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Teacher Presence and Systemic Thinking Pedagogy in the Age of AI: Structural Transformation of University Classrooms

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Abstract: With the rapid integration of generative Artificial Intelligence (AI) into higher education, the structure of teaching and learning in university classrooms is undergoing a profound transformation. While AI enhances efficiency in knowledge production, it also risks fragmenting students' cognitive processes and diminishing the depth of thinking. Based on a three-month classroom intervention and observation, this study investigates changes in students' learning behaviors within AI-assisted writing contexts, revealing a phenomenon of "absent thinking" caused by uncritical AI dependence. The study identifies systemic thinking ability as a key indicator of deep learning and cognitive independence, proposing a scaffolding-based pedagogical model rooted in the concept of teacher presence. The "demonstration–feedback–reflection" framework enables students to develop higher-order questioning, cross-disciplinary integration, and meta-cognitive reflection. Findings suggest that teacher presence functions as both a cognitive scaffold and a systemic catalyst, guiding learners from AI reliance toward AI mastery. The paper concludes with the Systemic Thinking-Oriented Pedagogical (STOP) Model, offering a theoretical and practical framework for the structural transformation of university teaching in the age of AI.

Keywords: Teacher Presence; Systemic Thinking; AI-assisted Learning; Scaffolding Pedagogy; University Classroom Transformation

1. Problem Identification: The Rise of AI-Generated Assignments and the Absence of Student Thinking

Generative Artificial Intelligence (AI), with its unprecedented capacity for rapid information production and linguistic construction, is reshaping how teaching, learning, and assessment occur in higher education [1]. The widespread adoption of AI tools such as ChatGPT, Copilot, and Wenxin Yiyan allows students to produce grammatically coherent and academically formatted texts in a matter of minutes. While this technological convenience increases efficiency and lowers the threshold for written expression, it simultaneously compresses, outsources, and even replaces the very process of learning itself [2]. The so-called "AI assignment wave" has evolved from a sporadic occurrence into a normalized learning phenomenon. Confronted with uniform, polished, yet intellectually indistinct submissions, educators increasingly struggle to discern students' genuine understanding and cognitive development[3].

Beneath this surface transformation lies a deeper pedagogical concern—a tendency for students to engage with AI without genuine cognitive reflection in their knowledge construction. Many university students do not use AI as a tool to extend cognition but rather as an instrument to evade it. They lack awareness of the generative logic underpinning AI outputs, fail to identify algorithmic bias, and seldom exercise critical judgment regarding the accuracy and contextual appropriateness of AI-generated content. Although their assignments appear more polished and efficiently completed, this form of delegated learning erodes the learner's agency and diminishes cognitive depth. Over time, such reliance on automation subtly undermines students' intellectual independence and their capacity for authentic expression [4].

At the same time, teachers themselves have become entangled in a new pedagogical dilemma. On one hand, AI-generated writing blurs the boundary between original work and assisted work, making it increasingly difficult for educators to apply traditional standards of assessment[5]. On the other hand, the growing workload and expanding class sizes in higher education often restrict teachers' engagement with students' learning processes, leaving

learners without sufficient guidance or feedback in their use of AI tools [3]. In response, some instructors have chosen to prohibit rather than guide the use of AI, thereby unintentionally diminishing students' opportunities to understand, interrogate, and master the very technologies that now shape their intellectual environment.

More importantly, the integration of AI into education is fundamentally reshaping the meaning structure of learning itself [1]. In the past, learning was understood as a process of understanding through thinking; today, for many students, it has been reduced to completion through generation. They tend to regard AI not as a medium that extends thought but as a mechanism that replaces it. This shift re-configures both the motivation for learning and the epistemological logic underlying knowledge production—transforming education from a human-centered, thought-driven process into an algorithm-centered, instruction-driven generation.

