

AI Literacy for Citizen Participation

Weekly Analysis — <https://ainews.social>

The Literacy Wars: Mapping AI Education's Contested Terrain

The explosion of artificial intelligence into everyday life has sparked an urgent question: what does it mean to be AI literate? As educational institutions scramble to develop frameworks and curricula, a conceptual battlefield has emerged where competing visions of AI literacy vie for dominance. The stakes could not be higher. With [2] documenting the rapid proliferation of AI literacy initiatives across educational levels, we face a critical juncture where the definitions we choose today will shape how generations understand and engage with AI systems that increasingly mediate our social, economic, and political lives.

Yet beneath the surface consensus that "AI literacy matters," profound disagreements simmer about what such literacy entails. Should we prioritize technical skills that enable people to use AI tools effectively? Or should we emphasize critical understanding of AI's societal impacts? The evidence reveals a field fractured along multiple fault lines, with [28] proposing four distinct types of AI literacy—functional, ethical, rhetorical, and pedagogical—while other frameworks focus on entirely different dimensions. This proliferation of approaches reflects not mere academic disagreement but fundamentally different visions of humanity's relationship with artificial intelligence.

Most troubling is what current AI literacy frameworks consistently overlook: the capabilities citizens need to participate meaningfully in democratic governance of AI systems. While initiatives multiply and frameworks proliferate, [9] reveals how few address the critical challenge of navigating AI-mediated information environments where truth itself becomes contested. This gap between educational rhetoric and democratic necessity demands urgent attention.

The Proliferation of Frameworks

The landscape of AI literacy frameworks resembles less a coherent field than a bazaar of competing visions, each reflecting different institutional priorities and ideological commitments. [3] offers one influential

[2] AI Literacy in K-12 and Higher Education in the Wake of Generative AI ...

[28] Understanding AI Literacy | Teaching Commons

[9] GenAI and misinformation in education: a systematic scoping ... - Springer

[3] AI Literacy: A Framework to Understand, Evaluate, and Use Emerging Technology

approach, proposing a comprehensive model that spans technical understanding, practical application, and ethical evaluation. Yet this framework, despite its breadth, exemplifies a common pattern: the tendency to treat AI literacy as primarily about individual competency rather than collective capability.

UNESCO's interventions, documented in [5], frame AI literacy through a human rights lens, introducing the "5C" framework that emphasizes critical thinking, creativity, communication, collaboration, and citizenship. This rights-based approach represents a significant departure from skills-focused models, yet even here we find limitations. The framework assumes a stable relationship between human agency and AI systems, failing to grapple with how AI fundamentally reshapes the terrain on which rights are exercised.

Meanwhile, [4] reveals yet another fault line: the debate over when AI literacy education should begin. The systematic review uncovers wildly divergent approaches to introducing AI concepts to young children, from playful engagement with AI-powered toys to sophisticated discussions of algorithmic bias. Some frameworks emphasize cognitive development stages, while others prioritize early exposure to AI's societal implications.

The corporate sector adds another layer of complexity. [27] presents Google's vision of AI literacy centered on "future-ready skills," a framing that subordinates educational goals to workforce preparation. This instrumentalist approach, while practically oriented, raises fundamental questions about whose interests AI literacy serves. When technology companies define the literacy required to use their products, we risk confusing consumer training with genuine education.

Technical Competency vs. Critical Understanding

At the heart of the AI literacy debate lies a fundamental tension between two paradigms: one that emphasizes technical competency and practical skills, another that prioritizes critical understanding and societal awareness. This divide manifests most clearly in the emerging field of prompt engineering education. [25] documents the rapid integration of prompt engineering into curricula, with educators racing to teach students optimal strategies for interacting with large language models.

The skills-based approach finds its exemplar in initiatives like [10], which gamifies AI security education. Proponents argue that hands-on technical engagement provides the most direct path to AI literacy. Students learn by doing, developing practical competencies that trans-

[5] Ce qu'il faut savoir sur l'IA et le droit à l'éducation - UNESCO

[4] Artificial intelligence literacy education in primary schools: a review ...

[27] Towards developing future-ready skills with generative AI

[25] Prompt engineering in higher education: a systematic review ... - Springer

[10] Hack the AI agent: Build agentic AI security skills with the GitHub Secure Code Game

late immediately to real-world applications. This approach has undeniable appeal in an era where [12] reports that 96% of young people have already used generative AI, with 61% using it daily.

