

Book Review

Teaching with AI: A Practical Guide to a New Era of Human Learning

Bowen, J. A., & Watson, C. E. (2024). *Teaching with AI: A practical guide to a new era of human learning*. Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-4214-4922-7, \$24.95 (paperback), 280 pages

Consider a student who asks an artificial intelligence (AI) system for 10 ways to improve a water filtration prototype during a design challenge. The central question is not whether the student used AI. It is whether the student met the learning goal. Did the student compare trade-offs, revise criteria, test a stronger design, document decisions, and explain what human judgment added to their decision-making? *Teaching with AI* helps educators rethink how they teach, assess, and support student learning as generative AI becomes part of education. José Antonio Bowen and C. Edward Watson argue that AI is changing how people think, create, and work. Educators should respond by teaching students to use AI responsibly, critically, and productively.

Bowen and Watson are most effective when they translate broad concerns about AI into practical guidance on AI literacy, assignment design, assessment, feedback, and human judgment. Educators in Technology and Engineering Education can apply this guidance to design-based learning, systems thinking, iterative problem solving, and the responsible evaluation of emerging technologies. The book progresses from understanding AI to applying it in teaching and learning. Its instructional guidance is stronger than its treatment of ethical and systemic consequences.

One strength of the book is its approach to AI literacy. Bowen and Watson define it through tool selection, problem formation, prompt quality, verification, bias awareness, recognition of hallucinations, and iteration (pp. 42–61). Students must know when AI is useful, how to improve weak output, and how to judge whether a response is accurate, relevant, and appropriate. The authors support these skills by presenting task, format, voice, and context as features of an effective prompt and showing how refinement and iteration improve AI-generated responses.

Their approach to AI literacy transfers well to Technology and Engineering Education because it requires students to evaluate how inputs, constraints, assumptions, and system limitations shape AI-generated responses. Educators

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can apply the book's guidance to design briefs, system evaluations, fabrication tasks, and technical troubleshooting. Examples involving AlphaGo (pp. 67–68), AlphaFold (pp. 72–73), and AI-assisted design work at NASA (p. 39) show how AI can generate possibilities people may not consider. Humans remain responsible for selecting, testing, revising, and justifying those ideas.

Using AI to generate and critique ideas fits design-based learning because students retain responsibility for the design process. Students may use AI to generate alternatives or critique proposed solutions, but they must still frame the problem, test ideas, revise prototypes, and justify decisions with evidence. That benefit depends on how the activity is structured. Students who accept generated options too quickly may narrow their thinking or bypass their own problem framing. Teachers should structure AI use so students remain responsible for inquiry, testing, revision, and judgment.

Bowen and Watson provide their clearest guidance in the discussion of assessment redesign. They state that “all assignments are now AI assignments” (p. 198) and argue that new assignments should develop critical thinking and AI literacy. They also call on educators to define work that exceeds what AI can produce, assess how students complete it, and reconsider the importance of the final product (pp. 157–158). This shifts assessment from detecting AI use to examining students' reasoning, decisions, and evidence of learning.

Process-based assessment is especially relevant to Technology and Engineering Education. Design notebooks, sketches, prototypes, test data, troubleshooting logs, and revision records can help teachers determine what students learned and whether they met the learning goals. A finished product alone may not show how students tested ideas, revised their work, or used evidence to make decisions. Teacher educators in the field can use process-based assessment to help future teachers determine whether AI supported learning or replaced the thinking required by the assignment.

The book's instructional guidance is likely to remain useful even as many examples become dated. Bowen and Watson acknowledge that parts of the book could change before publication and explain that they reran prompts close to press time, often with newer AI versions (pp. 2, 6–7). That transparency helps readers separate lasting principles from temporary tool guidance. Examples involving specific tools, interfaces, and detection products will date more quickly.

The authors support their recommendations with empirical studies, reports, tool tests, student conversations, and practical experimentation. They identify prompts, responses, AI versions, and dates and acknowledge that their student conversations did not constitute a large statistical sample (pp. 3–7). Their transparency helps readers understand what the recommendations are based on and where the evidence is limited.

Bowen and Watson also offer useful guidance on AI detection and academic integrity. They explain that detection tools vary in accuracy, provide probability scores, and cannot prove that a student was deceitful regarding their use of AI (pp. 111–115). They urge educators to pair careful judgment with clearer policies and assignments that require evidence of student thinking rather than rely on detection tools alone (pp. 130–133). This guidance gives educators a practical response to suspected misuse.

The book's practical focus leaves less room for a sustained treatment of ethics and equity. Bowen and Watson acknowledge that they kept the discussion focused on practical concerns while arguing that AI ethics should be integrated into the curriculum (pp. 2–3). They address bias and hallucinations when explaining how AI systems work (pp. 17–19) and later discuss unequal access, privacy, detection, and false accusations (pp. 106–120). These topics receive less development than prompting, assessment, and assignment design.

The *Standards for Technological and Engineering Literacy* emphasizes the ability to evaluate the benefits, risks, trade-offs, access, control, and unintended consequences of technologies (International Technology and Engineering Educators Association [ITEEA], 2020). *Teaching with AI* focuses primarily on classroom practice rather than these broader questions. Technology and Engineering Education readers may therefore need additional resources to examine AI's benefits, risks, labor demands, environmental costs, and effects on human judgment.

Teaching with AI gives educators practical guidance for redesigning instruction and assessment in response to generative AI. Its strongest ideas transfer well to technology and engineering teaching, particularly in design-based learning, process-based assessment, and responsible AI use. Although the book does not fully address the broader social and technological consequences of AI, Bowen and Watson offer a useful guide that supports educators to adapt their instructional practice to prepare students to think, design, and learn alongside AI.

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