

WHAT IS THE ROLE OF AI TUTORS IN DIALOGIC EDUCATION?

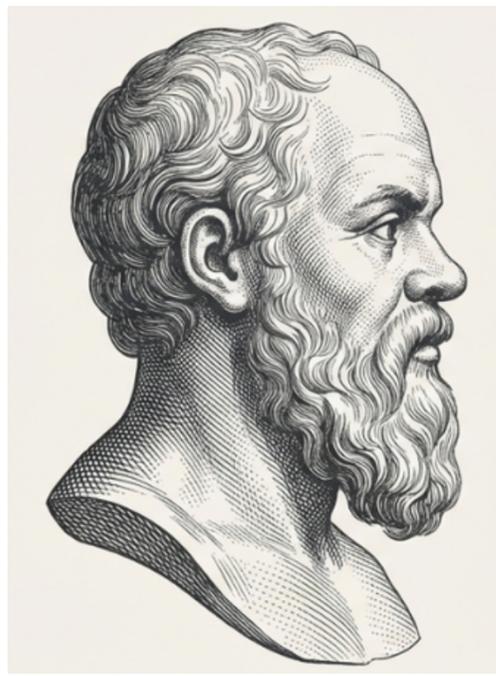
RETHINKING WHO IS DOING THE THINKING AS A GLOBAL EQUITY ISSUE



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A 2000 YEAR OLD WARNING

Socrates cautioned against technologies that offer...

“...the appearance of understanding without its substance.”

He argued that true knowledge emerges not from fixed representations, but from live dialogue, questioning and challenge. His concern: *what is lost when learning is stripped of responsive dialogue?*

Contemporary dialogic theory argues that learning does not arise from exposure to answers alone, but from sustained engagement with difference in understanding and uncertainty.

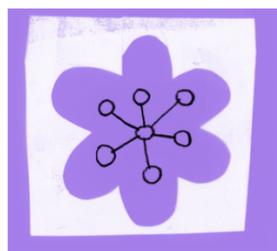
EMPOWERMENT



Bill Gates says A.I. could transform education: It 'will be like a great high school teacher' who always gives useful feedback

Published Tue, Aug 15 2023-1:28 PM EDT

Tom Huddleston Jr. SHARE



New Exploratory Research from Eedi and Google DeepMind Reveals Human-in-the-Loop AI Tutoring Outperforms Human-Only Support

COGNITIVE DEBT

Publication

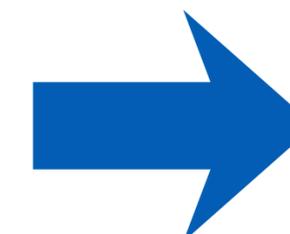
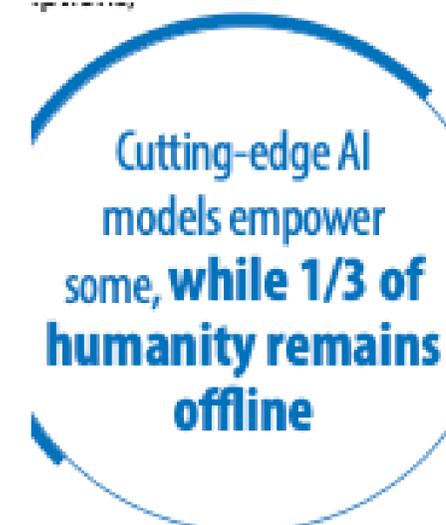
Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay



18/08/2025 · 1HR 34MIN

ChatGPT Brain Rot Debate: The Fastest Way to Get Dementia, Watch This Before Using ChatGPT Again, Especially If Your Kids Use It!

