

Amplifier and Risk: Extending the Community of Inquiry (CoI) f Inquiry (CoI) for Student AI Use

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Purpose of the Study

To extend the Community of Inquiry (CoI) framework by theorising two student-derived constructs, Cognitive Amplifier and Ethical Risk, to better capture how generative AI shapes learning in Caribbean higher education contexts.

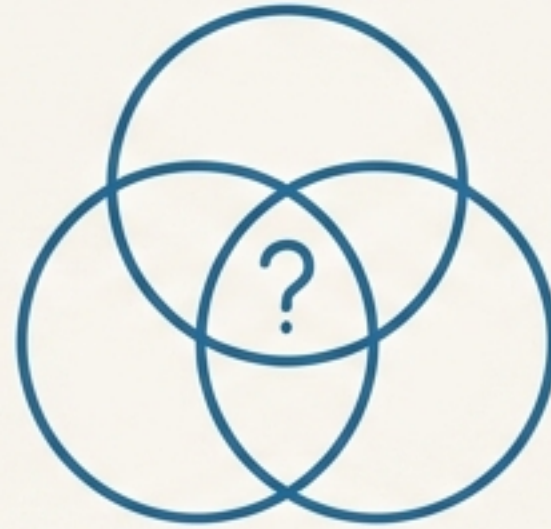


The Challenge: AI in a Pre-AI Framework



Generative AI is transforming higher education.

Tools like ChatGPT, Grammarly, and Quillbot are rapidly reshaping how students learn, write, and research.



The Community of Inquiry (CoI) framework requires refinement.

As a central model for online learning, it was developed in a pre-AI context and does not fully account for the unique dynamics AI introduces.

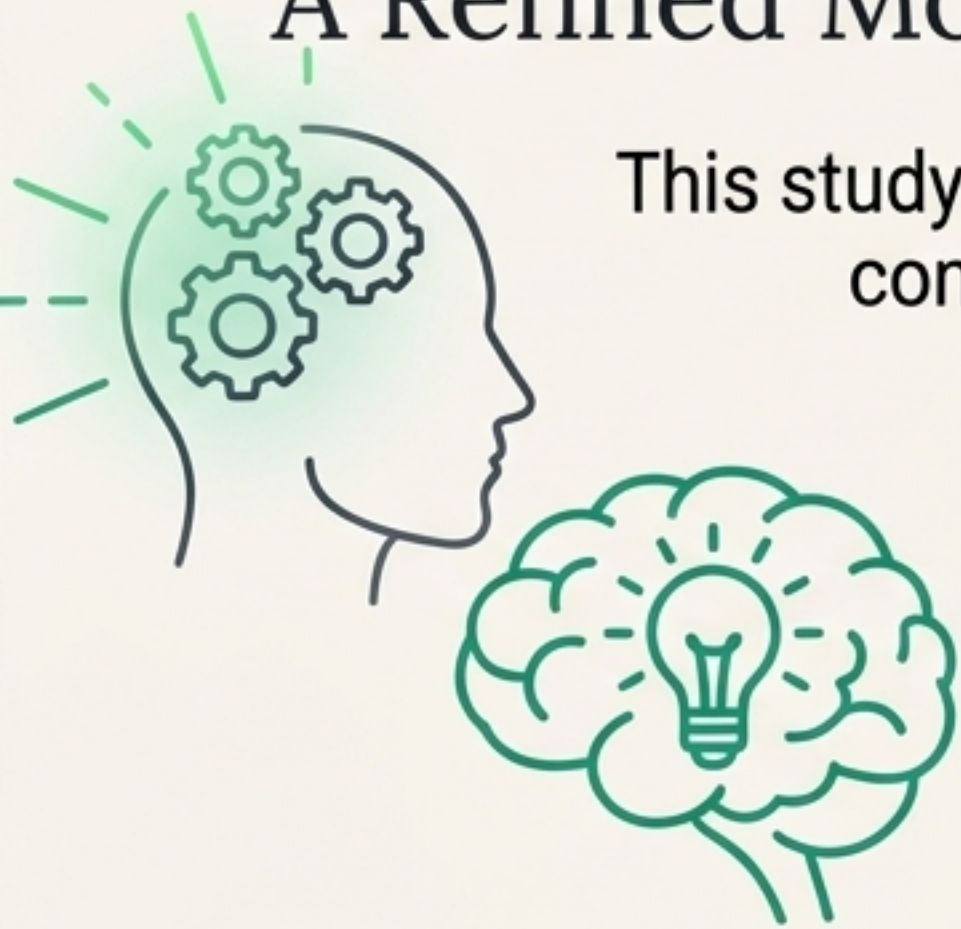


A Critical Gap: The Global South Perspective

This study addresses the need to foreground knowledge from underrepresented regions by focusing on Caribbean student experiences, where infrastructural inequities and policy gaps influence technology adoption.

A Refined Model: Two New Constructs to Explain AI's Role

This study extends the Col framework by theorising two student-derived constructs that capture the dual nature of AI in education.