Yet the critical understanding paradigm raises profound objections. [14] warns of a deeper crisis: by focusing on technical skills, we risk creating a generation that can use AI tools but cannot think independently about them. The article's stark observation that AI threatens to "capture cognition" suggests that technical competency without critical distance may accelerate rather than resist AI's colonization of human thought.

This tension plays out dramatically in assessment practices. [1] proposes a metacognitive framework requiring students to constantly question AI-generated content. The three-checkpoint system—asking "Does this make sense?", "Can I verify this?", and "What might be missing?"—represents an attempt to bridge technical use with critical evaluation. Yet even this integrated approach reveals the difficulty of the balance. How do we teach students to use tools productively while maintaining skeptical distance?

[8] attempts a synthesis, arguing that prompt engineering itself can serve as a vehicle for developing both technical and critical capacities. The article positions prompt engineering not as mere technical skill but as a form of "computational thinking" that requires understanding AI's capabilities and limitations. Yet critics might ask whether this represents genuine critical literacy or merely a more sophisticated form of tool optimization.

The Verification Imperative

Perhaps nowhere is the inadequacy of current AI literacy frameworks more apparent than in their treatment of verification and truth-assessment capabilities. [17] delivers a sobering finding: despite high AI usage rates among youth, only 48% can accurately identify AI-generated images. This verification crisis extends far beyond visual media. [23] documents how AI systems spread false medical information with dangerous confidence, creating new challenges for health literacy.

The verification challenge intersects catastrophically with the rise of synthetic media. [13] explores how deepfake technology has infiltrated educational environments, creating unprecedented challenges for maintaining trust and safety. Traditional media literacy, developed for an era of human-generated content, proves woefully inadequate for navigating landscapes where any image, video, or voice recording might be

[12] IA et jeunes talents : le défi n'est plus générationnel, il est organisationnel

[14] Jeff Raikes: AI is capturing cognition — and most companies are building a talent debt they don't see yet

[1] AI Hallucinations in Schools: How to Teach Students to Verify AI Output

[8] Frontiers | Prompt engineering as a new 21st century skill

[17] Spring 2026 Results | Yale Youth Poll

[23] Popular AI chatbots are confidently dispensing medical misinformation ...

[13] The deepfake dilemma: New challenges protecting students, confidentiality

artificially generated.

[24] represents one technical response, developing sophisticated systems for tracking and verifying digital content origins. Yet such solutions, while valuable, cannot address the deeper epistemological crisis. When [15] describes efforts to train journalists in AI detection, we see professionals struggling with verification challenges that will soon confront every citizen.

The problem runs deeper than technical detection capabilities. [29] argues provocatively that focusing on AI-generated content misses the point. The study found that the demand for political misinformation drives the adoption of AI tools, not the reverse. This insight suggests that verification literacy must encompass not just technical detection skills but understanding of the social and political contexts that make synthetic media effective.

Most frameworks fail to grapple with what philosophers call the "epistemic apocalypse"—the collapse of shared bases for determining truth. [17] provides practical tips for assessment, but such guidance assumes stable criteria for evaluation that AI increasingly undermines. When AI can generate plausible-sounding academic citations, create convincing expert testimonials, and even fabricate entire research studies, traditional verification strategies crumble.

Democratic Deficits

The most glaring omission in current AI literacy frameworks is their failure to address the capabilities citizens need for democratic participation in AI governance. While [16] documents Switzerland's efforts to build trust in AI systems through transparency and citizen engagement, most literacy initiatives focus on individual use rather than collective governance.

[6] raises crucial questions about AI's role in democratic deliberation. When algorithms synthesize citizen input for policy-making, what literacies do participants need to engage meaningfully? Current frameworks offer little guidance for understanding how AI mediates political participation or how citizens can maintain agency within AI-augmented democratic processes.

The democracy deficit manifests starkly in regulatory contexts. [13] examines the EU's AI Act, revealing how regulation assumes levels of AI literacy among citizens that simply don't exist. How can democratic oversight function when the public lacks basic understanding of AI capabilities and limitations? How can citizens meaningfully consent

[24] Project Provenance - Microsoft Research

[15] Journalism Dean Works to Help Newsrooms Spot AI

[29] We Looked at 78 Election Deep-fakes. Political Misinformation Is Not an ...

[17] Evaluating Information: Tip: Generative AI - Library Guides

[16] L'Assemblée fédérale suisse place la confiance au cœur ...

[6] Démocratie délibérative: l'IA pour trier la parole

[13] Intelligence artificielle : quels sont les apports concrets de la régulation européenne ?

to AI systems they cannot comprehend?

