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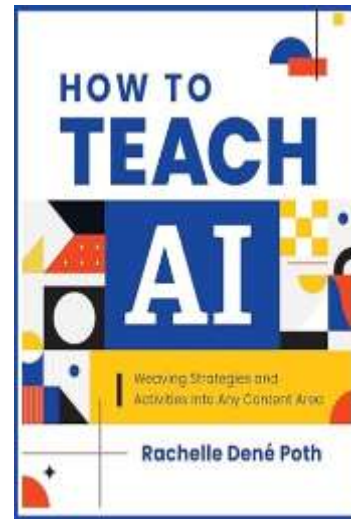
Poth, R. D. (2024). *How to teach AI: Weaving strategies and activities into any content area*. International Society for Technology in Education.

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Artificial intelligence (AI) has revolutionized teaching and learning. Teachers need to keep current with the latest developments in AI to support students' deep learning and equip them with the necessary knowledge and skills to thrive in a world characterized by *brittleness, anxiety, nonlinearity, and incomprehensibility* (BANI; de Godoy, 2021). In *How to Teach AI*, Rachelle Dené Poth demonstrates practical uses of AI in mainstream education and leverages various resources to assist teachers in creating meaningful and immersive learning experiences in the classroom. The book offers AI-powered tool recommendations and vivid examples from diverse fields for the purpose of strengthening teachers' confidence in integrating AI into their curricula.



Comprising seven chapters, *How to Teach AI* paints a comprehensive picture of artificial intelligence technologies, critical pedagogy, and ethical considerations for teaching with AI in mainstream education (Holmes & Tuomi, 2022). Poth seeks to promote a foundational understanding of AI, addressing significant terms such as algorithms, machine learning, *natural language processing* (NLP), neural networks, and computational thinking. The author also discusses the historical context of AI's evolution and how its founding figures, e.g., Alan Turing and John McCarthy, paved the way for contemporary AI applications.

In the AI era, the role of teachers constantly evolves as technology advances and policies change. Since technological shifts impact student learning and outcomes, teachers who stay abreast of these changes can better prepare students to enter a workforce where AI-infused technologies are prevalent. Teachers' commitment to professional development and *personal learning networks* (PLNs) enhances their AI literacy in teaching practices (p. 44).

Poth discusses key elements of AI and skills used in teaching with AI. For example, through machine learning algorithms, teachers can increasingly harness “strong AI” or “artificial general intelligence (AGI)” such as Chat GPT (Chat Generative Pre-trained Transformer) and GenAI (generative artificial intelligence) to perform human tasks such as creating lesson plans and designing a scoring rubric. The use of ChatGPT or GenAI in the classroom simplifies teacher tasks through “prompt engineering,” which includes differentiation, scaffolding, relationship building, and activities for elementary, middle, and high school students. Teachers can create and use chatbots—operating as virtual assistants—to enable interactive learning in their classrooms (p. 3). Chatbots can help teachers write effective prompts for learning activities across a range of subject areas, including computer science, economics, and literature (p. 74).

The author also asserts that teachers may thoughtfully integrate technology to enhance learning while maintaining human interaction and without diminishing personal connections. Poth underscores the significance of integrating AI tools in classrooms, critically assessing AI outputs, and recognizing the ethical ramifications of data privacy, algorithmic bias, and the potential for academic dishonesty and integrity when students interact with AI. It is essential to instill in students a sense of responsible use of AI since it is not capable of replicating human emotions or ethical reasoning. So informed, students are well-equipped to navigate an increasingly complex digital landscape and acquire deep learning skills.

AI generative capacities are not without biases, unfairness, misidentification, and misrepresentation since algorithms lacking human oversight can result in discrimination and inequity of AI applications in the classroom. Poth argues that AI does not displace but rather complements human activities. Teachers should use AI responsibly, taking a proactive approach to create and innovate, partnering with AI for understanding, exploring, and designing to interact with neural networks, and providing an understanding of how AI recognizes patterns (Chapter V). Successful AI integration prepares students for future work by developing “in-demand skills” spanning various industries such as education, automotive, e-commerce, finance, and healthcare (p. 117).

The text highlights opportunities that arise from incorporating AI in the classroom. Similar to a creative transfer type of education, AI holds significant potential for both teachers and students. Digital literacy supports student skills such as critical thinking, problem-solving, and deep learning. AI has far-reaching and game-changing effects for teachers, such as more efficient creation of lesson plans, customized materials, and assessment administration for English language and disabled learners.

AI tools benefit students by providing timely and comprehensive feedback, improving content retention, facilitating language learning, and promoting socio-emotional skills. AI-driven analytics offer teachers valuable interpretive insights into student performance and augment students’ learning. As a result, teachers leverage AI outputs based on prompts to provide personalized learning experiences and identify students’ strengths and weaknesses and learning pace.

Several chapters are devoted to pedagogical strategies for integrating AI into curricula. The author outlines a wide range of ideas for employing AI concepts across various fields by weaving AI-related activities and tools into existing lesson plans to foster a deeper understanding of technology and its implications for students. Nevertheless, the integration of AI presents specific issues due to the need for appropriate tools such as interactive simulations, educational apps, and online collaboration that align with learning objectives. Poth suggests a blended learning approach that combines online digital media with traditional classroom methods to maintain human interaction.

Intended for a broad audience, Poth's book is accessible to a range of non-experts outside the field of computer science to jump-start AI in practice. It would inform any education stakeholder interested in AI integration in K-12 classrooms, including teachers, teacher educators, schools or district-level administrators. Instructional designers, media developers, curriculum specialists, technology coaches, and researchers studying AI-related topics would also find this text useful.

Book chapters are also closely associated with the "Five Big Ideas in Artificial Intelligence" (perception, representation and reasoning, learning, natural interaction, and societal impact) proposed by AI4K12 (2020) (p. 11). Together, these five concepts shape our understanding of artificial intelligence and offer guidance concerning AI pedagogy for practitioners. These five concepts also govern U.S. laws for teachers related to data privacy and children's protection rights, such as Children's Online Privacy and Protection Act (COPPA) and Family Educational Rights and Privacy Act (FERPA) (p. 27). Appendices are provided for sample lesson ideas for all grade levels.

Incorporating socio-cultural viewpoints such as cultural sensitivities, especially for underprivileged groups, adopting *universal design learning* (UDL) to expand accessibility for technology based on the Americans with Disabilities Act (ADA) as well as promoting teacher wellbeing to cope with AI anxiety, would have made this book more comprehensive. Moreover, it is crucial to balance technology and human interaction with AI integration to create effective learning environments that bridge the gap between physical and digital learning spaces, ensuring a holistic approach to education. Embracing these additional aspects empowers teachers to create paradigm shifts in enriched learning environments, preparing students to reimagine AI for future learning.

Overall, *How to Teach AI* provides practical tools and strategies for teaching AI across the K-12 curriculum with accessible examples, including machine learning, robotics, and NLP, and the implementation of these technologies in various industries and educational settings. The successful integration of AI in teaching and learning requires a concerted effort from teachers and the broader community to foster a culture of lifelong learning and ethical responsibility, enhancing education quality for all.

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