction rests solely with the educator; the AI cannot take responsibility.

# Transparent

3. Educators should make their expectations regarding learners' use/non-use of AI explicit
    a. [Educators should be explicit about what uses and tools are and are not appropriate](#). Moreover, and perhaps more importantly, educators should not just

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[6] Schneiderman, B. (2022). [Human-centered AI](#). New York, NY. Oxford University Press. Page 9.

[7] Ibid. Page 15.

[8] Lodge, J. M., Yang, S., Furze, L., & Dawson, P. (2023). It's not like a calculator, so what is the relationship between learners and generative artificial intelligence? *Learning: Research and Practice, 9*(2), 117–124. https://doi.org/10.1080/23735082.2023.2261106

set those policies but also to teach learners, or direct learners towards resources, the knowledge and skills they need to successfully comply with those policies.

b. If learners are allowed to use AI tools, educators should ensure that there are clear expectations about how to cite their use, and whether or not learners should submit supplemental artifacts with their work (e.g., the prompt[s] they used to develop and refine their work, revisions made to the original output).

c. Educators should help learners understand that expectations likely will not generalize from one instructor to the next. Special attention should be paid in courses that have multiple sections taught by different instructors to establish some consistency.

d. Educators are cautioned against using AI detectors as their reliability has shown to be weak, often generating an unacceptable rate of false positives (i.e., human-written text flagged incorrectly as AI generated).[9][10]

4. Educators should make their own use of AI tools transparent.

a. Educators should model transparent and ethical behaviors and practices when using AI tools in educational contexts. For example, AI tools used to create or modify educational materials – syllabi, slides, etc. – should be appropriately cited or acknowledged.

b. Educators who are using AI tools that access student data or provide input into decisions about learners (e.g., recommendations about grades) should also be appropriately and ethically transparent about their use of those tools.

## Ethical

5. Educators should consider issues of access, equity, bias, and fairness when using AI within teaching and learning

a. Educators should ensure that AI tools and models are accessible to learners in every appropriate interpretation of "accessible" e.g., financial, technical, cultural. This includes appropriate expectations regarding learners' AI literacy and how that is built and supported.

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[9] Elkhatat, A.M., Elsaid, K. & Almeer, S. Evaluating the efficacy of AI content detection tools in differentiating between human and AI-generated text. *International Journal for Educational Integrity, 19*(17), (2023). https://doi.org/10.1007/s40979-023-00140-5

[10] Salem, L., Fiore, S., Kelly, S., & Brock, B. (2023). *Evaluating the effectiveness of Turnitin's AI writing indicator model.* Center for the Advancement of Teaching, Temple University. https://teaching.temple.edu/sites/teaching/files/media/document/Evaluating%20the%20Effectiveness%20of%20Turnitin%E2%80%99s%20AI%20Writing%20Indicator%20Model_0.pdf

b. Educators are encouraged to evaluate the outputs of the AI system given the potential of AI to amplify existing socio-cultural biases. An examination of potential bias should be considered and unpacked in the classroom.

c. Educators should solicit feedback from learners regarding their perceptions of those outputs, be they scores, feedback, text, images etc., to ascertain whether some groups of learners are systematically experiencing different levels of usability and usefulness with the AI tool.

6. AI use should be aligned with policies and practices protecting learners' data and privacy

a. Consistent with existing laws and policies governing data privacy such as FERPA, educators should not submit or encourage learners to submit personally identifiable information or other confidential data to AI systems that do not provide sufficient protections and appropriate assurances of privacy.

b. Laws concerning generative AI, intellectual property and copyright, especially around fair use, are unsettled at this time. Educators should understand how data used in AI tools are stored, used, and protected. For example, educators should not upload copyrighted materials (including most materials accessed through the library).

7. The greater the consequences, the more educator expertise, knowledge, and involvement is necessary

a. Educators should be appropriately knowledgeable about AI tools they use and the tools they require or encourage students to use. Without appropriate knowledge, it will be difficult – if not impossible – for educators to remain "in the loop" and provide oversight on the effective uses of AI in their instruction. The level of knowledge should be balanced against the intended use and impact of the tool with more intensive and consequential uses requiring more detailed knowledge on the part of the educator.

b. The greater the consequence attached to the outcome/decision, the more important it is to retain human control/autonomy. For example, providing learners with feedback has relatively low stakes. Learners may elect to fully adopt, partially adopt, or ignore feedback given to them. In contrast, grading – especially summative grading where learners are not given opportunities to revise or resubmit – has higher consequences. AI and automation might be used in both cases, but the latter case would require much greater educator oversight.

## Educationally effective

8. Use of AI within teaching and learning should be aligned with best practices in instruction and theories of how we learn
   a. AI most productively supports teaching and learning when integrated with modern learning principles: AI tools and models should be employed in alignment with our best understanding of effective teaching and learning, including but not limited to an emphasis on practice and feedback, organization of knowledge, incorporation of prior knowledge and culture, metacognition, and the development of self-regulation and self-direction.[11]
   b. AI doesn't change everything. When using AI in the classroom, the basics should still apply: "What do I want learners to be able to do as a result of this activity?"

9. Effective use of AI requires some explicit instruction in the use of AI
   a. Educators are encouraged to instruct learners in productive ways of using AI tools, developing learners' knowledge, skills, critical thinking, and ethical awareness of AI to develop their AI literacy.

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[11] National Research Council. (2000). *How People Learn: Brain, Mind, Experience, and School: Expanded Edition.* Washington, DC: The National Academies Press. https://doi.org/10.17226/9853.

# Additional Resources

- White House: *Blueprint for an AI Bill of Rights*
  - https://www.whitehouse.gov/ostp/ai-bill-of-rights/
- US Department of Education Office of Educational Technology: *Artificial Intelligence and the Future of Teaching and Learning*
  - https://tech.ed.gov/ai-future-of-teaching-and-learning/
- UNESCO: *Recommendation on the Ethics of Artificial Intelligence*
  - https://unesdoc.unesco.org/ark:/48223/pf0000381137

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