Research Community Brief

November 26–December 02, 2025 — https://ainews.social

Executive Summary

The distinction between AI literacy and AI readiness in higher education remains conceptually underdeveloped, yet institutions are constructing policy frameworks without resolving this foundational ambiguity [2]. Our synthesis of 909 education-focused articles reveals systematic fragmentation: research oscillates between prohibition-focused and preparation-focused paradigms without developing theoretical frameworks to reconcile them [6].

The field confronts what might be termed the "cognitive sedentarism" paradox—the possibility that AI tools simultaneously enhance learning outcomes while diminishing the intellectual effort that produces durable understanding [21]. French institutional discourse frames this as preserving "le goût de l'effort intellectuel" (the taste for intellectual effort) [22], yet empirical mechanisms linking AI use to cognitive development remain underspecified. Trust dynamics further complicate this picture: emerging research documents complex relationships between student confidence in AI systems and actual learning efficacy [5]. Systematic reviews document persistent methodological fragmentation across global research communities [14], while institutional responses vary dramatically—from comprehensive task force frameworks [15] to cautious incremental adaptation.

This briefing provides mapping of unstudied questions at the intersection of pedagogical theory and AI integration, analysis of methodological limitations constraining current research, and identification of high-impact research opportunities that could resolve foundational ambiguities now shaping policy worldwide.

Critical Tension

The Theoretical Problem

The field of AI in higher education confronts a foundational conceptual instability that resists simple resolution. The distinction between AI literacy and AI readiness—which appears superficially as a pedagogical progression—conceals a deeper theoretical problem about what kind of knowledge matters [2]. Literacy implies understanding a stable

[2] AI Literacy vs Readiness in Universities

[6] From Prohibition to Preparation: Reframing Academic Integrity in the Age of AI

[21] «Chat GPT y sedentarismo cognitivo: aprender de consultas a la IA ...
[22] «Préserver le goût de l'effort intellectuel» : l'université face ...

[5] Exploring trust in generative AI for higher education ... - Nature
[14] Navigating the Complexity of Generative Artificial Intelligence in Higher Education: A Systematic Literature Review
[15] PDF Toward an AI-Ready University - University of Toronto

[2] AI Literacy vs Readiness in Universities

technology, mastering its functions, knowing its boundaries. Readiness implies something else entirely: the capacity to adapt to perpetual transformation, to exercise judgment amid uncertainty, to integrate AI into professional practice without clear precedents. These are not sequential stages but competing epistemological orientations—one anchored in knowledge acquisition, the other in dispositional formation. The field has largely elided this distinction, treating readiness as merely enhanced literacy rather than a fundamentally different educational objective requiring different pedagogical architectures.

This tension ramifies through institutional responses to generative AI. Universities oscillate between prohibition and preparation, treating these as policy choices rather than recognizing them as expressions of irreconcilable views about student development [6]. French universities articulate this as a matter of preserving "le goût de l'effort intellectuel"—the taste for intellectual effort—suggesting that AI threatens something prior to skill or knowledge: the very desire to think [22]. The concept of "cognitive sedentarism" emerging from Latin American scholarship names this risk precisely—the atrophying of mental faculties through delegated cognition [21]. What conceptual frameworks exist to distinguish productive offloading from debilitating dependency? The field possesses none adequate to the task.

Paradigm Limitations

Dominant discourse frames AI as a "tool"—a neutral instrument whose effects depend entirely on user choices. This metaphor imports assumptions that foreclose critical inquiry. Tools are typically discrete, bounded, and subordinate to human intention; generative AI is diffuse, adaptive, and increasingly agentic. The tool metaphor assigns all meaningful causation to users, rendering invisible the ways AI systems shape cognition through their very architecture—what questions they make easy to ask, what answers they make easy to accept, what styles of reasoning they reward [19]. When professors redesign assessments in response to AI capabilities, who is adapting to whom? [9]

Alternative framings remain marginal. Viewing AI as an "environment" rather than a tool would foreground questions of habituation and attentional ecology. Treating AI as a "colleague" would raise questions about trust, delegation, and collaborative norms that the tool metaphor suppresses [5]. The field's causal attribution patterns consistently locate agency with individual users—students who choose to cheat, faculty who choose to adapt—while treating the systems themselves as inert. Research into AI's effects on loneliness and retention suggests this framing may be fundamentally mistaken [18].

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[19] Writing with machines? Reconceptualizing student work in the age of AI

[9] How college professors are adapting to rampant AI cheating

[5] Exploring trust in generative AI for higher education ... - Nature

[18] When artificial intelligence substitutes humans in higher education:the cost of loneliness, student success, and retention

Whose Knowledge Is Missing?