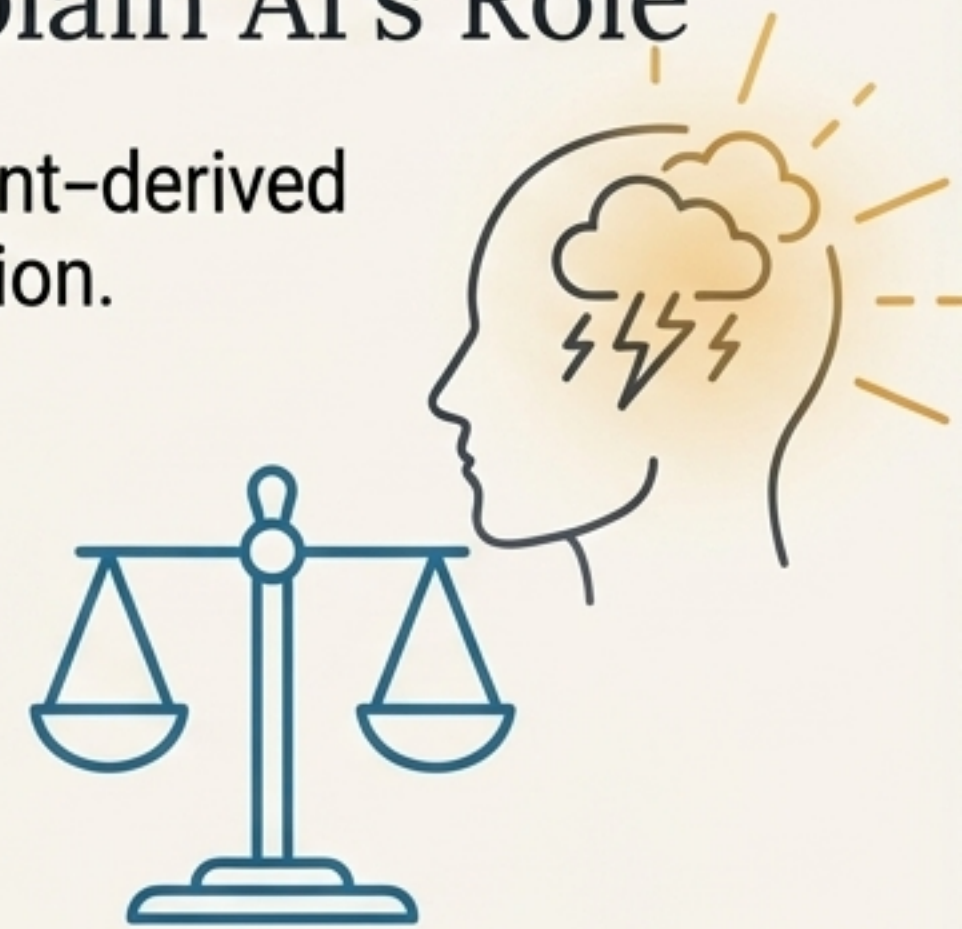
1. Cognitive Amplifier

AI's potential to enrich meaning-making by clarifying complex ideas, generating examples, and providing multimodal scaffolding.



2. Ethical Risk

Student anxieties surrounding misinformation, plagiarism, and policy ambiguity, which can suppress disclosure and collaboration.



The Moderating Factor: Teaching Presence

Teaching Presence is conceptualised as the key moderating lever that influences whether AI is experienced as supportive (an amplifier) or stressful (a risk).

A Pragmatist, Social-Constructivist Approach

Research Design: Secondary qualitative analysis of narrative data from a larger mixed-methods study. This is a theory-building study, not a hypothesis-testing one.

Dataset:

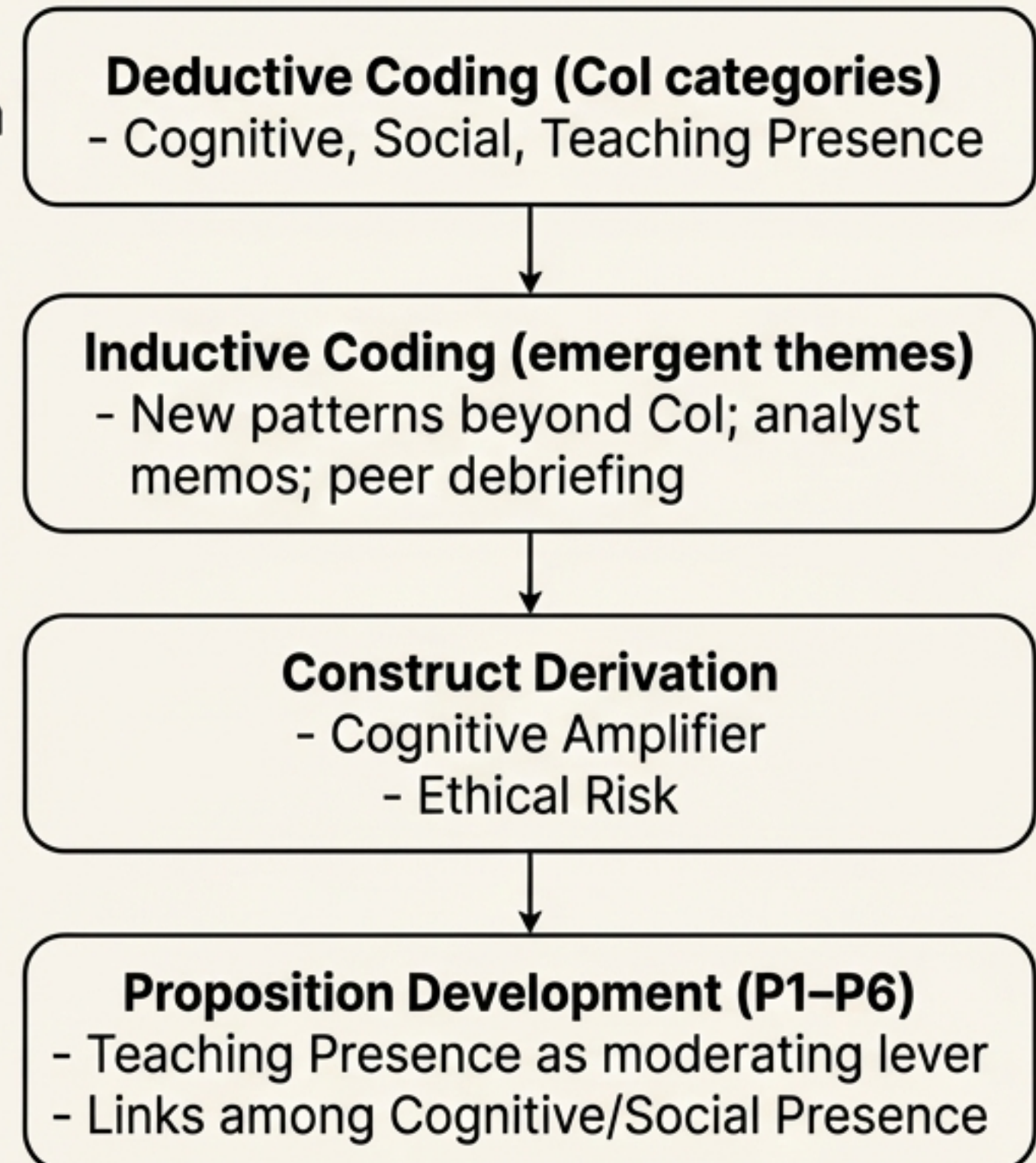
68 complete narratives from a sample of 114 tertiary students in the Caribbean. 46 partial or non-substantive responses were excluded.

Analytic Approach:

Deductive Coding: Applied existing Col categories (Cognitive, Social, Teaching Presence).

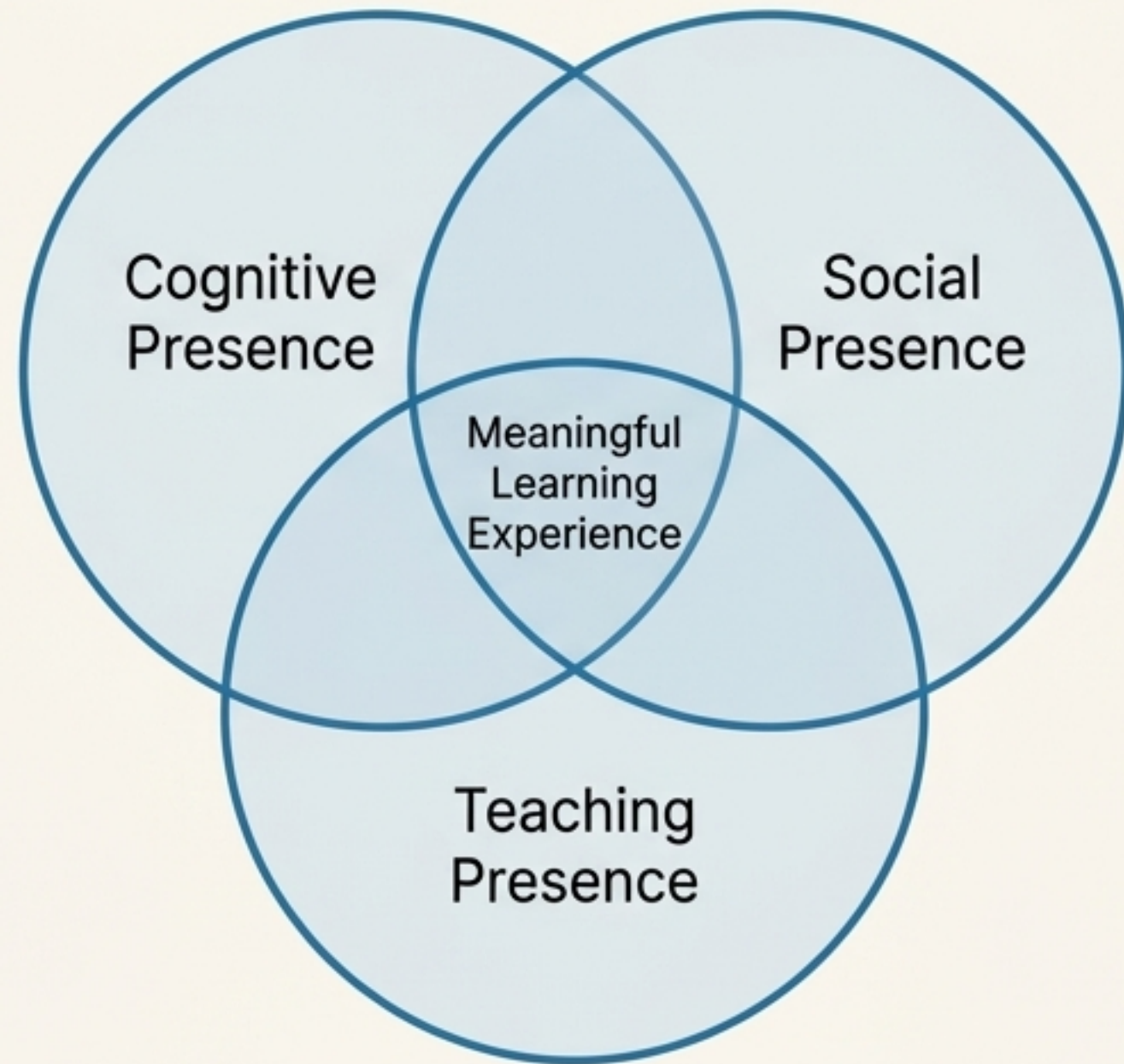
Inductive Coding: Identified emergent themes which became the new constructs.