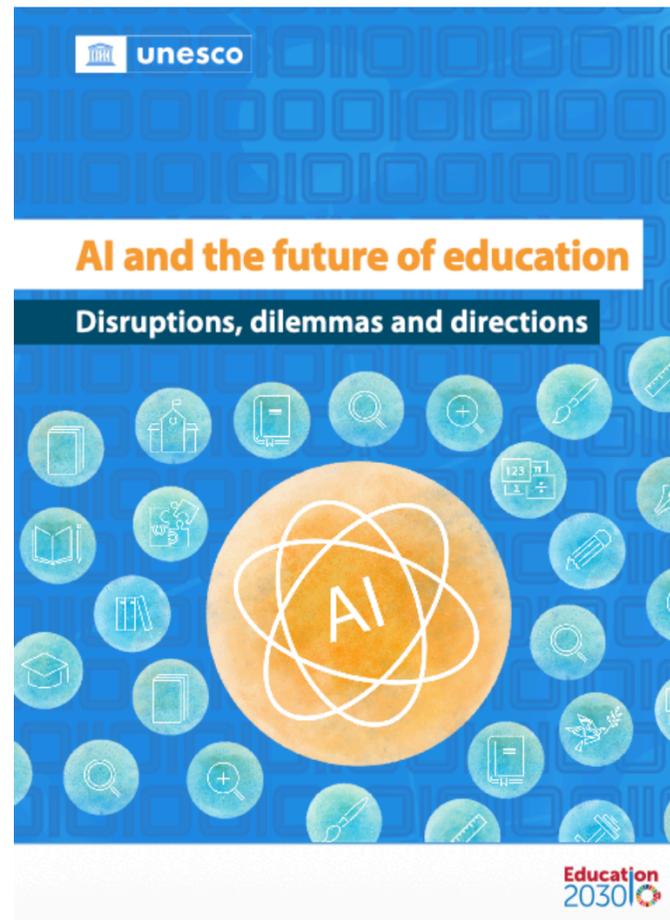
[The Diary Of A CEO with Steven Bartlett](#)



GLOBAL CHALLENGE...



SDG 4 is not just about access to education, it's about access to the **conditions for thinking.**

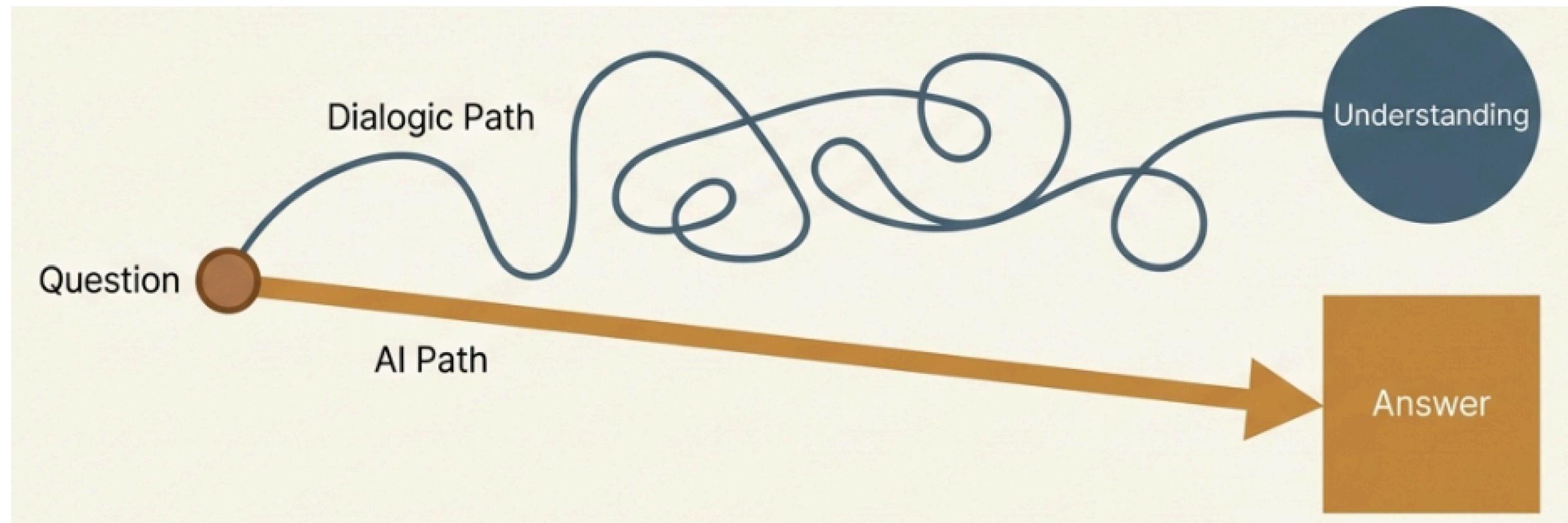


- Education is relational, ethical — not just content delivery
- AI risks automation of pedagogy, not just automation of tasks
- Equity is not access alone- it is **agency, voice, and participation**

Knowledge is obtained by '*curious and engaged interaction through **dialogue***' and for children to feel '*like master of her own thinking*'- Birhane, A (UNESCO, 2025)