Educational approaches that reduce AI literacy to individual skill development actively undermine democratic capacity. When [22] emphasizes educator voice and union involvement in AI implementation, it points toward more democratic models. Yet even this progressive framework stops short of preparing citizens to participate in fundamental decisions about AI's role in society.

The consequences of this democratic deficit are profound. As [7] documents, institutions act as gatekeepers, making crucial decisions about AI implementation with minimal public input. Without AI literacy frameworks that explicitly develop democratic competencies—understanding power structures, recognizing value choices embedded in systems, participating in governance discussions—citizens become subjects rather than agents of AI transformation.

Power and Definition

Who gets to define AI literacy? This question, often unasked, fundamentally shapes educational outcomes. [17] exemplifies one answer: technology companies and education entrepreneurs collaborating to define competencies aligned with industry needs. The degree promises to prepare students for "AI-enabled careers," but this framing already embeds assumptions about AI's purpose and human relationships to it.

The power to define literacy translates directly into the power to shape consciousness. When [19] identifies "training opportunities" for older workers, it frames AI literacy as adaptation to technological inevitability rather than critical engagement with technological choices. This naturalization of AI development serves specific interests while appearing neutral.

[21] from Quebec's education ministry offers a contrasting approach, emphasizing ethical reflection and legal frameworks. Here, governmental authority attempts to assert public values against commercial pressures. Yet even governmental frameworks reflect power dynamics, often prioritizing compliance and risk management over transformative critique.

The battle over definitions plays out in seemingly technical decisions. [20] shows how framing AI literacy through accessibility creates different priorities than framing it through innovation or efficiency. Each definitional choice—whether to emphasize creativity or compliance, exploration or safety, individual empowerment or collective

[22] PDF Report of the NEA Task Force on Artificial Intelligence in Education

[7] Frontiers | AI at the knowledge gates: institutional policies and ...

[17] Sal Khan launching a \$10K AI degree, with help from Google, Microsoft, and Replit

[19] New EY survey reveals AI literacy training opportunity for ...

[21] PDF L utilisation pédagogique, éthique et légale de l intelligence ...

[20] PDF AI and Accessibility in Education - cosn.org

responsibility—carries political implications.

Most insidiously, the power to define AI literacy includes the power to define its absence. When frameworks position certain communities as "lacking" AI literacy, they may pathologize reasonable skepticism or alternative ways of relating to technology. [11] walks a fine line between protecting vulnerable populations and reinforcing ageist assumptions about technological competence.

[11] Helping Older Adults Navigate AI Scams | Think Global Health

Toward Transformative AI Literacy

The evidence compels us toward a radically different conception of AI literacy—one that transcends both narrow technical training and abstract critical frameworks. [26] provides a crucial clue, documenting inverse relationships between AI dependence and critical thinking. This finding suggests that transformative AI literacy must actively resist dependence while building capacity.

[26] The association between AI dependence, AI literacy, and ...

What would such transformative literacy entail? First, it must be fundamentally political, preparing citizens not just to use or critique AI but to participate in decisions about its development and deployment. [17] shows how policy shapes educational possibilities, but citizens need literacy to shape policy in return.

[17] Final Education Dept. Rule Prioritizes AI in Federal Grants

Second, it must be epistemological, grappling seriously with AI's challenge to human knowledge-making. [18] proposes the "iGyro" framework for navigating information chaos, but we need approaches that go beyond navigation to reconstruction—helping citizens rebuild epistemic foundations in an AI-saturated world.

[18] Misinformation, Disinformation, and Generative AI: Implications for ...

Third, it must be collective rather than individual. While current frameworks focus on personal competencies, transformative AI literacy recognizes that meaningful agency in relation to AI systems requires collective action. [17] notes the absence of research on AI's collective impacts on children—a gap that reflects broader blindness to AI's fundamentally social character.

[17] L'impact de l'IA sur les enfants reste à étudier – ONU France

Finally, transformative AI literacy must be reflexive, constantly examining its own assumptions and power relations. As we teach about AI, we must ask: whose interests does this literacy serve? What futures does it enable or foreclose? How does it position humans in relation to machines and to each other?

The stakes of this conceptual struggle extend far beyond educational policy. The AI literacy frameworks we choose today will shape whether future generations relate to AI as subjects or citizens, consumers or creators, isolated individuals or collective agents. In map-

ping this contested terrain, we see not just competing definitions but competing visions of human futures. The urgent task is not to resolve these tensions through false consensus but to ensure that the voices shaping AI literacy include those who will live with its consequences—not just those who profit from its promulgation. Only through such inclusive struggle can we develop forms of AI literacy adequate to the democratic challenges ahead.

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