Ethics: All data were collected under the original institutional ethics approval, anonymised, and reused with no participant re-contact.



The Foundation: The Community of Inquiry (CoI) Framework

The CoI framework posits that meaningful learning in online environments emerges from the interplay of three core, overlapping “presences.”



Garrison, Anderson & Archer (2000)

Cognitive Presence: The extent to which learners can construct and confirm meaning through sustained reflection and discourse.

Social Presence: The ability of participants to project their personal characteristics into the community, presenting themselves as ‘real people’.

Teaching Presence: The design, facilitation, and direction of cognitive and social processes to realize meaningful and educationally worthwhile learning outcomes.

The Two Faces of AI: Introducing Amplifier and Risk

Student narratives revealed two powerful, cross-cutting dynamics that mediate the Col presences.

(+) Cognitive Amplifier: How AI Enhances Meaning-Making



- **Clarifies Complexity:** Breaks down difficult concepts into digestible explanations.



- **Generates Examples:** Provides concrete instances to illustrate abstract ideas.



- **Multimodal Scaffolding:** Offers support through text, images, and diagrams.

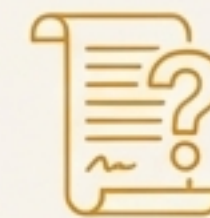
(-) Ethical Risk: Student Anxieties that Suppress Inquiry



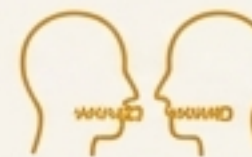
- **Misinformation:** Anxiety about fabricated sources and inaccurate content.



- **Plagiarism:** Fear of misconduct accusations, even for legitimate uses.



- **Policy Ambiguity:** Uncertainty over institutional rules discourages disclosure.



- **Suppressed Collaboration:** Hesitancy to openly discuss AI use with peers.



The Crucial Moderator: **Teaching Presence**

Teaching Presence is the lever that determines the balance between AI's positive and negative potentials. It shapes whether AI is perceived as a supportive tool or a source of stress.

When Teaching Presence is Strong (Reduces Risk, Strengthens Amplifier)

- ✓ **Clear Policies:** Transparent institutional and classroom rules reduce student anxiety.
- ✓ **AI Literacy:** Curricula that embed AI literacy empower students to use tools critically.
- ✓ **Thoughtful Design:** Integrity-by-design assessments and instructor modeling create a supportive environment.

When Teaching Presence is Weak (Increases Risk, Weakens Amplifier)

- ✗ Policy ambiguity leads to fear, hidden use, and suppressed collaboration.
- ✗ Students are left to navigate complex ethical terrain alone.

Voices from the Field: What Students Say

Cognitive Amplifier

> *"It allowed me to spend more time reading and examining complex information and data, rather than searching for it, improving my analytical skills..." (R14)*

> *"I used AI to generate pictures to explain abstract ideas, and that made the content clearer." (R7)*

Ethical Risk

> *"AI tools...can sometimes generate false or fabricated sources...it's important to double-check the output." (R27)*

