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Education, Epistemologies and AI: Understanding the role of Generative AI in Education

A framing essay

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Abstract

As generative AI becomes more deeply embedded in educational contexts, it raises critical questions about trust, epistemic reliability, and the nature of knowledge production. While AI offers significant opportunities for enhancing pedagogical methodologies, facilitating personalised learning, and augmenting research, it also raises concerns regarding cognitive offloading, the erosion of critical thinking skills, and the perpetuation of biases inherent in training data.

This essay examines how higher education institutions navigate these complexities, focusing on institutional adaptation, ethical considerations, and policy responses. Central to this inquiry is an analysis of key theoretical frameworks in education and epistemology to understand how these impact the discourse around generative AI in the classroom. This essay looks at existing educational theory to understand the role of AI in the classroom. Furthermore, the study assesses existing institutional and national AI policies, evaluating their efficacy in addressing governance challenges, and offers future-looking questions and recommendations to guide the responsible integration of generative AI in education.

Keywords: Generative AI, AI Governance, education policy, knowledge production, critical thinking, epistemic trust, algorithmic bias, responsible AI integration

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Introduction

Artificial Intelligence (AI) has been conceptualized in various ways, but at its core, it refers to the ability of machines to perform tasks that typically require human intelligence, such as processing vast amounts of data, recognising patterns, and making autonomous decisions.[1] As AI continues to advance, it is becoming increasingly embedded in various sectors, including healthcare, finance, law enforcement, and education. Its expanding presence has also sparked significant ethical and philosophical debates, particularly regarding its role in education, sparking concerns about overreliance of students on AI, leading to cognitive offloading and a decline in critical thinking and problem-solving abilities.

A study by Microsoft and Carnegie Mellon University[2] highlighted concerns that increasing reliance on generative AI may lead to reduced critical thinking, as users transition from direct task execution to mere oversight. The researchers argue that automation can atrophy cognitive skills by depriving users of routine decision-making practice. However, the study situates these concerns within a broader historical pattern of anxiety surrounding new technologies, from the written word (criticized by Socrates), to printing (objected by Trithemius) to modern-day internet. While these tools have not rendered humanity less intelligent, their improper use can indeed erode cognitive faculties over time, underscoring the importance of balanced AI integration that encourages, rather than replaces, critical thinking.[3]

Many educational institutions and education departments are navigating the changing realities with the wide scale use and uptake of generative AI tools in education, while AI companies continue to advance and build foundational models, indicating only higher availability of such tools in the future. It is in this complex and rapidly evolving landscape that we write this essay.

This framing essay aims to look at key educational frameworks and theories that may help explain and understand the use of AI in education, and its potential challenges and benefits. We look into some critical areas that are impacted by the use of

[1] McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A proposal for the Dartmouth Summer Research Project on Artificial Intelligence, August 31, 1955. *AI Magazine*, *27*(4), 12. https://doi.org/10.1609/aimag.v27i4.1904.

[2] Lee, H.-P. (2025). *The impact of generative AI on critical thinking: Self-reported reductions in cognitive effort and confidence effects from a survey of knowledge workers.* https://www.microsoft.com/en-us/research/wp-content/uploads/2025/01/lee_2025_ai_critical_thinking_survey.pdf.

[3] Ibid.

generative AI in the classroom: trust, critical thinking, the role of language, and briefly the role of open knowledge movements. The essay also looks into some policies that exist: both in educational institutions, as well as National level frameworks, to try and understand how the use of generative AI can be governed. Finally, the essay offers some future looking questions and a few recommendations as a way to inform policy as well as offer insights to educational institutions as they think about policies for AI use in the classroom.

Understanding generative AI

Before we get into the discussion around use of AI in education, it is imperative to have a shared understanding of what some of these terms mean. While definitions across the various models of AI have been contested (foundation models, frontier models, machine learning among others), here we aim to explain what this terms may mean in the given context.