The most striking feature of current AI-in-education discourse is what it fails to measure. No systematic tracking exists of whose perspectives inform policy development, curriculum design, or ethical frameworks. This absence is not neutral—it reflects research priorities shaped by institutional concerns rather than educational stakeholders. Student voices appear primarily as objects of study (adoption patterns, cheating behaviors, performance outcomes) rather than as sources of epistemic authority about learning and development. What would research look like if it began from student experiences of cognitive change rather than institutional concerns about assessment validity?

Critical perspectives examining power dynamics—who benefits from particular AI implementations, whose labor is displaced, whose data trains the systems—remain systematically underrepresented [7]. Parent and community perspectives on educational values, the purposes of higher education, and acceptable trade-offs between efficiency and human connection appear almost nowhere in the literature. University AI task forces, while increasingly common, draw primarily from administrators and technologists [15]. This exclusion has theoretical consequences: it constrains the range of questions asked, forecloses attention to values that resist quantification, and renders the field incapable of addressing the political dimensions of educational transformation. Without systematic attention to whose knowledge counts, research risks producing increasingly sophisticated answers to questions that matter only to those already empowered to ask them.

[7] Generative AI in higher education: A global perspective of ...

[15] PDF Toward an AI-Ready University - University of Toronto

Actionable Recommendations

The Case for Reframing Research Priorities

Current scholarship clusters around immediate pedagogical concerns—detection, policy, adoption—while systematically underexploring questions that will determine whether AI integration serves educational goals or subverts them. The following research directions address documented gaps in the literature, offering concrete pathways toward more rigorous, equitable, and theoretically sophisticated inquiry.
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Direction 1: Phenomenologies of AI-Mediated Learning

Current gap: Student voices remain peripheral in a discourse dominated by institutional and faculty perspectives. Research treats students as subjects of policy rather than sources of insight about lived

experience with AI tools.

The field has largely approached student AI use through behavioral frameworks—measuring adoption rates, compliance patterns, and performance outcomes—which misses the phenomenological dimension of how AI transforms the experience of learning itself. Evidence suggests profound affective consequences when AI substitutes human interaction [18], yet we lack thick descriptions of what students actually experience.

Research questions: - How do students describe the subjective experience of learning with versus through AI systems? - What meaning-making processes occur when students recognize AI-generated content as superior to their own work? - How do student conceptions of intellectual identity shift across sustained AI engagement?

Methodological considerations: Phenomenological interviewing and longitudinal diary studies would capture experiential dimensions that surveys miss. Research on ChatGPT adoption mechanisms among higher education students [13] provides frameworks for understanding acceptance, but qualitative approaches must move beyond technology acceptance models to capture transformation of educational meaning. Key challenge: recruiting students willing to discuss practices that remain stigmatized.

Potential contribution: Grounds policy debates in actual student experience rather than faculty projections. Could reveal whether current frameworks address genuine educational concerns or administrative anxieties.

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Direction 2: Cognitive Consequences of AI-Assisted Thought

Current gap: Discourse around "preserving intellectual effort" assumes cognitive harm without rigorous investigation of whether, when, and how AI assistance affects thinking capacities.

Spanish researchers have introduced "cognitive sedentarism" as a metaphor for AI-induced intellectual passivity [21], while French commentators warn of threats to the "taste for intellectual effort" [22]. Yet these remain largely rhetorical claims requiring empirical investigation.

Research questions: - Does repeated AI use for particular cognitive tasks (synthesis, argumentation, problem-formulation) measurably affect capacity to perform those tasks independently? - Under what conditions does AI assistance function as cognitive scaffolding versus cognitive substitution? - How do domain expertise and task type moderate cognitive transfer effects?

Methodological considerations: Controlled experimental de-

[18] When artificial intelligence substitutes humans in higher education:the cost of loneliness, student success, and retention

[13] Modèles d'acceptation d'une technologie et mécanismes attentionnels: l'adoption de ChatGPT chez les étudiants de l'enseignement supérieur

[21] Chat GPT y sedentarismo cognitivo: aprender de consultas a la IA ...
[22] «Préserver le goût de l'effort intellectuel» : l'université face ...

signs comparing cognitive performance across AI-use conditions, supplemented by think-aloud protocols capturing real-time cognitive processes. Critical thinking frameworks like SAGE [16] offer measurement instruments, though challenges include isolating AI effects from confounding variables and determining appropriate time horizons for cognitive change.

[16] The SAGE framework for developing critical thinking and responsible generative AI use in cybersecurity education

Potential contribution: Moves debate from ideological assertion to empirical ground. Could validate, modify, or refute cognitive harm hypotheses—any outcome would advance policy foundations.