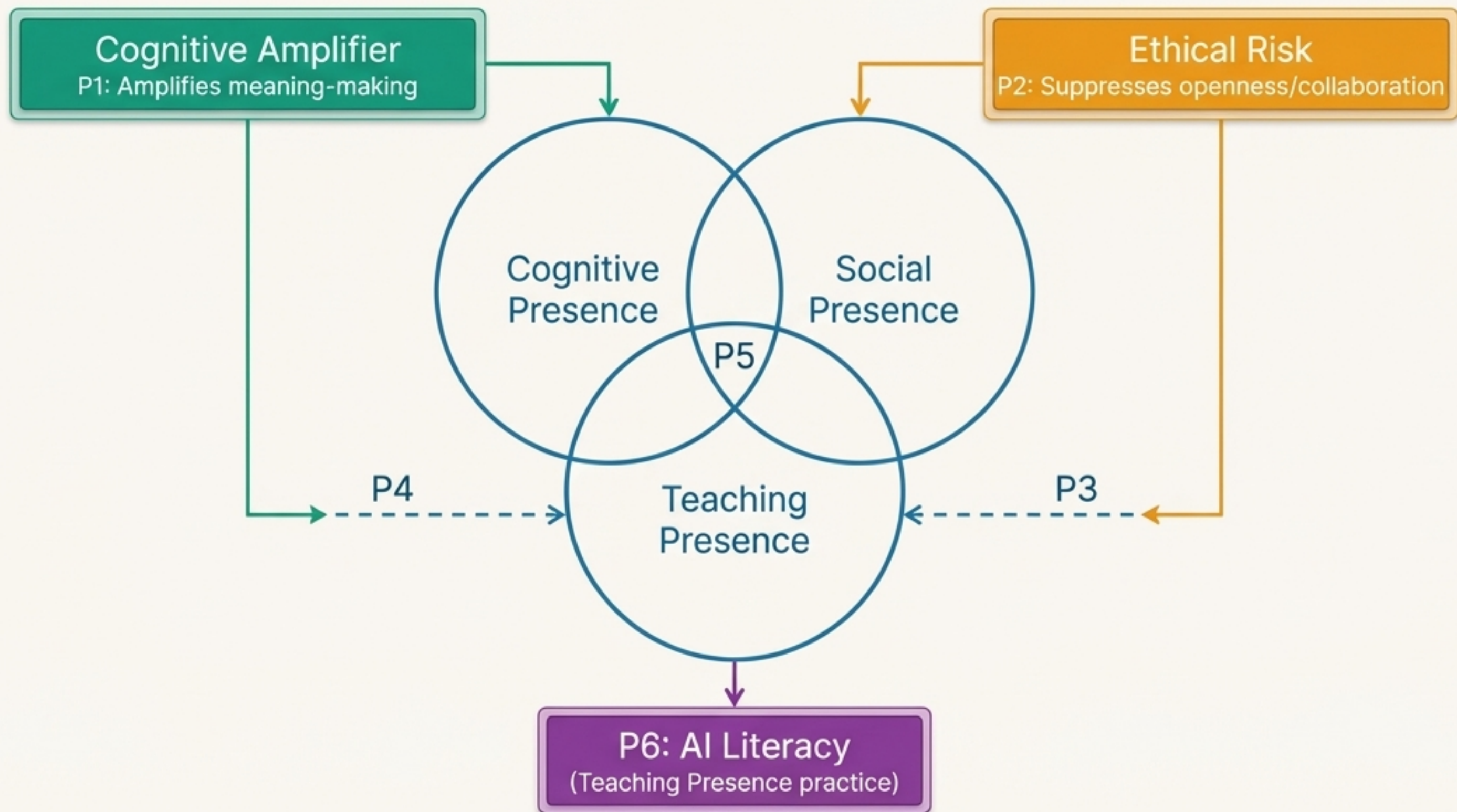
> *"I feel more anxious submitting work because of the fear that comes with using AI for assignments." (R19)*

Teaching Presence

> *"The lecturer's guidance made me confident that my use of AI was acceptable." (R21)*

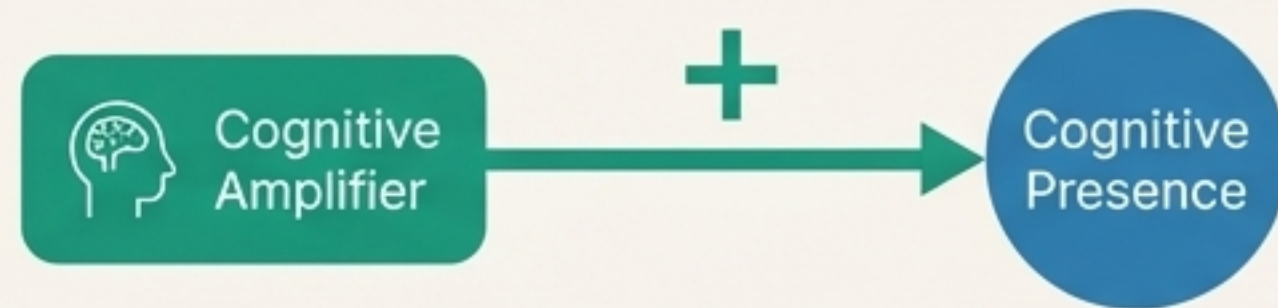
A Refined Model for AI-Mediated Learning

This extended framework visualizes Cognitive Amplifier and Ethical Risk as cross-cutting mechanisms that influence the core presences, with Teaching Presence acting as the moderating lever.

