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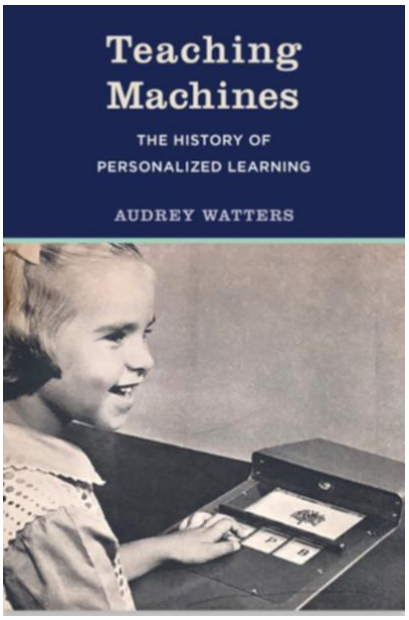
Ayesha Siddiqua
Illinois State University
United States



Personalized learning, often seen as a modern breakthrough, has deep roots that go back nearly a century. In *Teaching Machines: The History of Personalized Learning,* Audrey Watters provides a crucial historical perspective, demonstrating how debates over personalization and standardization have long influenced educational technology. Watters places these debates within a framework of technocracy, the idea that technical expertise can guide and improve education. She highlights how corporate interests now shape what "personalized learning" truly means. Watters questions the assumption that technological progress in education is always beneficial, noting that many modern claims resemble past, often unsuccessful, experiments. She reveals how many current innovations imitate earlier, frequently unsuccessful, efforts, emphasizing the importance of understanding the history of educational technology. Her analysis clarifies the promises, myths, and market forces that continue to influence digital learning, offering lessons for anyone interested in the potential and boundaries of personalized education. In this review, I discuss how Watters's historical critique enhances our understanding of digital tools for personalized learning and underscores the ongoing challenges in educational reform.

Watters is an independent writer and researcher who studies education technology and its history. Her long-standing interest in how technology shapes teaching and learning is clearly reflected in *Teaching Machines*. In this book, Watters uses her background in education technology to examine where ideas about personalized learning come from and how they developed over time. Drawing on her experience as a critical education writer, she questions the belief that new technologies automatically improve learning and shows that many of today's ideas have existed before.

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Following the introduction, the first two chapters trace how Sidney Pressey and B.F. Skinner's early experiments created a longstanding tension between efficiency, control, and personalization in education. Pressey's 1920s "Automatic Teacher" aimed to reduce teachers' workloads and give students immediate feedback. As Watters observes, it "raised unease about what might be lost when machines mediate learning" (p. 22). Skinner later developed a behaviorist teaching machine designed to reinforce correct responses and allow students to progress at their own pace. While presented as tools for personalized learning, these devices could not adapt to diverse ways of thinking, and teachers were confined to managing programmed instruction rather than responding to individual student needs. Watters demonstrates how early machines blended the promise of personalization with subtle kinds of standardization and control and argues that efficiency frequently comes at the cost of personal connection and educational complexity. These chapters set the stage for the book's central argument: the pursuit of personalized learning has long been intertwined with managerial logic and technological solutions, no matter how advanced, and it inevitably reshapes both the practice and values of education.

In the next set of chapters, Watters explores the history of educational technology by showing how machines were first celebrated as tools to transform learning. Early reformers, tired of strict drills, saw typewriters, tests, and later, films as ways to modernize classrooms and make learning more personal. Progressive educators argued that education should start and end with the child. However, as Watters notes in Chapter 3, newly developed devices often shifted control from teachers to data. Classrooms became factory-like, efficient but standardized, ignoring students' social and emotional needs. Machines promised freedom but often created new limits, a tension still felt in today's edtech. Postwar developments, covered in Chapters 4 and 5, exacerbated these issues. Skinner's teaching machine, driven by both postwar commercial and educational interests, was created to address teacher shortages but had trouble proving its worth: "with just the one machine, there was no way to run experiments that would test the efficacy of programmed instruction on a whole class" (p. 103). The device focused on efficiency over human connection. Skinner even claimed that higher productivity would justify higher pay. Watters demonstrates how devices developed at this time followed the industrial logic of the time, often ignoring the needs of children and teachers.

While Watters offers a compelling, historically grounded critique of personalized learning technologies, her analysis becomes even more relevant when considered alongside the rise of artificial intelligence. AI is frequently cited as a solution to previous educational inadequacies due to its ability to modify instructions, analyze trends, and generate individual learning pathways. However, this promise requires serious consideration. AI systems are trained on existing data, which rarely reflect everyone equally. In contrast, data frequently reflect dominant groups' experiences, languages, cultural norms, and learning patterns. As a result, what is labeled aspersonalized may really benefit certain students while marginalizing others.

AI personalization in education risks misrepresenting or overlooking diverse learners by reinforcing narrow definitions of successful learning. Ethical concerns arise as algorithms dictate instruction, potentially perpetuating existing inequalities rather than improving them. This prompts a vital inquiry about whether technology

can cater to all learners without the unique perspectives provided by human educators. Watters clearly shows that mechanized learning was never neutral. Machines reflected the values of their era: discipline, control, and efficiency, and shaped classrooms in ways that persist today. By examining these early experiments, Watters encourages us to ask whether current educational tools truly serve learners or just standardize them, reminding us that the idea of personalized learning has always been tied to larger social and economic goals.

