



Asian Journal of Distance Education

The Ghost in the Machine: Navigating Generative AI, Soft Power, and the Specter of "New Nukes" in Education

Aras Bozkurt, Ramesh C Sharma

Abstract: The rapid and widespread integration of generative artificial intelligence (AI) into educational settings marks a significant paradigm shift, presenting a dual narrative of transformative potential and profound challenges. This paper critically examines the impact of generative AI on education through three interconnected thematic lenses. First, it analyzes the disruptive effects on pedagogical practices and student development, highlighting the tension between the promise of hyper-personalized learning and the risks of intellectual homogenization and student de-skilling. Second, the paper conceptualizes generative AI as a potent instrument of "soft power." It argues that AI systems, developed predominantly in the Global North, are embedded with specific cultural and ideological values that can subtly reshape global educational norms, posing a threat to local educational traditions and intellectual sovereignty. Third, the paper employs the "AI as the new nukes" metaphor not as a literal comparison but as a critical framework to underscore the urgency for proactive governance and to analyze the systemic, dual-use nature of the technology. By exploring these themes, the paper contends that the primary challenge is not the technology itself, but the preservation of human agency in an increasingly automated world. It concludes by advocating for a form of educational sovereignty, calling for the adoption of robust, human-centric frameworks that prioritize augmentation over automation and critical AI literacy over simple policy enforcement. This requires a concerted effort from all stakeholders—educators, policymakers, students, and developers—to ensure that AI serves as a tool to enhance human potential rather than diminish it, thereby safeguarding the core humanistic values of education.

Keywords: Generative AI, GenAI, Education, Human Agency, Soft Power, AI Ethics, Pedagogy, Educational Technology, AI Governance, Critical Digital Literacy, "New Nukes" Metaphor

Highlights

What is already known about this topic:

- Generative AI offers personalized learning but poses risks to academic integrity and student skills.
- The integration of AI is shifting the educator's role from instructor to facilitator of learning.
- Discussions on AI in education often focus on ethical issues like bias and data privacy.

What this paper contributes:

- Conceptualizes generative AI as a tool of "soft power" that standardizes global educational norms.
- Uses the "AI as the new nukes" metaphor to argue for urgent, proactive AI governance in education.
- Links AI's soft power to the erosion of human agency and calls for "educational sovereignty".

Implications for theory, practice and/or policy:

- For theory, it urges a recalibration of pedagogical models to center human agency with AI.
- For practice, it advocates for AI literacy and redesigning curricula for augmentation over automation.
- For policy, it calls for governance that fosters transparency and equity over corporate interests.
- Implies a need for international standards to manage AI's cross-border influence on education.



Introduction: Chasing the Ghost

“Knowledge cannot be pursued without morality.”

— J. Robert Oppenheimer

A paradigm shift is underway in education that is something we cannot ignore. The sudden and widespread integration of generative artificial intelligence (AI) has moved from a niche technological curiosity to a ubiquitous presence in classrooms and on campuses in a remarkably short period (Bozkurt et al., 2024). With college-aged adults representing the largest group of active weekly users (Gallup & Walton Family Foundation, 2024), these systems are fundamentally influencing the landscape of teaching, learning, and assessment (Garcia et al., 2025a). This technological revolution presents a dual narrative (Bozkurt et al., 2023, 2024). On the one hand, it holds the promise of a more equitable and effective educational future, offering hyper-personalised learning pathways, immediate student support, and tools that can enhance creativity and critical thinking. On the other hand, it summons a host of anxieties surrounding academic integrity, the potential de-skilling of students, and the very definition of knowledge in an age where content can be generated instantaneously.

This paper navigates this complex terrain through three thematic lenses. First, it examines the disruptive impact of *generative AI in education*, moving beyond a simple cost-benefit analysis to probe its effects on pedagogical practice and student development. Second, it analyses generative AI as an instrument of *soft power*, exploring how the underlying values and biases within these systems can subtly shape educational norms and global standards. Finally, it employs the *AI as the new nukes* metaphor, not as a prediction of doomsday, but as a critical framework to interrogate the high-stakes nature of AI integration and its potential for systemic, unforeseen consequences.