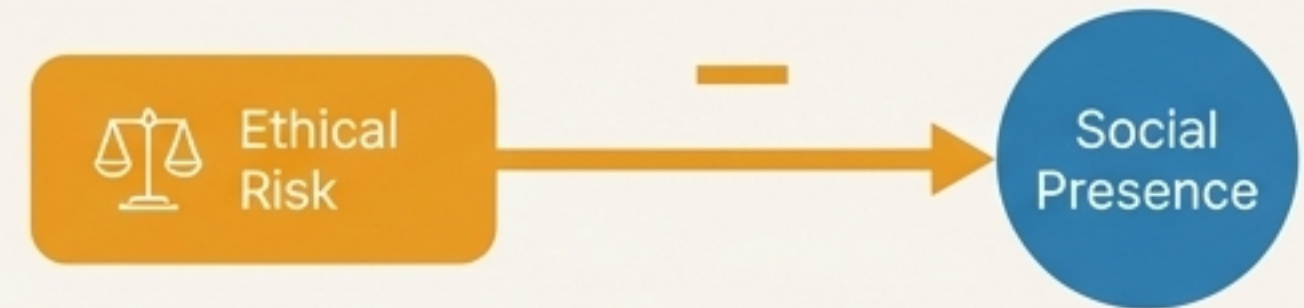


Theorised Pathways for Future Testing

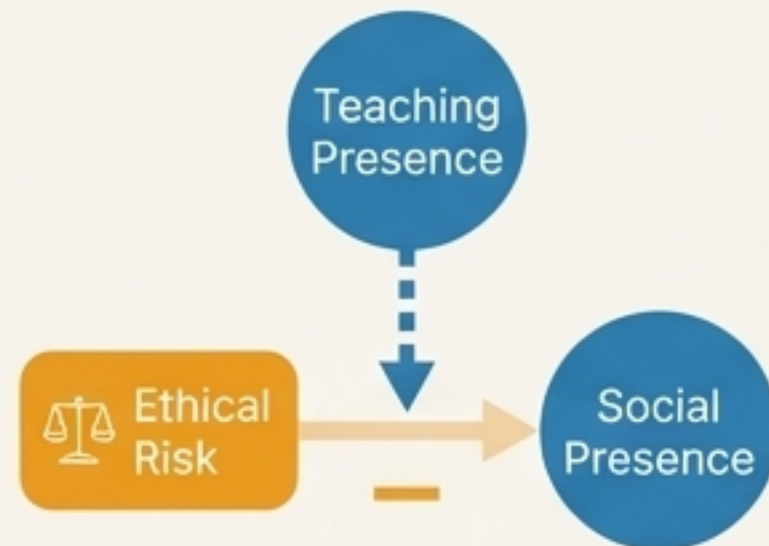
The extended framework generates six testable propositions about the relationships between AI use and the Col presences.



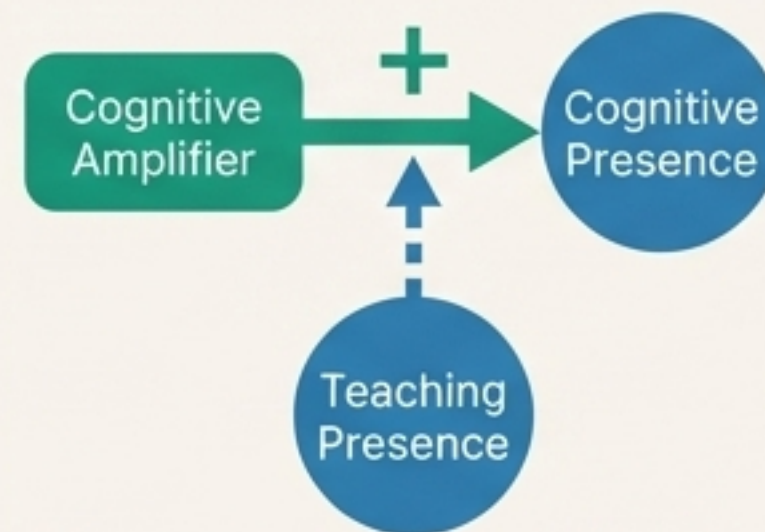
P1: Perceptions of AI as a Cognitive Amplifier will be positively associated with Cognitive Presence.



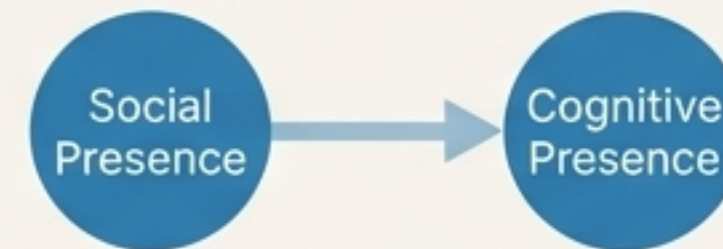
P2: Perceptions of Ethical Risk will be negatively associated with Social Presence.