Generative AI (also called GenAI), a form of foundation model, refers to AI systems that are able to generate content on the basis of user inputs. These applications include chatbots, photo and video filters, and virtual assistants. The content types (also known as modalities) that can be generated include images, video, text and audio. While all genAI may not be foundation models, some GenAI applications have been built on top of foundation models, for example, OpenAI's DALL·E or Midjourney, which use natural language text prompts to generate images.[4]

Large language models (LLMs), often seen as a type of generative AI, refer to language models that have hundreds of millions of parameters, which are pre trained using billions of words of text. LLMs are most of what we see as foundation models in the current day. Open AI's ChatGPT is an example of an LLM.[5]

[4]Jones, E. (2023). What is a foundation model? Ada Lovelace Institute https://www.adalovelaceinstitute.org/resource/foundation-models-explainer/
[5] Ibid.

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Theoretical Frameworks on Education

Education is fundamentally a social process, shaped not only by the transmission of knowledge but also by relationships of trust, community engagement, and collective meaning-making. **Sundar Sarukkai's** model of Teaching as Caring[6] emphasizes that teaching is more than just the transfer of knowledge—it is a relational act defined by care. While teaching involves a transactional element (since educators are paid for their work), true teaching goes beyond this by demonstrating a commitment to the student's growth, not just in terms of knowledge acquisition but also in shaping their critical thinking, confidence, and sense of purpose. Applying this model to AI education reveals both the potential and limitations of AI-driven learning systems. AI can personalize instruction, automate assessments, and enhance accessibility, but it lacks the fundamental ability to *care*. AI tutors may teach concepts efficiently, but they cannot recognize emotional struggles, inspire students, or instill ethical responsibility in the way human educators can. In *Thinking and Learning in the Age of Maggi Noodles*,[7] Sarukkai critiques the rise of an "instant culture" that prioritizes immediate results over deep, reflective learning. **The most significant casualty of this shift is *thinking* itself, as it requires time, a scarce resource in today's fast-paced world**. While adaptive learning platforms, AI-driven tutoring systems, and automated assessments prioritize efficiency, personalization, and immediate feedback, they also risk reducing education to a transactional exchange of information, where students seek quick answers rather than engaging in the slow, reflective process of understanding.

Paulo Freire (1970)[8] critiques the "banking concept of education," where students are treated as passive recipients of knowledge, merely memorizing and storing information without engaging in critical thinking. Put simply, they become containers for what the teacher has deposits in their 'banks'. Drawing on Marxist understanding, Freire proposes the problem-posing model of education challenges students to think critically, participate in discussions, and recognize their agency in shaping the world. To align with Freire's vision of education as *praxis*, AI must be used as a tool that

[6] Das, R. (2018). Sundar Sarukkai on Indian Higher Education: Quality, Excellence in Neoliberal times. *Tattva - Journal of Philosophy*, *10*(1), 89–93. https://doi.org/10.12726/tjp.19.6.

[7] Sarukkai, S. (2013). *Thinking and learning in the age of Maggi noodles.* Lecture delivered on November 28, 2013, at India International Centre. https://lilafoundation.in/2013/12/04/sundar-sarukkai-thinking-learning-age-maggi-noodles/.

[8] Freire, P., Barr, R. R., & Freire, A. M. A. (1995). Pedagogy of hope: reliving Pedagogy of the oppressed. *Choice Reviews Online*, *32*(06), 32–3424. https://doi.org/10.5860/choice.32-3424.

fosters meaningful dialogue, promotes reflective participation, and encourages students to question, discuss, and act upon their knowledge rather than passively absorbing information.

Jiddu Krishnamurti (2014)[9] critiques the traditional model of education, which often conditions individuals into fitting within societal structures rather than enabling them to question and transcend these limitations. In the context of AI and education, Krishnamurti's insights highlight the risks of an over-reliance on technology that prioritizes efficiency and information delivery over self-awareness and holistic understanding. True learning, he suggests, involves an integrated comprehension of life—one that does not isolate technological progress or material success from the deeper aspects of human existence. To align with Krishnamurti's vision, AI in education must be used as a means to *enhance critical inquiry rather than replace it*, fostering curiosity, self-reflection, and a deeper engagement with the complexities of life beyond academic performance or career advancement.