The Allure and Anxiety of the AI Tutor

“We knew the world would not be the same.”

— J. Robert Oppenheimer

The most seductive promise of generative AI in the classroom is its ability to act as an infinitely patient and adaptable tutor (Pesovski et al., 2024). Proponents argue that AI can create truly personalized learning experiences, tailoring content and pacing to the unique needs of each student in a way that is impossible in a traditional, one-to-many classroom model (Litslink, 2024). This vision suggests a future where educational disparities could be mitigated by providing every learner with on-demand support. However, this personalized approach carries the inherent risk of intellectual homogenization (Bae & Bozkurt, 2024). As students increasingly rely on a handful of dominant AI models for information and even for structuring their thoughts, we face the possibility of a "monoculturing" of scientific and humanistic knowledge (Messeri & Crockett, 2024) and perhaps degrading some intellectual and cognitive abilities (Bozkurt, 2025; Kosmyrna et al., 2025). Instead of fostering diverse perspectives, we may inadvertently create intellectual filter bubbles that limit exposure to challenging or dissenting viewpoints, thereby, undermining a core tenet of liberal education.

This technological shift inevitably redefines the role of the human educator and requires us to recalibrate the theoretical foundations of the educational landscape (Garcia et al., 2025b). The traditional model of the teacher as the primary repository and dispenser of knowledge is becoming obsolete. Instead, educators are being recast as "facilitators" or "guides on the side," who help students navigate a sea of information and critically evaluate AI-generated content (Holmes, 2024). While this can free educators from repetitive tasks and allow them to focus on higher-order thinking skills, it also raises concerns about professional de-skilling and the erosion of pedagogical autonomy. If curriculum development, lesson planning, and even assessment are increasingly outsourced to AI platforms, the professional judgment and relational expertise that define effective teaching may be devalued. This places student agency at a critical crossroads. While AI tools can empower students to take a more active role in their learning, an over-reliance on them can atrophy the very skills education is meant to build: resilience, problem-solving, and the ability to grapple with ambiguity without an immediate, algorithmically generated answer.

The Soft Power of Code and the "New Nukes" Analogy

"The optimist thinks this is the best of all possible worlds. The pessimist fears it is true."

— J. Robert Oppenheimer

Beyond the individual classroom, the unchecked proliferation of generative AI functions as a potent new instrument of soft power. Coined by Joseph Nye, soft power is the ability to attract and co-opt rather than coerce (Nye, 2004). In the digital age, this influence is wielded through technology. The generative AI models shaping global education are not neutral artifacts; they are the products of a few powerful technology companies (Bozkurt, 2023), predominantly located in the Global North. As such, they are embedded with the cultural values, linguistic norms, and ideological assumptions of their creators. When an educational institution in any part of the world adopts these platforms, it is not just adopting a tool; it is implicitly adopting the framework of values contained within the code. This dynamic creates a powerful, yet almost invisible, force for cultural and pedagogical standardization, establishing a new form of technological hegemony that can subtly erode local educational traditions and priorities (ORP, 2025). The global race to integrate AI into schools is, therefore, not merely a race for better educational outcomes, but a geopolitical competition to set the norms that will shape the thinking of future generations.

It is within this high-stakes context that the "AI as the new nukes" metaphor, while provocative, finds its utility. Critics rightly point out the dissimilarities: AI is decentralized, largely privately owned, and not a physical weapon (Dafoe, 2018; Özer, 2025). However, to dismiss the analogy is to miss its function as a vital framework for critical inquiry. Its power lies not in a literal comparison but in its ability to force a conversation about governance and existential risk. First, it imparts a sense of urgency, recalling the concerted global efforts to manage nuclear proliferation and suggesting that a similar level of proactive, international governance is required for AI before the technology outpaces our ability to control it (Jones, 2024). Second, the metaphor shifts the focus from individual-level problems, like plagiarism, to the potential for large-scale, systemic disruptions to our information ecosystem, including the pollution of the internet with synthetic content and the erosion of shared truth. Finally, it starkly illuminates the "dual-use" dilemma (Bozkurt & Bae, 2024). Just as nuclear fission can power cities or destroy them, generative AI can be a tool for unprecedented human flourishing or for widespread manipulation and the diminishment of human agency.