THE CORE RISK- EARLY CLOSURE

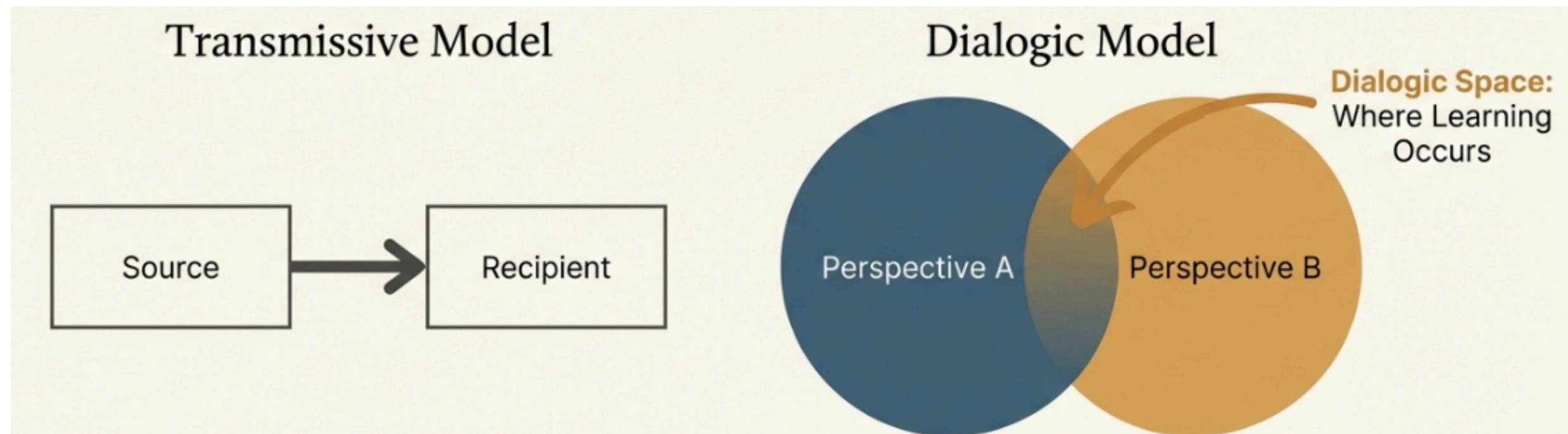
Large Language Models are designed to optimize for speed, fluency, and convergence on a single, plausible response. This creates a critical risk for learning: **resolving questions before understanding has had the time to develop.**



Research aim: what happens to learning when **dialogic tension** is prematurely resolved?

LEARNING HAPPENS BETWEEN VOICES, NOT IN TRANSMISSION

Dialogic theory argues that thinking is not a purely internal process. It occurs in a Dialogic Space that opens up between different perspectives. Learning arise from engaging with a 'Dialogic Gap'; a difference in understanding that invites engagement, not immediate resolution.



DIALOGIC ≠ DIALOGUE

Source: Bakhtin, M.M. (1981) The dialogic imagination: four essays. Edited by M. Holquist. Translated by C. Emerson and M. Holquist. Austin: University of Texas Press.

EVIDENCE FROM THE CLASSROOM: WHAT MAKES DIALOGUE PRODUCTIVE?

