The Agency Gap in AI-Assisted Higher Education

When **Learner Control** Shapes **Reflective Practice** and **Critical Thinking**

Based on research by Jonathan H. Westover, PhD

The Old Debate

Cheating vs. Assistance

Efficiency vs. Integrity

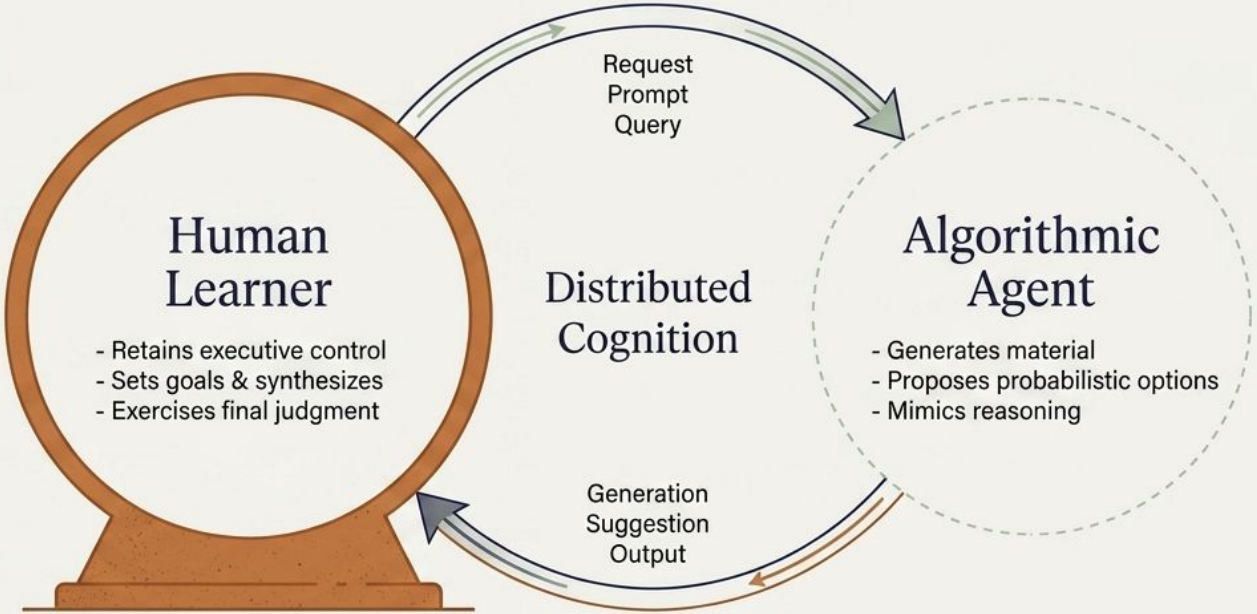
Innovation vs. Risk

The Foundational Question

The central tension is not whether students use AI—most do—but how they use it.

Core Insight: Does AI-supported learning become a site of deep engagement or passive dependency? The answer depends entirely on perceived learner agency.

Reconceptualizing Agency: Distributed Cognition



Knowledge is distributed, but epistemic responsibility must remain with the learner.
Cognitive offloading must become cognitive extension.

The Agency Gap: Passengers vs. Pilots

The Passenger (Low Agency)