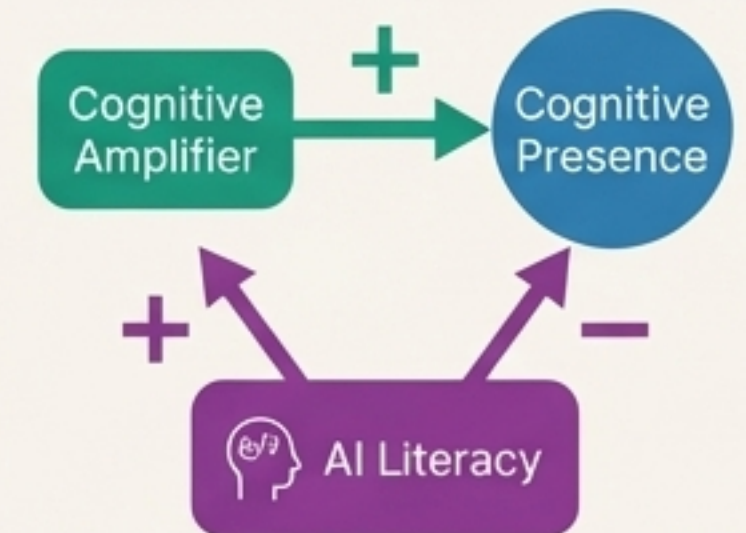
P3: Strong Teaching Presence will weaken the negative relationship between Ethical Risk and Social Presence.



P4: Strong Teaching Presence will strengthen the positive relationship between Cognitive Amplifier and Cognitive Presence.



P5: Reduced Social Presence (due to Ethical Risk) will indirectly diminish Cognitive Presence.



P6: AI literacy practices (part of Teaching Presence) will enhance Amplifier benefits and reduce Ethical Risk.

From Theory to Practice: Actionable Strategies

The extended Col framework suggests concrete strategies for higher education stakeholders.

For Institutions



Develop and communicate transparent institutional AI policies.



Embed AI literacy and critical evaluation skills across all curricula.

For Educators



Design 'integrity-by-design' assessments that focus on process and originality.



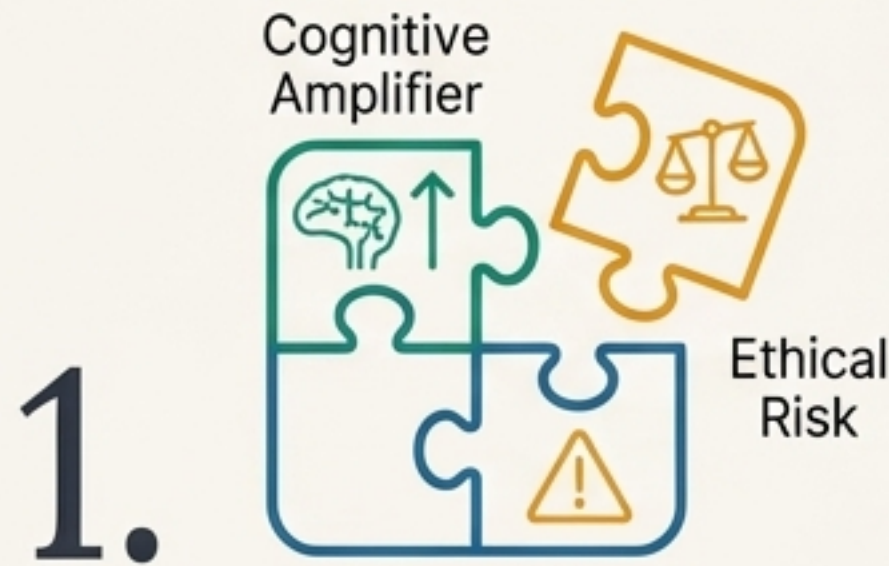
Encourage responsible multimodal AI use (e.g., for brainstorming or visualization) and teach verification strategies.



Promote a culture of open disclosure and peer collaboration around AI tools.

Advancing the Conversation on AI in Education

This study makes three key theoretical contributions:



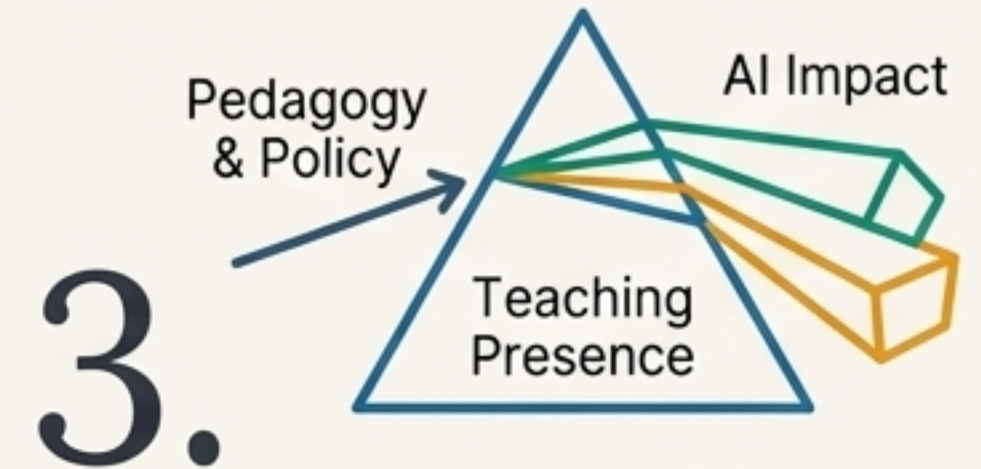
Refinement of a Core Framework

Extends the Col model with two student-derived, cross-cutting constructs, making it more relevant for the AI era.