Consequently, the rise of AI-generated assignments, while ostensibly an efficiency revolution, in fact reveals a deeper epistemic crisis: students no longer lack access to knowledge but rather lack the systemic capacity to understand it; they no longer lack tools but lack the consciousness to think with tools. Within this context, redefining the role of the teacher becomes crucial. Teachers must not only guard against the substitution effect of AI but also re-establish themselves as the mediators of thought between students and technology [6]. Through deliberate cognitive scaffolding and dialogic intervention, educators can help students reclaim the space of human thinking within AI-augmented learning environments.

2. Teaching Intervention: Teacher Presence as a Catalyst for Systemic Thinking

Upon recognizing students' widespread passive reliance on AI and their absence of deliberate thinking, the author did not choose to ban AI from the classroom but instead sought to intervene through the strategy of teacher presence—a deliberate pedagogical stance aimed at rebuilding the relationship between students and AI. The notion of presence extends far beyond the teacher's physical availability in the classroom; it represents a cognitive form of being-with—a mode of engagement in which the teacher, through modeling, feedback, and guided questioning, helps students gradually reclaim their agency in thinking during interactions with AI [3]. Such presence serves simultaneously as emotional support and cognitive regulation. It not only addresses the distortions in learning behavior introduced by AI technologies but also re-establishes the teacher as a structural architect within the evolving learning system [2].

2.1 Phase I: Cognitive Revelation — Helping Students Distinguish between AI and Human Thinking

In the initial stage of this pedagogical intervention, the teacher's primary task was to help students recognize the boundary between AI-generated responses and human thought. Accordingly, during the first assignment review, the author presented several examples of texts generated entirely by AI and engaged the class in a collective analysis of their linguistic logic and content patterns. Through this exercise, students were guided to distinguish between linguistic correctness and authentic thought. At this stage, teacher presence functioned as a form of cognitive disclosure—a process in which the teacher used concrete cases to illuminate the mechanical nature and conceptual limitations of AI-generated writing, thereby fostering students' awareness of original thought as an intentional and irreplaceable human act [1].

This face-to-face analytical process helped students rediscover the intrinsic value of writing as a means of thinking rather than mere task completion. More importantly, it signaled to them that the teacher's engagement with their learning was both authentic and substantive. By bringing reflection back into the center of academic practice, the teacher's presence transformed AI from a substitute for thought into a mirror that revealed the very contours of thinking itself [7].

2.2 Phase II: Structured Reflection — Guiding Students to Re-examine the Human–AI Relationship

In the second stage of the teaching intervention, the teacher's role shifted from that of a revealer to that of a facilitator. By requiring students to attach an "AI usage statement" to each submitted assignment, the teacher encouraged reflection on the function and boundaries of AI within the learning process—Is AI a thinking partner or a cognitive substitute? Students were asked to explicitly distinguish between AI's generative

contribution and their own traces of thought [5]. This exercise strengthened their meta-cognitive awareness: students were no longer merely completing tasks but were invited to consider How do I learn? and What role does AI play in my learning? At this stage, teacher presence manifested as a form of structured reflection [7], guiding students through task design to re-examine their learning trajectories and to make their cognitive processes visible.

2.3 Phase III: Cognitive Activation — From Task Guidance to Systemic Inquiry

In the third stage, teacher presence gradually evolved from task guidance to cognitive activation. Here, the teacher prompted students to present their interactions with AI—their questions, follow-up prompts, and iterative reasoning—thus transforming AI use from a unidirectional generation into a multi-directional dialogue. By encouraging students to develop multilayered questioning patterns [8], the teacher guided them to reflect on the logic, content, and depth of their own inquiries, fostering the emergence of systemic questioning competence [4]. This interactive, inquiry-centered pedagogy helped students realize that learning is not a one-time act of information retrieval but an ongoing process of constructing interconnected knowledge networks.