Watters continues her historical analysis in Chapters 6–8, tracing how programmed instruction and early automation reshaped ideas of learning and control. In Chapter 6, she explores efforts to transform education "from an art to a science" (p. 137), as figures like Meyer Markle and Norman Crowder promoted systems that allowed learners to progress at their own pace. Though promising personalization of pace, these innovations often reflected commercial interests rather than pedagogical interests and, as Watters notes, they centered "men and their machines" (p. 139) while overlooking women's contributions. By linking programmed instruction to industrial efficiency and gendered hierarchies, she shows that personalization often disguises new forms of control. Chapter 7 deepens this critique through futurist Simon Ramo's dream of automated classrooms, where "teaching engineers" replaced teachers and struggling students were "automatically dropped from the course" (pp. 154–155). Watters argues that such visions prioritized productivity over empathy and reduced learning to data management. These ideas materialized in Chapter 8, where Watters discusses the Roanoke Experiment, in which teaching machines seemed to boost performance mainly because students knew they were being observed, a classic Hawthorne effect. Though a teacher's presence improved outcomes, parents worried their children were being treated as "guinea pigs" (p. 172), revealing distrust in tech-driven education. While Watters's critique is persuasive, she gives few counter examples; technology was used thoughtfully to support teachers rather than replace them, which would enhance the persuasiveness of her central argument. Still, she convincingly shows that each new wave of innovation repeats old hierarchies, sidelining educators and valuing efficiency over human connection.

In the later chapters, Chapters 9–11, Watters examines the commercialization and market-driven logic of teaching machines. In her discussion of mid-20th-century teaching machines in Chapter 9, she highlights how companies marketed devices like decorative encyclopedias as symbols of status rather than effective learning tools. Even B. F. Skinner, discussed in Chapter 10, whose machines were intended to transform education, faced technical problems, limited teacher support, and practical constraints that exposed the gap between vision and reality. While these machines offered efficiency and structure, they often reduced education to rote compliance, sidelining creativity, critical thinking, and the relational aspects of teaching. In examining the illusion of freedom in programmed instruction in Chapter 11, Watters critiques the assumption that mechanization automatically benefits learners, showing that strict standardization risks undermining independent thought and human engagement. Her analysis exposes a recurring tension: while innovation and technology might promise improvement, without careful consideration of context, aim, and pedagogy, such instruments may encourage control and market logic rather than actual learning.

Throughout the book, Watters' critical examination of Skinner's behaviorist approach is particularly potent. It is shown to be not only scientifically limited but also morally and culturally troubling. Skinner's idea that students could be shaped through rewards and punishments reduces learning to mechanical responses, ignoring human thought, emotion, and creativity. Culturally, behaviorism reflected mid-century values of control, efficiency, and obedience, rooted in Cold War anxieties and industrial logic. Morally, Watters warns that such systems risk stripping students of freedom, dignity, and moral agency, likening it to the conditioning of Alex in *A Clockwork Orange* (1962). She also critiques the commercialization of teaching machines, showing that their failure stemmed as much from overhyped marketing as from flawed technology. However, Watters reminds us that resistance is part of history and that we can choose a different path.

Teaching Machines is an incisive, well-researched critique that prompts us to reevaluate what constitutes meaningful learning. Watters urges readers to question not just what technology can do for education, but what it might take away and whether we risk losing the human complexity at its core. Her argument is highly relevant today, as she shows how AI and data-driven tools can prioritize efficiency, surveillance, and profit over creativity, critical thinking, and human relationships. Readers might read *Teaching Machines* alongside texts focused on emerging technologies to see the historical patterns at play in the newest developments in edtech, such as the commercialization and automation of higher education (Mirrlees & Alvi, 2020) and the influence of neoliberal policies on public schooling (Anderson, 2023)Watters' engaging writing style makes these complex ideas accessible and meaningful to a wide range of readers, including educators, educational researchers, school administrators, technology specialists, as well as parents and community members. Overall, it is a compelling and thought-provoking work that challenges readers to evaluate the role of technology in education critically.

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About the Reviewer

Ayesha Siddiqua is an international student pursuing an EdD in the Department of Teaching and Learning at Illinois State University. As a graduate assistant in the Borg Student Center, she is passionate about education and cultural exchange and is committed to fostering inclusive and innovative learning environments. Her research interests include personalized learning, multicultural education, educational technology, literacy equity, and access.

About the Author

Audrey Watters is an independent scholar, journalist, and critic of educational technology. She has written extensively on the history, politics, and culture of education, with a focus on technology's impact on learning and schooling. The author of several books, including *The Monsters of Education Technology*, Watters is known for her critical, research-based approach to examining trends in education, innovation, and personalized learning. She is the creator of the popular blog *Hack Education* (hackeducation.com) and the author of widely read annual reviews of educational technology news and products.

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