Amplifying Global South Perspectives

Foregrounds the experiences of Caribbean students, providing a more globally representative understanding and highlighting how context shapes AI adoption.



Theorising AI's Role as Mediator

Positions AI not as a replacement for inquiry, but as a powerful mediating force whose impact is shaped by pedagogy and policy (Teaching Presence).

Boundaries and Considerations

As a theory-building study, this work has several important limitations.

- * **Single-Coder Analysis:** Qualitative coding was conducted by a single researcher; trustworthiness was supported by memoing and peer debriefing.
- * **No Subgroup Comparison:** The analysis focused on cross-cutting themes and did not compare experiences across different disciplines or academic levels.
- * **Regional Specificity:** Findings are grounded in the Caribbean context and may not be universally generalizable without further comparative research.
- * **Theory-Building, Not Testing:** The propositions are conceptual and require future empirical validation to test causal claims.

An Agenda for Future Inquiry

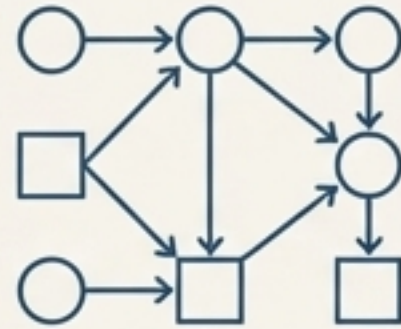
The proposed framework opens several avenues for future research.

Validation & Refinement



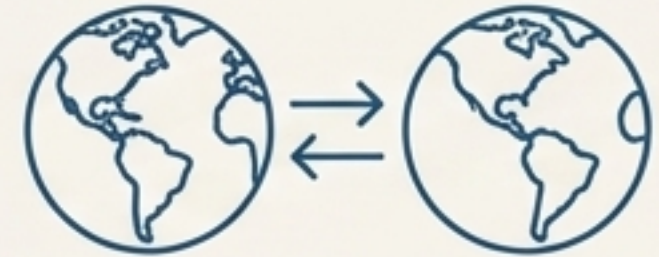
- Use **Delphi Panels** with experts to refine the construct definitions and boundaries.

Empirical Testing



- Employ **Quantitative Modeling** (EFA/CFA and Structural Equation Modeling) to test the six propositions empirically.

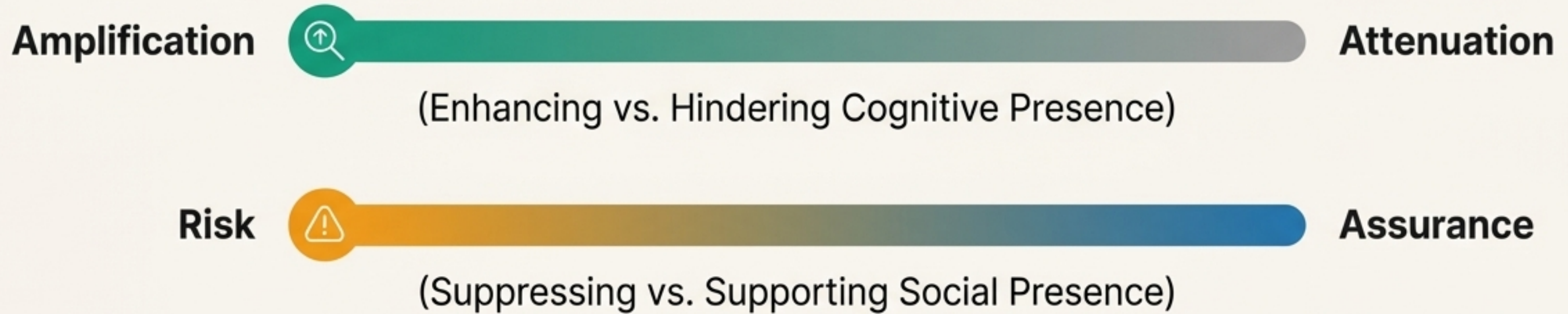
Comparative & Contextual Studies



- Conduct studies comparing **Global North vs. Global South** to explore regional differences.
- Investigate **Disciplinary Variation** to see how AI use differs across academic fields (e.g., humanities vs. STEM).

AI's Role is Not Fixed, It Is Moderated

Generative AI functions along two key continua in student learning:



The decisive factor that determines the balance is Teaching Presence.

By implementing clear policies, embedding AI literacy, and designing for integrity, educators and institutions can steer AI's impact towards amplification and assurance. This refined Col framework provides a model to support more ethical and meaningful AI-mediated learning.