Jotirao Phule and **B.R. Ambedkar** reimagined education as an instrument of social transformation. Both thinkers saw education as central to dismantling caste and gender hierarchies, rejecting the dominant Brahmanical epistemology that upheld social inequality. Both Phule and Ambedkar viewed pedagogy as inherently political—an arena where power operated through the production and transmission of knowledge. In the context of AI and education, their vision calls for technology that does not reinforce existing social hierarchies but instead democratizes access to knowledge, challenges dominant narratives, and fosters critical thinking.[10]

[9] Malhotra, M. (2018). Relevance of Educational Contribution Of Jiddu Krishnamurti In The Present System Of Education. *International Journal of Scientific Research and Management (IJSRM)*, *6*(01). https://doi.org/10.18535/ijsrm/v6i1.el07.

[10] Rege, S. (2010). Education as trutiya Ratna. In *Routledge eBooks* (pp. 275–295). https://www.jstor.org/stable/20787534.

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‘Thinking’ in the Age of Generative AI

Learning is not just about acquiring information but about the process of meaning-making through discourse. A leading educational theorist, **John Dewey** viewed education as inherently social. In *Democracy and Education (1916)*, he argued that learning occurs through experience and interaction, emphasizing the role of discussion, cooperation, and community in developing critical thinking. John Dewey places ‘reflection as central to learning’, and goes on to explore what reflective thinking vis-à-vis the widely prevalent dictum, ‘no time to think’.[11] **Chahna Gonsalves** (2024) highlights AI’s dual impact on cognitive skills: while it has the potential to enhance critical thinking, it also poses risks of dependency and superficial learning if students passively rely on it without deeper engagement. Two distinct forms of critical thinking in AI-enhanced learning emerge—one directed at AI itself, requiring skepticism, bias evaluation, and ethical reasoning, and another focused on synthesizing and applying AI-generated insights to real-world problems. This distinction underscores the need for educational strategies that not only encourage metacognitive engagement with AI but also ensure that students develop the ability to critically integrate AI-generated knowledge rather than merely consuming it. Additionally, the study suggests that AI functions as a co-creator in the learning process, shifting traditional student-centered approaches toward a more interactive, symbiotic relationship where students actively refine, challenge, and integrate AI outputs.[12] This dynamic necessitates a rethinking of pedagogical frameworks to harness AI’s cognitive potential while fostering autonomy, deep learning, and critical engagement.

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[11] Dewey, John. Democracy and Education. A Penn State Electronic Classics Series Publication, https://nsee.memberclicks.net/assets/docs/KnowledgeCenter/BuildingExpEduc/BooksReports/10.%20democracy%20and%20education%20by%20dewey.pdf.

[12] Gonsalves, C. (2024). Generative AI’s Impact on Critical Thinking: Revisiting Bloom’s Taxonomy. Journal of Marketing Education, 1. https://doi.org/10.1177/02734753241305980.

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Shifts in site of knowledge production and consumption

AI is fundamentally altering the patterns of knowledge production and consumption by replacing traditional sources like books and expert-authored texts with generative models that synthesize and reproduce information probabilistically. Alan Turing's concept of the 'Imitation game' (1950), later reframed as the Turing test, questions whether machines can think, ultimately sidestepping the inquiry in favor of assessing whether a machine can successfully imitate human responses.[13] AI, particularly large language models (LLMs), operates within this lineage by functioning as an advanced system of statistical imitation rather than a truly intelligent entity. The rise of LLMs like ChatGPT marks a new phase in this imitation paradigm. Unlike earlier AI models, which primarily imitated human decision-making on data, LLMs imitate the structure and style of data itself, producing text that appears coherent and authoritative but lacks true understanding. Scholars like Emily Bender (2021) have termed these systems "stochastic parrots," emphasizing their ability to mimic human-like responses without genuine cognition.[14] This statistical approach also means that biases in training data are replicated and even amplified in AI-generated content, making biases and hallucinations intrinsic features rather than mere errors (Deepak P, 2024).[15] Ultimately, AI's dominance in knowledge production represents both a revolution and a reckoning; it democratises access to information but also disrupts traditional structures of verification and critical engagement, replacing them with a probabilistic, imitation-based system that challenges conventional notions of truth and expertise.