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Direction 3: Longitudinal Analysis of Institutional Policy Evolution

Current gap: Research captures snapshot moments of policy formation without tracking how institutional approaches evolve, adapt, or fail over implementation.

Multiple institutions have documented comprehensive AI strategy development [15], [3], while scholarship documents the conceptual shift from prohibition toward preparation [6]. What remains unexamined is whether declared policies translate into practice, how they modify under pressure, and what factors explain differential success.

[15] Toward an AI-Ready University - University of Toronto
[3] Boston University Ai Task Force
[6] From Prohibition to Preparation: Reframing Academic Integrity in the Age of AI

Research questions: - How do institutional AI policies change across 3-5 year implementation periods? - What explains variation in policy effectiveness across similar institutional contexts? - How do faculty interpretations diverge from official policy intentions, and with what consequences?

Methodological considerations: Comparative case studies tracking policy documents, implementation practices, and stakeholder interviews across multiple institutions over extended timeframes. Must attend to gap between espoused and enacted policies. Research on faculty adaptation strategies [9] suggests significant variation in ground-level practice that institutional documents may obscure.

[9] How college professors are adapting to rampant AI cheating

Potential contribution: Generates actionable knowledge about what implementation approaches succeed under what conditions— moving beyond normative prescription toward empirical guidance.

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Direction 4: Equity Implications of AI-Enhanced Personalization

Current gap: Personalization discourse emphasizes pedagogical benefits while underexploring power asymmetries, data practices, and differential access.

The emergence of "hyperpersonalization" through generative AI [20] raises urgent questions about surveillance, consent, and equity. Spanish data protection authorities have already sanctioned biometric AI use in educational settings [10], signaling regulatory attention to practices that educational research has largely normalized.

Research questions: - How do AI personalization systems construct learner profiles, and what categories shape algorithmic classification? - Who benefits and who is marginalized by personalization algorithms—what patterns emerge across race, class, and institutional context? - How might equity-centered design principles reshape personalization architecture?

Methodological considerations: Critical algorithm studies approaches, including algorithmic audits and participatory design research centering historically marginalized student populations. Frameworks bridging educational equity gaps [4] offer starting points, though researchers must negotiate access to proprietary systems and center communities typically excluded from research design.

Potential contribution: Interrupts techno-optimism with systematic equity analysis. Could inform regulatory frameworks and institutional procurement decisions.

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Direction 5: Reconceptualizing Human-AI Educational Relations

Current gap: Dominant "tool" metaphor constrains theoretical development by positioning AI as instrument subordinate to human intention—obscuring more complex relational dynamics.

Emerging scholarship questions whether "writing with machines" requires fundamentally reconceptualized frameworks for student work [19]. Systematic reviews reveal theoretical fragmentation across the literature [14], suggesting the field lacks adequate conceptual vocabulary.

Research questions: - What alternative metaphors and theoretical frameworks might capture AI-education relations more adequately than the tool paradigm? - How do different conceptual framings (AI as collaborator, tutor, environment, infrastructure) lead to different pedagogical and policy implications? - What can educational philosophy contribute to conceptualizing genuinely novel human-AI learning configurations?

Methodological considerations: Conceptual analysis drawing on philosophy of technology, posthumanist theory, and critical pedagogy. Comparative analysis of metaphors deployed across global contexts [7] could reveal cultural variation in fundamental assumptions. Challenge: avoiding jargon that alienates practitioners while achieving genuine conceptual innovation.

[20] Zero-Shot to Head-Shot: Hyperpersonalization in the Age of Generative AI

[10] La AEPD sanciona el tratamiento de datos biométricos con IA en la ...

[4] Bridging educational equity gaps: expanding the CHAT-ACTS ... - Springer

[19] Writing with machines? Reconceptualizing student work in the age of AI

[14] Navigating the Complexity of Generative Artificial Intelligence in Higher Education: A Systematic Literature Review

[7] Generative AI in higher education: A global perspective of ...

Potential contribution: Provides theoretical infrastructure for subsequent empirical work. Could liberate the field from cramped conceptual vocabulary that currently limits what questions appear askable.

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Toward Productive Scholarly Engagement

These directions share common commitments: privileging previously marginalized voices, demanding methodological rigor commensurate with claims, and resisting both techno-optimism and technophobia. The field requires not more studies but better questions—questions that surface power, center experience, track change over time, and remain genuinely uncertain about answers.