Re-Centering Humanity: A Call for Educational Sovereignty

"There are no secrets about the world of nature. There are secrets about the thoughts and intentions of men."

— J. Robert Oppenheimer

The central challenge, then, is to harness AI's potential without succumbing to its colonizing influence (Zembylas, 2023). This requires moving the conversation from *what* AI can do to *why* we are using it in the first place. It is a call to reassert a form of educational sovereignty, where communities and institutions consciously define their pedagogical goals and values first, and only then ask how technology might serve them. To do this, we must adopt robust, human-centric frameworks for AI integration. Eric Hudson of AI for Education (2025) proposes four critical priorities: focusing on *augmentation over automation* to ensure AI enhances, rather than replaces, human cognition; prioritizing *AI literacy over policy* to empower users with critical understanding instead of simply enforcing compliance; emphasizing *design over technology* by rethinking assessments to be AI-enabled rather than AI-resistant; and centering *vision over decisions* to ensure that long-term pedagogical goals guide short-term technological choices.

This vision is complemented by frameworks that embed ethical practice into daily use. The Human-Centric AI-First (HCAIF) pedagogy, for instance, requires students to maintain reflections on their use of AI and explicitly attribute its contribution to their work, fostering metacognition and preserving accountability (AACSB, 2025). Adopting such frameworks is not a technological challenge but a leadership one. It requires a fundamental commitment to keeping humanity at the core of an increasingly automated process.

Conclusion: The Ghost in the Machine and the Guardians of the Gate

“Now, [A] am become Death, the destroyer of worlds.”

— J. Robert Oppenheimer

The integration of generative AI into education represents a pivotal moment, one laden with both transformative promise and significant peril. Its soft power threatens to subtly reshape global education in the image of its creators, while the "new nukes" metaphor serves as a stark reminder of the speed and scale of potential unintended consequences. The path forward is not to reject the technology, but to master it. This requires a concerted effort from all stakeholders. Educators must be empowered as "guardians of the gate," equipped with the training and autonomy to critically evaluate and implement AI tools in ways that align with their pedagogical expertise. Students must be cultivated into digitally literate citizens who can question, co-create with, and challenge AI systems, not just consume their outputs. Policymakers have a responsibility to establish guidelines that prioritize transparency, equity, and user agency over corporate interests. Finally, developers must accept their role as architects of the new learning environment and build systems that are not just powerful, but also transparent, explainable, and fundamentally in service of human growth. The future of learning will not be written by code alone; it will be determined by the collective will to ensure that the ghost in the machine remains a tool in our hands, and that the deeply human endeavor of education retains its soul.