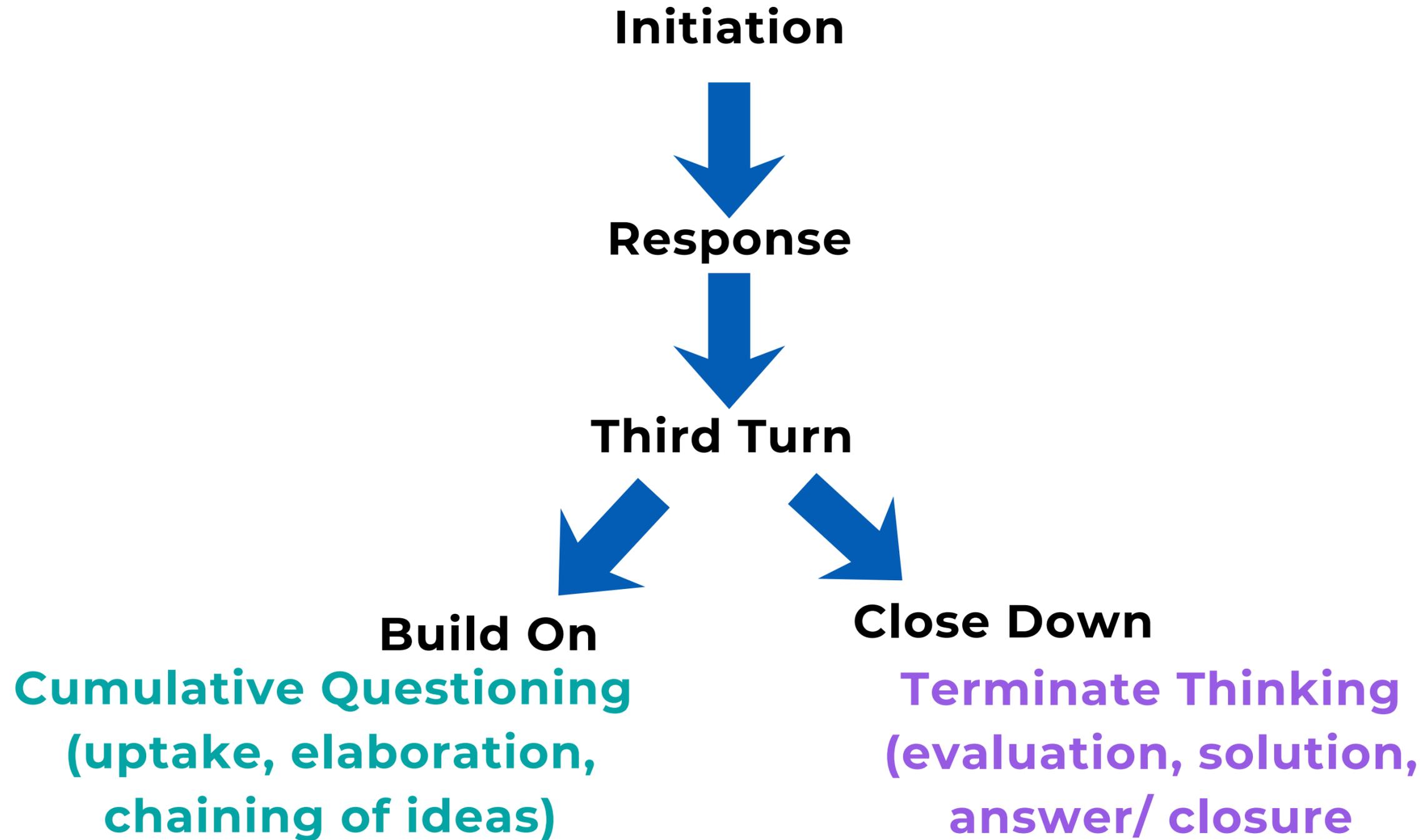
Learning gains are tied to **explicit and coherent reasoning**.

Simply giving the correct answer or participating in discussions is **not sufficient**.

Children who provide **complete and clear explanations** of their problem-solving strategies achieve **higher post-test scores**.