[13] Turing, A.M. (1950). Computing machinery and intelligence. Mind, 59, 433-460.

[14] Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (FAccT '21), 610–623. Association for Computing Machinery. https://doi.org/10.1145/3442188.3445922.

[15] Deepak, P. (2024). Is AI our salvation, our undoing, or just more of the same?. https://aeon.co/essays/is-ai-our-salvation-our-undoing-or-just-more-of-the-same.

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Language as the Primary Mode of the Social[16]

Language is at the core of the social aspect of education. It is not just a tool for communication but also a medium through which meaning is negotiated. Language operates both as a collective and an individual phenomenon. Birgit Brock-Utne (2012) emphasizes language as a social construct that shapes access to knowledge and educational equity, advocating for local languages to bridge systemic inequalities.[17] Technology, particularly AI-driven educational tools, is emerging as a transformative force, facilitating access to educational resources in African languages and promoting their status in literacy and communication.[18] AI-powered translation models, speech recognition, and adaptive learning systems have the potential to bridge linguistic gaps and personalize education, making learning more accessible for students in multilingual contexts. Generative AI and large-scale language models (LLMs) are also playing a crucial role in preserving endangered languages by generating text, creating educational resources, and transcribing oral traditions. The Maori language revival in New Zealand highlights how AI, combined with human oversight, can support language preservation and cultural heritage.[19] However, ensuring that these technologies are designed inclusively, without reinforcing biases in training data, remains a key challenge in AI-driven education.

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[16] Vygotsky, L. (1962). *Thought and language*. (E. Hanfmann & G. Vakar, Eds.). MIT Press. https://doi.org/10.1037/11193-000.

[17] Brock-Utne, B. (2012). Language and inequality: global challenges to education. Compare: A Journal of Comparative and International Education, 42(5), 773–793. https://doi.org/10.1080/03057925.2012.706453.

[18] Brock-Utne, B. (2012). Language and inequality: global challenges to education. Compare: A Journal of Comparative and International Education, 42(5), 773–793. https://doi.org/10.1080/03057925.2012.706453.

[19] Koc, V. (2025). *Generative AI and large language models in language preservation: Opportunities and challenges*. arXiv. https://arxiv.org/html/2501.11496v1#S5.

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Open knowledge systems and AI

Education, as a social activity, relies on the trustworthiness of linguistic exchange—whether in lectures, textbooks, or discussions. With the rise of AI-powered education tools, particularly large language models (LLMs), there is a fundamental shift in the source of authority and trust in knowledge dissemination. However, this question of trust is not new. It has previously been debated even in the case of open knowledge sources such as Wikipedia. A report by the **Centre for Internet & Society (2024)** highlights the skepticism among Indian faculty members toward Open Knowledge Sources, which reflects a broader hesitancy in embracing open and collaborative models of knowledge production.[20] The absence of systemic efforts to normalize open practices—whether through institutional backing, policy frameworks, or funding for publicly accessible research—means that open remains an exception rather than the default.[21]

It is interesting to note, that despite hesitancy around open knowledge sources, the uptake in AI-generated content, which is inherently not open due to the black box nature of the algorithms, and concerns around use of copyrighted data among other issues, enjoys a lot of popularity amongst various users. Research shows that since they are trained on vast datasets that include both explicit and implicit human biases—on gender, race, class, and other social hierarchies—they absorb and reproduce these biases in their outputs.[22]

Wikipedia, despite being open-source, has been shown to disproportionately represent Western perspectives, highlighting underrepresentation of indigenous, African, and non-Western epistemologies.[23] Similarly, AI models trained on biased datasets risk further narrowing the scope of knowledge production. Unlike Wikipedia, where edits undergo human debate, AI-generated content lacks real-time critique. This erodes the social dimension of learning by removing the collective, dialogic process that builds epistemic trust.

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[20] Wadhwa, S. (2024). *Open movement in India: The idea and its expression.* Centre for Internet & Society. https://cis-india.org/a2k/blogs/open-movement-in-india-idea-and-its-expressions.