References

- AACSB. (2025, February 12). *A framework for human-centric AI-first teaching*. AACSB International. <https://www.aacsb.edu/insights/articles/2025/02/a-framework-for-human-centric-ai-first-teaching>
- AI for Education. (2025, February 25). *Four priorities for human-centered AI in schools webinar*. <https://www.aiforeducation.io/four-priorities-for-human-centered-ai-in-schools>
- Bae, H., & Bozkurt, A. (2024). The untold story of training students with generative AI: Are we preparing students for true learning or just personalization?. *Online Learning*, 28(3). <https://doi.org/10.24059/olj.v28i3.4689>
- Bozkurt, A. (2024). GenAI et al.: Cocreation, Authorship, Ownership, Academic Ethics and Integrity in a Time of Generative AI. *Open Praxis*, 16(1), 1–10. <https://doi.org/10.55982/openpraxis.16.1.654>
- Bozkurt, A. (2025). Algorithmically Manufactured Minds: Generative and Agentic AI in a time of Post-Truth, Reconfiguration of Student Agency and Death of Critical Pedagogy. *Open Praxis*, 17(2). <https://doi.org/10.55982/openpraxis.17.2.792>
- Bozkurt, A., & Bae, H. (2024). May the Force Be with You JediAI: Balancing the Light and Dark Sides of Generative AI in the Educational Landscape. *Online Learning*, 28(2), 1-6. <https://doi.org/10.24059/olj.v28i2.4563>
- Bozkurt, A., Xiao, J., Farrow, R., Bai, J. Y. H., Nerantzi, C., Moore, S., Dron, J., Stracke, C. M., Singh, L., Crompton, H., Koutropoulos, A., Terentev, E., Pazurek, A., Nichols, M., Sidorkin, A. M., Costello, E., Watson, S., Mulligan, D., Honeychurch, S., ... Asino, T.I. (2024). The Manifesto for Teaching and Learning in a Time of Generative AI: A Critical Collective Stance to Better Navigate the Future. *Open Praxis*, 16(4), 487–513. <https://doi.org/10.55982/openpraxis.16.4.777>
- Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., Toquero, C. M., Singh, L. Tlili, A., Lee, K., Nichols, M., Ossiannilsson, E., Brown, M., Irvine, V., Raffaghelli, J. E., Santos-Hermosa, G Farrell, O., Adam, T., Thong, Y. L., Sani-Bozkurt, S., Sharma, R. C., Hrastinski, S., & Jandrić,

- P. (2023). Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education*, 18(1), 53-130. <https://doi.org/10.5281/zenodo.7636568>
- Bozkurt, A. (2023). Generative artificial intelligence (AI) powered conversational educational agents: The inevitable paradigm shift. *Asian Journal of Distance Education*, 18(1), 198-204. <https://doi.org/10.5281/zenodo.7716416>
- Dafoe, A. (2018). *AI governance: A research agenda*. Future of Humanity Institute, University of Oxford. <https://www.fhi.ox.ac.uk/wp-content/uploads/GovAI-Agenda.pdf>
- Gallup & Walton Family Foundation. (2024, May 23). *Generative AI is coming for our students, and now is the moment to shape it*. Brookings. <https://www.brookings.edu/articles/generative-ai-is-coming-for-our-students-and-now-is-the-moment-to-shape-it/>
- Garcia, M. B., Rosak-Szyrocka, J., & Bozkurt, A. (2025b). Pitfalls of AI Integration in Education: Skill Obsolescence, Misuse, and Bias. IGI Global. <https://doi.org/10.4018/979-8-3373-0122-8>
- Garcia, M. B., Rosak-Szyrocka, J., Yilmaz, R., Metwally, A. H., Acut, D. P., Ofosu-Ampong, K., Erdoğan, F., Fung, C. Y., & Bozkurt, A. (2025a). Rethinking Educational Assessment in the Age of Generative AI: Actionable Strategies to Mitigate Academic Dishonesty. In M. Garcia, J. Rosak-Szyrocka, & A. Bozkurt (Eds.), *Pitfalls of AI Integration in Education: Skill Obsolescence, Misuse, and Bias* (pp. 1-24). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3373-0122-8.ch001>
- Holmes, W. (2024). AI, AIED and Human Agency. In *AI for Teachers: An Open Textbook*. Pressbooks. <https://pressbooks.pub/aiforteachers/chapter/ai-aied-and-human-agency/>
- Jones, A. (2024, April 25). *From nuclear stability to AI safety: Why nuclear policy experts must help shape AI's future*. European Leadership Network. <https://www.europeanleadershipnetwork.org/commentary/from-nuclear-stability-to-ai-safety-why-nuclear-policy-experts-must-help-shape-ais-future/>
- Kosmyna, N., Hauptmann, E., Yuan, Y. T., Situ, J., Liao, X. H., Beresnitzky, A. V., ... & Maes, P. (2025). Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task. arXiv preprint. <https://doi.org/10.48550/arXiv.2506.08872>
- Litslink. (2024, June 5). *Generative AI in education: The impact, ethical considerations, and use cases*. Litslink. <https://litslink.com/blog/generative-ai-in-education-the-impact-ethical-considerations-and-use-cases>
- Messeri, L., & Crockett, M. J. (2024). Generative AI and the monoculturing of science. *Daedalus*, 153(2), 156-169.
- Nye, J. S. (2004). *Soft power: The means to success in world politics*. PublicAffairs.
- Observer Research Foundation. (2025, January 23). *AI and human agency: Reflections on the International Day of Education*. <https://www.orfonline.org/expert-speak/ai-and-human-agency-reflections-on-the-international-day-of-education>
- Özer, M. (2025). Can Mathematical Models Be Weapons of Mass Destruction?. *REFLEKTIF Journal of Social Sciences*, 6(1), 259–268. <https://doi.org/10.47613/reflektif.2025.212>
- Pesovski, I., Santos, R., Henriques, R., & Trajkovik, V. (2024). Generative AI for customizable learning experiences. *Sustainability*, 16(7), 3034. <https://doi.org/10.3390/su16073034>
- Sparsh Global School. (n.d.). *Generative AI in education: Smarter classrooms ahead*. <https://www.sparshglobalschool.com/articles/generative-ai-in-education-revolutionising-classrooms-for-future-ready-students/>