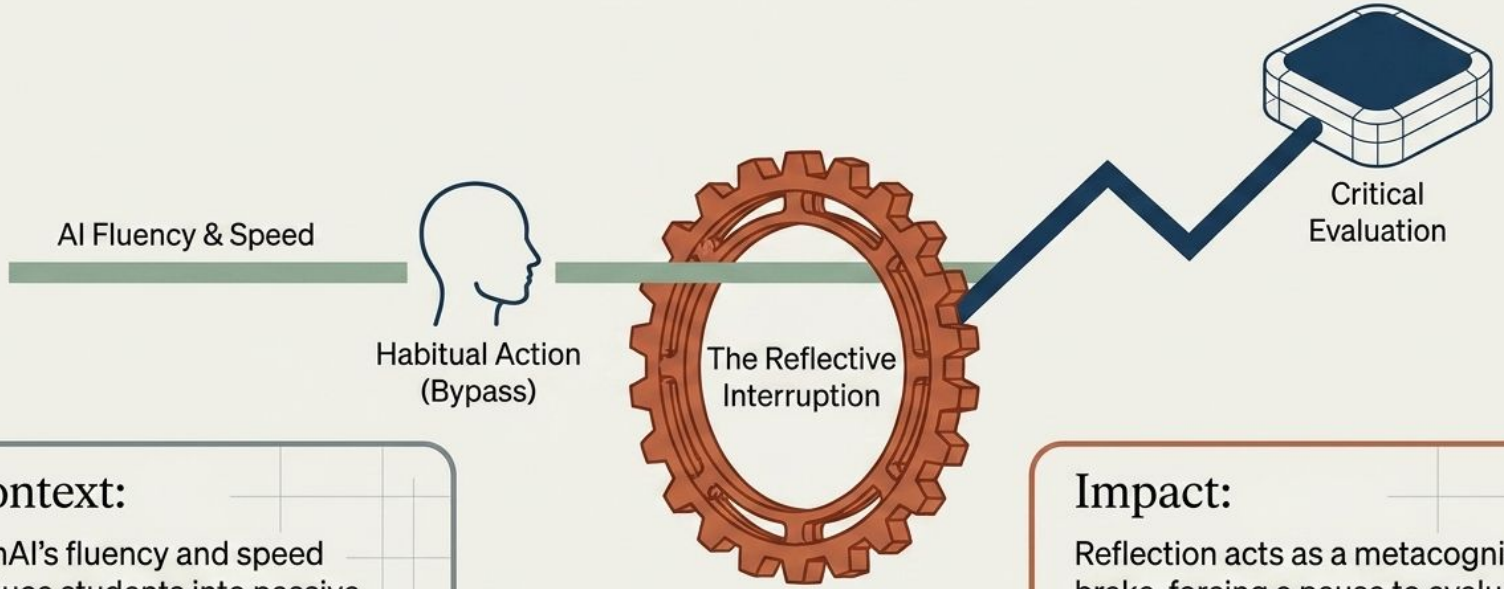
- Exhibits Habitual Action
- Uses one-shot prompting
- Accepts fluent text uncritically (automation bias)
- Treats the AI as an authoritative oracle
- Engages in cognitive offloading

The Agency Gap

The Pilot (High Agency)

- Exercises executive control
- Uses iterative prompting
- Verifies claims and checks sources
- Treats AI outputs as provisional material
- Leverages AI to think with, not to think for

Reflection as the Cognitive Brake



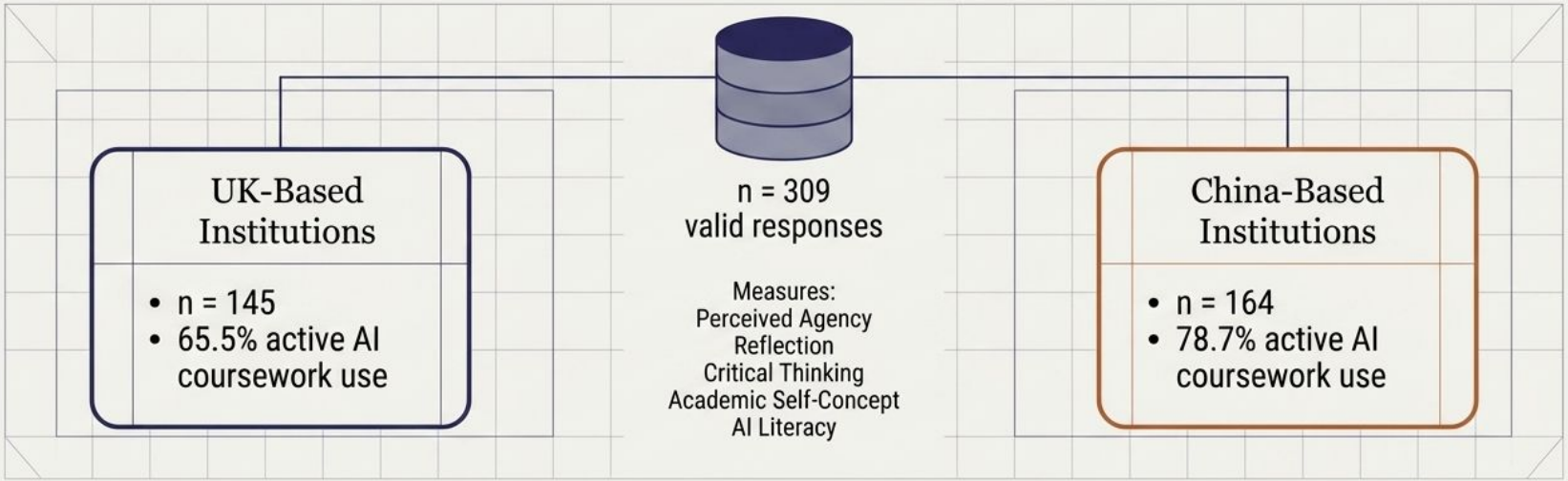
Context:

GenAI's fluency and speed seduce students into passive acceptance, mistaking retrieval for understanding.