[21] Ibid.

[22] Fang, X., Che, S., Mao, M., Zhang, H., Zhao, M., & Zhao, X. (2023). Bias of AI-generated content: An examination of news produced by large language models. *arXiv preprint arXiv:2309.09825*. https://doi.org/10.48550/arXiv.2309.09825.

[23] Yang, P. and Colavizza, G. (2024), "Polarization and reliability of news sources in Wikipedia", Online Information Review, Vol. 48 No. 5, pp. 908-925. https://doi.org/10.1108/OIR-02-2023-0084.

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Loss of Epistemic Trust[24]

Trust is central to the question of education. **Annette Baier (1986)** critiques moral philosophy for its overemphasis on contract theory and rational autonomy, which assumes interactions between free and equal individuals. She argues that this neglects the fundamental role of trust, particularly in relationships marked by power asymmetries—such as between teachers and students. Trust, for Baier, requires reasonable confidence in another's goodwill or at least an absence of ill will.[25] **Karen Jones'** theory of affective trust (1996) highlights that trust is not merely a rational expectation of reliability but an emotional attitude grounded in optimism about another's goodwill. Since only agents capable of goodwill—such as individuals, firms, or governments—can be genuinely trusted, trust is deeply tied to ethical relationships and the social expectations that sustain them.[26] **Suzanne Rice** (The Educational Significance of Trust, 2023) applies this idea to education, emphasizing that students who do not trust their teachers—or the sources of knowledge they rely on—are at a disadvantage. The teacher-student relationship is not simply transactional, it is built on trust that the teacher has the student's best interests at heart, guiding them toward meaningful learning rather than mere rote memorization.[27] When this trust is eroded, either by institutional failures or by alternative sources of knowledge that lack accountability, the very foundation of education is weakened.

With generative AI, this trust dynamic is shifting from human educators to machine-generated content, raising concerns about epistemic reliability and ethical responsibility. Unlike traditional education, which ensures accountability through scholarly peer review and expert validation, AI operates as a probabilistic system, generating responses without clear citations or transparency in reasoning. **Lukyanenko et al. (2022)** emphasize a significant gap in research regarding trust in

[24] Epistemic trust refers to one's trust in communicated knowledge. More specifically, it can be defined as "the capacity of the individual to consider the knowledge that is conveyed by others as significant, relevant to the self, and generalizable to other contexts" (Campbell, C., Tanzer, M., Saunders, R., Booker, T., Allison, E., Li, E., O'Dowda, C., Luyten, P., & Fonagy, P. (2021). Development and validation of a self-report measure of epistemic trust. *PLOS ONE*, *16*(4), e0250264. https://doi.org/10.1371/journal.pone.0250264).

[25] Baier, A. (1986). Trust and Antitrust. 96(2) The University of Chicago. https://doi.org/10.1086/292745.

[26] Jones, Karen (1996). "Trust as an Affective Attitude," Ethics 107: 4–25.

[27] Rice, S. (2006). The Educational Significance of Trust. University of Kansas. https://educationjournal.web.illinois.edu/archive/index.php/pes/article/view/1516.pdf.

broader educational systems where AI technologies are embedded.[28] **Glikson and Woolley (2020)** focus on specific characteristics of AI technologies that influence trust. They identify five attributes: (1) Tangibility- The physical presence or visual representation of AI systems can make them more relatable and trustworthy. (2) Transparency- Clear communication about how AI systems work and make decisions fosters understanding and trust. (3) Reliability- Minimizing errors and ensuring consistent performance builds confidence in AI systems. (4) Immediacy behaviours- Responsiveness, adaptability, and pre-social behaviors help AI systems align with user needs. (5) Anthropomorphism- Human-like qualities in AI can enhance trust, but only when balanced with transparency and reliability.[29] In the educational context, generative AI introduces new complexities—students may rely on AI for answers without questioning their validity, leading to a passive rather than an engaged form of learning. This creates a paradox: AI promises access to unlimited information, yet by obscuring the source of knowledge, it undermines the very pursuit of learning. Without knowing where knowledge originates, students cannot critically engage with it, breaking the essential link between inquiry, trust, and understanding.

