The AI Paradox: How Efficiency is Dismantling the Relational Infrastructure of Transformative Learning

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Elevator Pitch

AI agents make students 60% more productive—but reduce their social and emotional communication by 23% (Ju & Aral, 2025). For networked learning, this is a crisis masquerading as progress. We're optimizing for efficiency while accidentally dismantling the relational networks where transformative learning happens. AI doesn't just augment learning networks—it reconfigures them, weakening peer-to-peer ties and replacing dialogue with transactions.

This roundtable challenges the productivity narrative and asks: **Can we design AI agents that strengthen learning networks instead of substituting for them?** What if AI created connection opportunities instead of answering questions? What if it surfaced emotion instead of eliminating "coordination effort"? What if we evaluated AI on network-strengthening rather than task completion?

We'll explore:

- How efficiency-focused AI reshapes network topology, weakening the ties that enable learning—and how we can measure these structural changes
- Alternative roles for AI grounded in networked learning principles (trust, dialogue, weak ties, mutual engagement) and informed by network analysis of actual information flows
- Design principles that distinguish transactional AI (replaces relationships) from transformative AI (amplifies relationships)
- How to evaluate AI implementations using network-informed metrics of belonging and connection rather than individual productivity

The core question: How do we design AI agents to strengthen rather than substitute for the networked relationships that enable transformative learning?

The Problem

When humans collaborate with AI agents, productivity soars but collaboration fundamentally changes. Teams using AI sent 23% fewer social and emotional messages while increasing task-focused communication. Researchers celebrate this "reduced social coordination effort" (Ju & Aral, 2025). But in networked learning, that "inefficiency" is how learning networks form—through trust, dialogue, and reciprocal exchange. Most institutional AI strategies accelerate this isolation through personalized tutoring and automated feedback. We're optimizing individual productivity while dismantling the relational infrastructure of transformative learning.

We're witnessing a transformation from Wellman's "Networked Individualism" (dispersed human networks) to "AI Individualism"—where learners rely on AI rather than peers for information, support, and even relational experiences (Brandtzaeg et al, 2025). While networked individualism (the internet-driven shift from group-based communities to individually curated networks) reduces dependence on *strong ties*, AI individualism threatens to eliminate the *weak ties* that connect learners to diverse perspectives, unexpected information, and opportunities they couldn't have anticipated.

This distinction is significant because weak ties serve an epistemic function that AI cannot replicate. Granovetter's (1973) insight was counterintuitive: the relationships that matter most for accessing novel information are not our closest connections, but rather our more distant ones. Strong ties cluster in homophilous groups. These are the people who share our backgrounds, assumptions, and information. Weak ties bridge across otherwise disconnected network segments, exposing us to genuinely different perspectives from differently situated knowers. This is fundamentally epistemic work: weak ties expand the information environment within which we form beliefs and develop judgment.

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Chen (2025) argues that epistemic agency, the capacity to actively engage in one's own belief formation rather than passively accepting information, "depends not only on individual cognitive capabilities but on the infrastructural conditions that enable or constrain epistemic actions." Weak ties are part of that infrastructure. These connections provide what AI cannot: not just information, but exposure to people who think differently and challenge our preconceived notions. When AI substitutes for these connections, learners gain information but lose the capacity to evaluate it.

Social Network Analysis now allows us to quantify this reconfiguration: Turkkila et al. (2025) demonstrate that non-human actors (computers, AI) don't merely support learning networks—they fundamentally reshape network topology, alter information flows, and redistribute agency. Their analysis reveals how digital tools can become dominant "source" nodes that replace peer-to-peer "relay" roles essential for collaborative knowledge construction. AI agents wield "model power"—their superior computational models subtly guide users' thinking while appearing neutral, potentially homogenizing worldviews across learner populations.

Goals

This roundtable will explore what networked learning theory reveals about AI integration and what we should consider when designing AI for learning contexts.

Key questions we'll examine together:

1. What happens to learning networks when AI reduces "social coordination effort"? How can we trace changes in network structure and information flows to understand the implications for trust, dialogue, weak ties, and social presence—and how should these shape our design choices?
2. What alternative roles might AI play in networked learning? Rather than becoming dominant "source" nodes that answer questions or automate tasks, how might AI strengthen peer-to-peer "relay" roles, create connection opportunities, surface emotional dimensions, or make network relationships visible?
3. What distinguishes transformative from transactional AI in learning contexts? What network patterns should we look for to evaluate whether AI strengthens or substitutes for the relationships that enable learning?
4. What metrics and frameworks should inform decisions about AI implementation? How can we move beyond individual productivity measures to assess network health, information flow patterns, and relational density?
5. What are the implications for already-disconnected students? How should concerns about network peripherality, structural isolation, and belonging shape AI design and deployment?

Engaging Participants

Structured whole-group dialogue building from individual reflection through collective imagination to shared principles. All participants remain together; activities ensure every voice is heard.

Session Structure

Opening: Provocations

Participants receive printed cards with three provocations:

1. "Networked Individualism freed us from groups to manage human networks. AI Individualism frees us from humans altogether—replacing weak ties with algorithmic certainty."
2. "Weak ties are epistemic infrastructure. They provide not information but genuine otherness-the encounter with differently situated knowers that develop judgement. AI offers information without alterity. Learners become fluent consumers of AI-mediated knowledge while losing the capacity to evaluate it."
3. "AI agents don't augment learning networks; they become the network hub. Students gain a 'model-strong' partner but lose the diverse perspectives that weak ties provide."
4. "The paradox: We seek autonomy through AI but achieve it only through total dependency on opaque algorithmic systems that subtly guide our thinking."

Round-robin opening: Each participant briefly shares which provocation resonates/challenges them and why. Every voice enters early; reveals range of perspectives.

Dialogue Round 1: Current Impacts

Guiding question: "When AI enters learning networks, which relationships change first—the strong ties with close collaborators or the weak ties with peripheral connections? What have you observed?"

Dialogue Round 2: Reimagining AI

Participants receive scenario cards (discussion forums, group projects, peer review, peripheral students). They individually reflect (3-4 minutes): How might AI strengthen network ties rather than provide answers?

Synthesis: Design Considerations

Collaborative principle-building: Review 3-4 key insights, then pose: "What should we be asking when evaluating or designing AI for networked learning?"

Closing: Questions to Carry Forward

Final round—each participant shares one question they'll carry into their practice

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