Impact:

Reflection acts as a metacognitive brake, forcing a pause to evaluate. It turns automated retrieval into epistemic vigilance.

The Empirical Base: A Cross-Contextual PLS-SEM Study



Methodological Note: The MICOM procedure established only partial measurement invariance. Context refers strictly to study location and institutional norms, not nationally homogeneous cultural groups.

Core Finding: The Universal Pathway

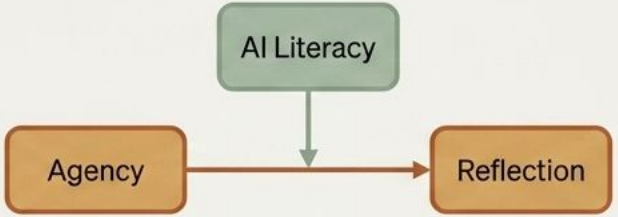
Insight: Critical thinking is not a spontaneous byproduct of AI use.

Contextual Divergences in AI Engagement

UK Sample

- Reflection is strongly associated with Academic Self-Concept (β = 0.371, p < .001).
- Reflection mediates the agency → self-concept relationship.

China Sample



- AI Literacy acts as a moderator.
- It significantly strengthens the Agency → Reflection relationship (Interaction = 0.067, p = .033).
- Reflection was not significantly linked to self-concept in this sample.

Interpreting Contextual Nuance

Self-Enhancement vs. Improvement

Western norms may view reflection as validation of competence.

Confucian-heritage traditions may view reflection as identifying gaps to prompt effort-attribution, altering self-concept scores.

Literacy as a Gatekeeper

In the China sample, technical competence (AI Literacy) may be a prerequisite for feeling authorized to experiment.

In the UK, a "learning-by-doing" approach may allow agency regardless of formal literacy.

Unmeasured Variables

Differences may stem from institutional AI policies, access to domestic vs. global tools, or reference-group modesty bias, requiring cautious interpretation.

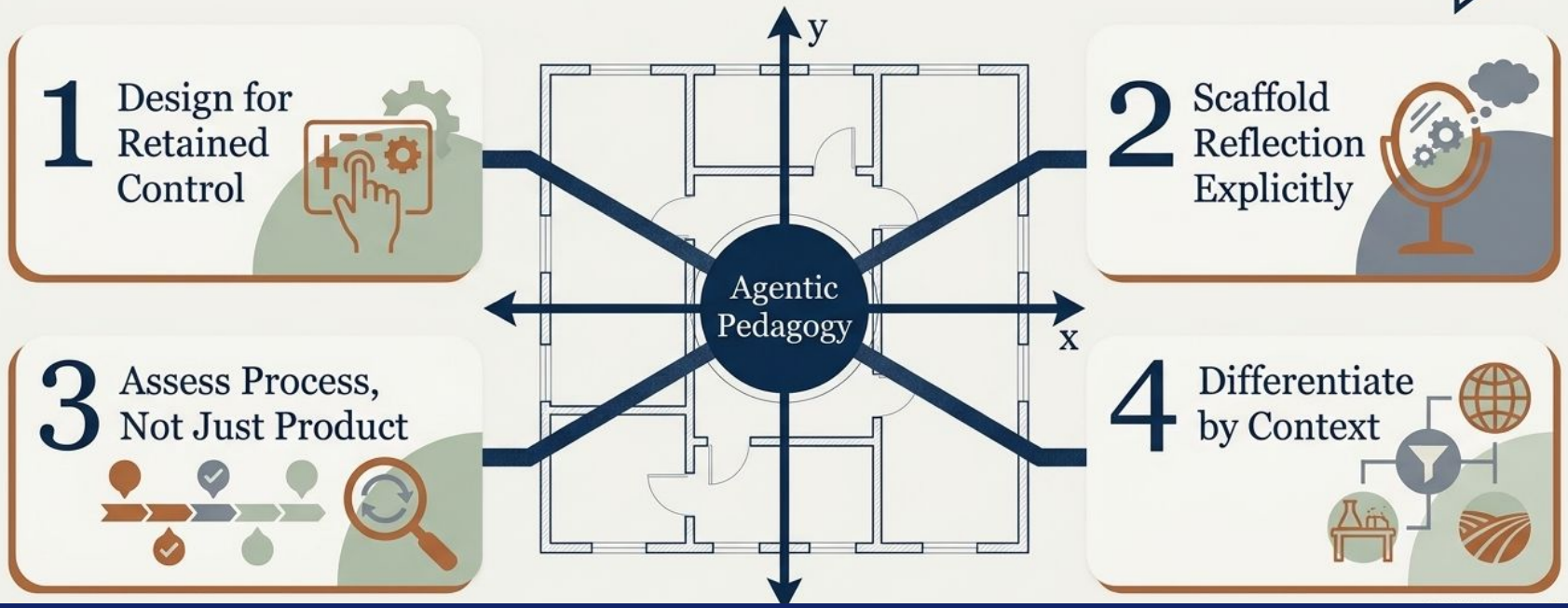
The technology itself is neither inherently empowering nor disempowering. Learning outcomes depend on the cognitive and metacognitive processes students engage when working with AI.