[28] Lukyanenko, R., Maass, W. & Storey, V.C. Trust in artificial intelligence: From a Foundational Trust Framework to emerging research opportunities. Electron Markets 32, 1993–2020 (2022). https://doi.org/10.1007/s12525-022-00605-4.

[29] Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals, 14*(2), 627–660. https://doi.org/10.5465/annals.2018.0057.

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Policies on AI in Education

Artificial Intelligence (AI) and education intersect in two primary ways: Education for AI and AI for Education (AIED). Education for AI focuses on developing AI expertise, preparing the workforce for AI-driven changes, and improving public understanding of AI. In contrast, AI for Education (AIED) explores how AI enhances teaching, learning, and administration (Schiff, 2022).[30]

Elia Rasky's survey (2024) highlights that AI policies in post-secondary institutions across Europe and the United States emphasize institution-wide governance, academic integrity, and responsible AI use while allowing instructors some autonomy in setting course-specific guidelines. Universities like Sciences Po and the University of Phoenix mandate transparency in AI usage, requiring students to disclose AI-generated content. Institutions such as Oxford and UCL incorporate AI education into curricula, with strict citation requirements for AI-generated content. Most universities grant faculty the discretion to permit or restrict AI tools, as seen in Stanford's approach, where instructors set policies in their syllabi. While senior administrators typically lead AI policy development, some universities, like Stanford and Harvard, are incorporating student participation in policymaking.[31]

In India, AI is being implemented in Indian education through a mix of government-led initiatives and private sector innovations, with the National Education Policy (NEP) 2020 providing a policy framework to this end. The NEP emphasizes AI-powered personalized learning, automated assessments, and the integration of Natural Language Processing (NLP) to enhance regional language education. At the central level, platforms like DIKSHA are incorporating AI-driven Personalized Adaptive Learning (PAL) to track student progress and improve learning outcomes.[32] Premier institutions like the IITs and universities across the country are introducing AI-focused curricula to build greater AI capabilities.[33] The government's National Educational Alliance for Technology (NEAT) further aims to bridge the gap

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[30] Schiff, D. Education for AI, not AI for Education: The Role of Education and Ethics in National AI Policy Strategies. Int J Artif Intell Educ 32, 527–563 (2022). https://doi.org/10.1007/s40593-021-00270-2.

[31] Rasky, E. (2024). Generative AI Policy in Higher Education: A Preliminary Survey. Centre for International Governance Innovation. https://www.cigionline.org/static/documents/DPH-paper-Rasky_0Pw3nS7.pdf.

[32] Raja, A. (2023, July 18). *Five ways AI is transforming education in India.* IndiaAI. https://indiaai.gov.in/article/five-ways-ai-is-transforming-education-in-india.

[33] Ministry of Education, Government of India. (2021). *Digital education: Remote learning initiatives across India.* www.education.gov.in/sites/upload_files/mhrd/files/irde_21.pdf.

between edtech companies, institutions, and students, fostering AI-driven innovation in education.[34] Balakrishnan & Vidya (2024) explore the adoption of ChatGPT by teaching faculty in Chennai's higher education institutions, emphasising the need for balanced AI integration, recommending enhanced training, technological support, and ethical guidelines to optimize its use in education.[35]

Schiff's (2022) review of 24 AI policy strategies reveals that policymakers largely view education as a workforce training tool, prioritizing AI-specialist development over meaningful integration into learning frameworks. The study highlights a significant gap in policy conversations, where the role of AI in transforming teaching and learning methodologies remains largely overlooked. Schiff warns that if this trend continues, policymakers may fail to recognize and harness AI's transformative potential in education, leading to inadequate funding, weak regulatory oversight, and insufficient consideration of its ethical implications, such as biases in AI-driven learning tools and concerns over data privacy.[36]