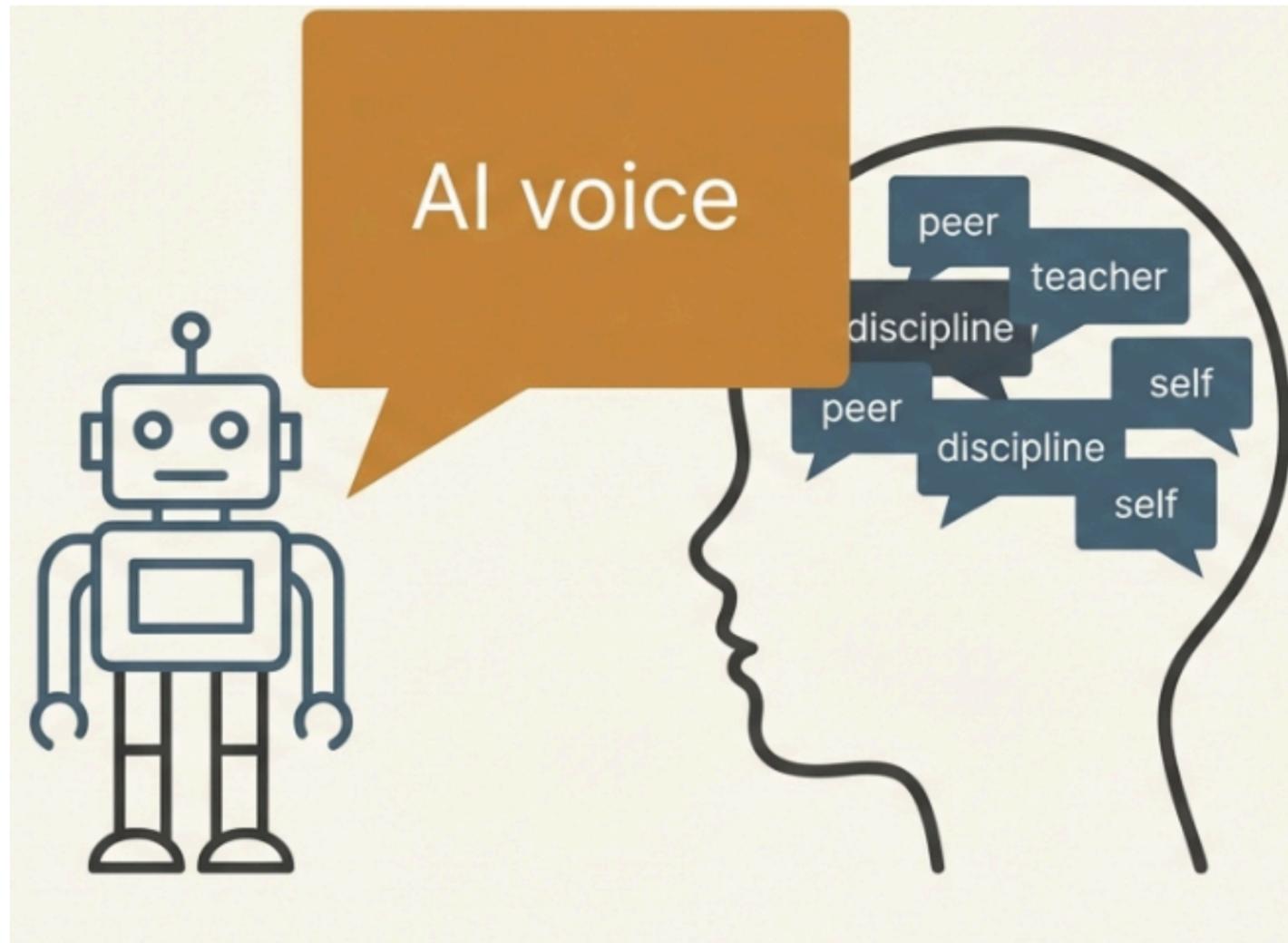
ALEXANDER'S CUMULATIVE PRINCIPLE

Classroom 'talk'...



i.e., is a LLM-tutor building on the child, or closing them down?

WHOSE VOICE IS BEING AUTHORISED?



Dialogue is about more than interaction; it's about internalising a knowledgeable, cultural voice of a 'discipline'- 'the Generalised Other' (Wegerif, 2020).

Critical Questions for AI Design:

- What kind of 'Other' is the LLM becoming for the child?
- If dialogic space is closed, who is disadvantaged? **Learners who most need structured opportunities to articulate their thinking may be disproportionately disadvantaged**

REFRAMING THE GLOBAL QUESTION INTO MY RESEARCH...

GLOBAL ANXIETY

- AI makes students lazy
- 'ChatGPT does the thinking'
- Brain rot
- Personal tutors for all

WHAT MY RESEARCH REFRAMES

*The question is not whether AI
tutors work, but how thinking
itself is organised.*

- Early closure vs sustained
uncertainty
- Answer production vs mathematical
justification
- Cognitive offloading vs cognitive
extension

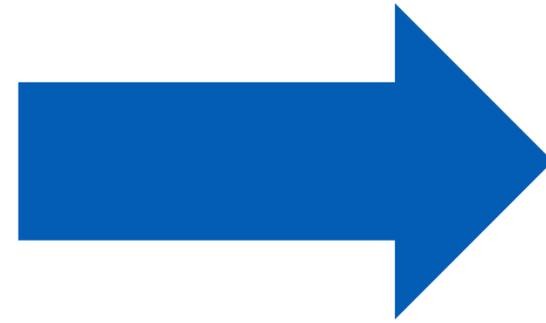
WHY PRIMARY MATHEMATICS EXPOSES THE CONDITIONS FOR THINKING

- Mathematics depends on
holding uncertainty open
- Reasoning must be articulated,
not just correct answers

SHIFTING THE AGENDA FOR MY RESEARCH DESIGN...

METRICS OF EFFICIENCY

- Speed of response
- Accuracy of the final answer
- Task completion rate



METRICS OF DIALOGIC QUALITY

- Sustaining productive difference
- Making child reasoning visible
- Developing justification, reasoning, and mathematical thinking
- Deepening dialogic engagement

FINALLY...

Not just whether AI tutors improve learning, but whether they preserve the dialogic conditions through which learning, agency, and equity can be made possible, particularly where thinking depends on structured opportunities to be externalised.



When AI tutors speak fluently, do they **open** thinking, or quietly **close** it?



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