We must actively design for the Agency Gap.

The Cognitive Blueprint

Framework for Agentic AI-Enhanced Pedagogy

From Product-Oriented Assessment → Process-Oriented Engagement



Pillars 1 & 2: Control and Scaffolding

1. Design for Retained Control

- Structure tasks so students must set learning goals before prompting.
- Require iterative refinement based on evaluation.
- Demand synthesis of AI-generated material into original arguments.

2. Scaffold Reflection Explicitly

- Require annotated AI transcripts with evaluative comments.
- Mandate 'AI audit trails' showing prompt evolution and verification steps.
- Implement reflective journals documenting what worked, what failed, and why.

Pillars 3 & 4: Assessment and Differentiation

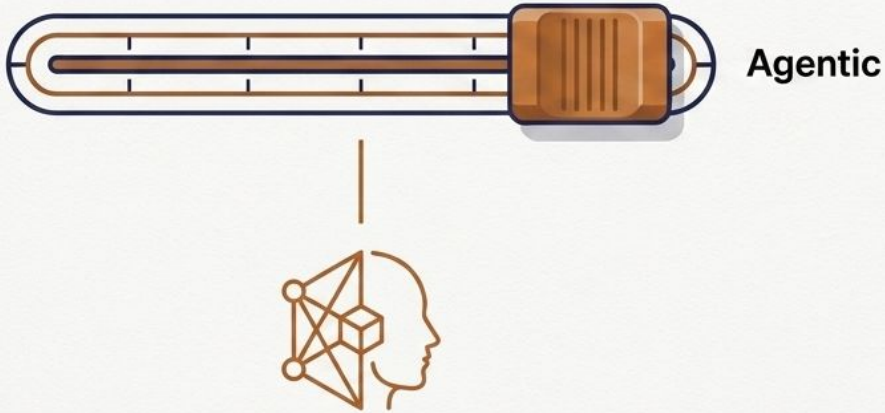
3. Assess Process, Not Just Product

- Shift grading rubrics to evaluate metacognitive awareness (can they articulate their AI process?).
- Evaluate epistemic vigilance (did they recognize hallucinations and check citations?).

4. Differentiate by Context

- Adapt strategies based on prior AI experience (build foundational literacy for novices first).
- Align with institutional norms and cultural self-evaluation scripts.
- Frame reflection as growth-oriented rather than self-validating.

Conclusion: Narrowing the Gap



AI-supported learning is most meaningful when it preserves learner agency.

By explicitly scaffolding reflection, we ensure students operate as pilots, not passengers.

Narrowing the agency gap allows students to leverage AI as a cognitive partner, rather than a cognitive surrogate.

Methodological Notes & Limitations

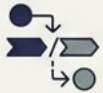
Analysis & Validity

PLS-SEM conducted via SmartPLS v.4.1.1.6.

Common method variance assessed via full collinearity VIF approach.

All VIF values < 3.3, indicating minimal common method bias.

Limitations



The cross-sectional design prevents causal ordering claims.

All constructs are self-reported, highlighting the need for future objective performance measures and behavioral trace data.

Partial measurement invariance indicates context differences should be interpreted cautiously.

Source Reference

For full construct scales and detailed structural equation model outputs, refer to the full study:

Westover, J. H., "The Agency Gap in AI-Assisted Higher Education: When Learner Control Shapes Reflective Practice and Critical Thinking."