Cecilia Ka Yuk Chan's research (2023) builds upon UNESCO's (2021a) guidelines to develop a more nuanced AI policy framework for university teaching and learning. It categorises policy recommendations into three key dimensions—Pedagogical, Governance, and Operational—each overseen by designated stakeholders. The **Pedagogical** dimension, led by teachers, focuses on assessment adaptation, holistic competency development, and ethical AI use. The **Governance** dimension, managed by senior leadership, ensures academic integrity, data privacy, and transparency. The **Operational** dimension, overseen by IT and teaching staff, facilitates AI implementation through training and infrastructure support. Recognizing that these dimensions are interconnected, the framework emphasizes the need for collaboration among educators, administrators, students, and external regulatory bodies to develop inclusive, ethical, and sustainable AI policies in higher education.[37]

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[34] Sarma, A. (2024). Instructing Generations: AI and Education in India. Observer Research Foundation. https://www.orfonline.org/public/uploads/posts/pdf/20250118170914.pdf#page=78.

[35] Balakrishnan, S., & Vidya, B. (2024). Unveiling the role of ChatGPT in higher education: a qualitative inquiry into its implementation among teaching faculties in Chennai, India. *Multidisciplinary Science Journal*, *7*(4), 2025167. https://doi.org/10.31893/multiscience.2025167.

[36] Schiff, D. Education for AI, not AI for Education: The Role of Education and Ethics in National AI Policy Strategies. Int J Artif Intell Educ 32, 527–563 (2022). https://doi.org/10.1007/s40593-021-00270-2.

[37] Chan, C.K.Y. A comprehensive AI policy education framework for university teaching and learning. Int J Educ Technol High Educ 20, 38 (2023). https://doi.org/10.1186/s41239-023-00408-3.

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Discussion and Recommendations

Generative AI tools have the capacity to transform various facets of academic life, including teaching, student assessment, research, and writing. While concerns persist about their potential impact on pedagogy, student learning, knowledge acquisition, academic integrity, and creativity, these technologies also offer opportunities to enhance educational practices and expand the horizons of scholarly exploration. When effectively integrated, generative AI can serve as a valuable asset to academia and higher education, fostering learning across a wide range of student populations. Oftentimes the responses to such new technologies have been to prohibit or ban the use of such tools. Given the wide proliferation of AI-based tools, at this moment, such prohibitive measures may not work. Instead, a more inclusive and understanding approach, that aims at both raising awareness around some of the harms of such technologies while also suggesting ways of responsible use, can be beneficial for all stakeholders.

AI policies in education must remain adaptive, evolving alongside technological advancements to ensure educational policies are conducive to the technological realities. Establishing dedicated AI governance bodies within educational institutions can facilitate informed policy development, ensuring that perspectives from faculty, students, and administrators are incorporated into decision-making. These bodies should actively solicit public feedback through online surveys and town hall meetings, fostering a democratic approach to AI governance. Further, it is critical that students play an active role in determining policies around the use of Generative AI and participatory approaches can go a long way in making meaningful policy that may have greater adoption across different stakeholder groups.

Additionally, it is critical to build greater awareness around impacts of the use of such tools. Sustained conversations, awareness building programs can equip students with the skills to critically engage with generative AI tools, promoting responsible and ethical use across disciplines. Such initiatives should focus on technical understanding, ethical implications, proper citation practices, and critical evaluation of AI-generated content. Such programs may also want to focus on highlighting areas in which generative AI tools should not be used.

By prioritizing transparency, adaptability, and inclusive policy-making, universities can harness the potential of AI while maintaining rigorous academic standards and preparing students for a technology-driven future. It is also important to reflect on additional questions that will be key to consider as models become more accurate and more widely used, some of which we list below for future work and inquiry:

- How can educators be empowered with the necessary skills and training to effectively use AI while maintaining pedagogical integrity?
- Can open-source AI models serve as a counterbalance to the dominance of proprietary AI in education, and what challenges do they face?
- Can generative AI be restructured to prioritize source attribution without compromising creativity and efficiency?
- What lessons can be drawn from global AI education policies to inform India's evolving AI-driven learning landscape?

We hope that this essay provides some foundational understanding of the use of generative AI in education, and the particular ways in which it interacts with education theories and frameworks. We also hope that this work can help create greater synergies between educators, education policy researchers and digital policy researchers, to create ways for informed policymaking in this space.