Zembylas, M. (2023). A decolonial approach to AI in higher education teaching and learning: Strategies for undoing the ethics of digital neocolonialism. *Learning, Media and Technology*, 48(1), 25-37. <https://doi.org/10.1080/17439884.2021.2010094>

About the Author(s)

- Aras Bozkurt; arasbozkurt@gmail.com; Anadolu University, Türkiye. <https://orcid.org/0000-0002-4520-642X>
- Ramesh C. Sharma; rc_sharma@yahoo.com; Dr B R Ambedkar University Delhi, India. <https://orcid.org/0000-0002-1371-1157>

Author's Contributions (CRediT)

Aras Bozkurt: Conceptualization, Methodology, Visualization, Writing – original draft, Writing – review & editing; Ramesh C Sharma: Writing – original draft, Writing – review & editing.

Sustainable Development Goals (SDGs)

This study is linked to the following SDGs: Quality education (SDG 4: Target 4.6) and Partnerships for the goals (SDG 17: Target 17.6).

Acknowledgements

J. Robert Oppenheimer, reflecting on the dawn of the atomic age, spoke of a moment when physicists "have known sin." In exploring the dawn of this new age of generative AI, that sentiment has been a constant and humbling companion. The power to create worlds of text, image, and code brings with it a responsibility that echoes the gravest lessons of the last century. It is a stark reminder that unchecked power, however revolutionary, is not progress but peril.

Funding

This paper is funded by Anadolu University with grant number YTS-2025-2776.

Ethics Statement

Because this study doesn't involve any living entities, an ethics review is not applicable.

Conflict of Interest

The authors do not declare any conflicts of interest.

Data Availability Statement

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Author(s) Notes

Based on *Academic Integrity and Transparency in AI-assisted Research and Specification Framework* (Bozkurt, 2024), the authors of this paper acknowledge that the paper was reviewed, edited, and refined with the assistance of Google's Gemini (Versions as of June 2025), complementing the human editorial process. The human authors critically assessed and validated the content to maintain academic rigor. The authors also assessed and addressed potential biases inherent in the AI-generated content. The final version of the paper is the sole responsibility of the human authors.

Article History

Submitted: June 15, 2025 – Accepted: June 23, 2025.

Suggested citation:

Bozkurt, A., & Sharma, R. C. (2025). The ghost in the machine: Navigating generative AI, soft power, and the specter of "new nukes" in education. *Asian Journal of Distance Education*, 19(2), i-vi. <https://doi.org/10.5281/zenodo.15720488>



Authors retain copyright. Articles published under a Creative Commons Attribution 4.0 (CC-BY) International License. This licence allows this work to be copied, distributed, remixed, transformed, and built upon for any purpose provided that appropriate attribution is given, a link is provided to the license, and changes made were indicated.