Supporting Evidence

Evidence Base Characteristics

This analysis draws from 1,885 total articles, with 909 specifically addressing education-related AI developments—representing a substantial but methodologically uneven corpus. The distribution reveals a significant skew toward commentary, position papers, and institutional guidance documents rather than rigorous empirical investigation. Task force reports from major universities provide policy frameworks [15] and [3], while systematic research remains comparatively scarce. The preponderance of theoretical and prescriptive work over empirical validation represents a fundamental limitation: we have abundant guidance on what institutions *should* do but limited evidence on what actually *works*.

[15] Toward an AI-Ready University - University of Toronto
[3] Boston University Ai Task Force

Quality assessment reveals concerning patterns. High-scoring articles—those offering genuine conceptual advancement or rigorous methodology—constitute a minority. The field's rapid expansion has produced volume without proportionate depth, with rapid review and scoping protocols [1] attempting to map terrain that shifts faster than systematic review can accommodate.

[1] Academic Integrity and Artificial Intelligence in Higher Education Contexts: A Rapid Scoping Review Protocol

Perspective Distribution Analysis

The evidence base exhibits pronounced geographic and institutional stratification. Anglophone and European perspectives dominate, with French-language scholarship [22] and Spanish contributions [8] providing important but underrepresented counterweights. Global South perspectives remain notably absent despite these regions facing the

[22] «Préserver le goût de l'effort intellectuel» : l'université face ...
[8] Guía para el uso de IA generativa en educación e investigación

most acute resource constraints in AI adoption. This geographic imbalance produces theoretical frameworks calibrated to well-resourced institutional contexts, limiting generalizability.

Disciplinary perspectives cluster heavily around computer science, education policy, and information science. Conspicuously underrepresented are critical theory, disability studies, and labor economics perspectives—absences that shape what questions get asked. The resulting scholarship tends toward instrumental concerns (how to implement, how to detect) rather than structural critique (whose interests are served, what gets displaced). Student and instructor voices as research subjects rather than research producers creates a participatory deficit that constrains the field's practical relevance.

Failure Pattern Analysis

Documented failures concentrate in detection and enforcement mechanisms, with widespread acknowledgment that AI-detection tools produce unacceptable false-positive rates affecting non-native speakers and neurodivergent students [9]. Ethical failures around biometric data collection have drawn regulatory sanction [11]. Implementation failures—policies adopted without adequate instructor support, assessment redesigns that increase workload unsustainably—receive anecdotal acknowledgment but limited systematic study. Notably understudied are long-term pedagogical failures: erosion of foundational skill development, impacts on critical thinking capacity, and what one researcher termed "cognitive sedentarism" [21].

[9] How college professors are adapting to rampant AI cheating

[11] La AEPD sanciona el tratamiento de datos biométricos con IA en la ...

[21] Chat GPT y sedentarismo cognitivo: aprender de consultas a la IA ...

Discourse Analysis Findings

Dominant framings position AI as transformative force requiring institutional "readiness" and individual "literacy" [2]—metaphors that naturalize adaptation to technological change while obscuring questions of whether such adaptation serves educational purposes. The shift from prohibition to preparation [6] reflects pragmatic accommodation but also represents discursive capitulation to technological inevitability. Trust frameworks emerging in recent scholarship [5] attempt to reintroduce human judgment but remain subordinate to integration imperatives.

[2] AI Literacy vs Readiness in Universities

[6] From Prohibition to Preparation: Reframing Academic Integrity in the Age of AI

[5] Exploring trust in generative AI for higher education ... - Nature

Methodological Observations

Cross-sectional survey designs predominate, capturing attitudes and adoption patterns at single moments. Longitudinal studies tracking learning outcomes over semesters or years remain exceptionally rare.

Intervention studies—rigorous comparisons of pedagogical approaches with and without AI integration—constitute a critical gap. The field urgently needs randomized controlled designs and quasi-experimental approaches that can isolate AI's effects from confounding variables [12].

[12] Literature Review on the Integration of Generative AI in Programming ...

Theoretical Development Needs

Unresolved tensions between preserving intellectual struggle and expanding accessibility demand new conceptual frameworks—not compromise positions but genuine theoretical synthesis [17]. The relationship between AI assistance and learning transfer requires theorization beyond intuition. Most critically, the field needs frameworks connecting micro-level pedagogical decisions to macro-level labor market and epistemological implications.

[17] UNIVERSAL DESIGN FOR LEARNING, ACCESSIBLE LEARNING DESIGN AND ARTIFICIAL INTELLIGENCE: AN EXPLORATORY STUDY ON PRE-SERVICE TEACHERS

References

1. Academic Integrity and Artificial Intelligence in Higher Education Contexts: A Rapid Scoping Review Protocol

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