Viewed as a whole, this three-phase intervention forms a dynamic structure of teacher presence: from cognitive intervention (revealing the limits of AI), to structural intervention (guiding reflection on the human–AI relationship), to systemic intervention (activating higher-order questioning). In each layer of presence, the teacher provides process-oriented scaffolding that enables students to learn to think through interaction with AI. This progression resonates with Vygotsky's concept of the zone of proximal development, in which learning occurs through guided participation before independent mastery. Through this scaffolded engagement, students begin to uncover their own cognitive structures, comprehend the logic of knowledge generation, and gradually evolve from AI-dependent users to AI-literate thinkers and orchestrators.

3. Systemic Thinking: A New Indicator of Learning in the Age of AI

Within AI-mediated learning environments, teacher presence should not be seen as an endpoint but rather as the starting point for developing systemic thinking. The value of pedagogical intervention lies not only in correcting students' mechanistic use of AI but also in helping them perceive the relational architecture of knowledge through AI itself, thus enabling a shift from using AI to understanding systems [8]. In other words, AI has not diminished the reflective dimension of learning; instead, it has exposed, in a new way, the structural vulnerabilities within students' cognitive systems. The teacher's task, therefore, is to provide intentional cognitive guidance that transforms learning from fragmented, command-based engagement into systematic knowledge construction [6].

The capacity for systemic thinking has become a defining indicator of learning competence in the age of AI. It concerns not only whether students can think independently but also whether they can understand, integrate, and evaluate knowledge in a structured and interconnected manner [9]. Systemic thinking requires learners to discern the relationality, hierarchy, and interdependence among ideas—to grasp how parts interact to form a whole [10]. For learners navigating AI-augmented environments, their ability to reconstruct meaning from AI-generated information determines the depth and breadth of their understanding [2].

Empirical classroom observations reveal clear stratification in how students engage with AI. Some remain at a directive level of use, issuing simple commands such as "Write a report for me." Others, however, engage in iterative questioning, comparative evaluation, and cross-disciplinary verification of AI responses. Such behaviors—marked by continual inquiry, integration, and reflection—represent concrete manifestations of systemic thinking [2]. They signal a cognitive transition: students evolving from users of technology to constructors of knowledge systems.

Building on this understanding, systemic thinking can be identified and cultivated through three interrelated dimensions which adapted from Bruner [7] and Senge [8] (see Table 1):

Table 1. Dimensions of Systemic Thinking

Dimension	Student Performance	Observable Teacher Indicators
Structurality	Constructs progressive chains of inquiry around a central theme	Demonstrates logical progression and hierarchical structure in questioning

Connectivity	Integrates concepts and perspectives across disciplines	Establishes meaningful connections among distinct areas of knowledge
Reflexivity	Identifies biases in AI outputs and self-corrects understanding	Exhibits critical thinking and reflective awareness in written work

The use of AI has made the learner's cognitive structure increasingly visible—teachers can now trace students' patterns of reasoning and cognitive movement through their prompts and dialogue records [3]. This visibility enables more precise and timely pedagogical intervention, allowing teachers to engage directly with students' thinking processes rather than merely evaluating their final outputs.

Consequently, systemic thinking should be understood not merely as a learning ability but as a pedagogical orientation. It compels teachers to transcend disciplinary boundaries and assume the role of designers of learning systems [6]. Through structured tasks and cross-disciplinary inquiry, teachers can activate students' cognitive networks, fostering deeper integration between human reasoning and AI-assisted learning. This conceptual framework provides both the theoretical foundation and the practical rationale for the next section—Systemic Thinking-Oriented Pedagogical Model.

4. Theoretical Framework: Teacher Presence and the Scaffolding-Based Systemic Thinking Pedagogy

4.1 From Presence to Scaffolding: The Cognitive Function of Teacher Presence

Teacher presence is not merely a pedagogical attitude; it constitutes a cognitive mechanism for constructing learning systems. In AI-enhanced learning environments, the teacher's role is shifting from that of a knowledge transmitter to that of a learning architect [6]. This transformation demands that teachers cultivate an interdisciplinary orientation toward systemic thinking, adopt a design-oriented mindset, and develop an understanding of the intricate interactions between technology and cognition [3]. Consequently, teacher presence must transcend reactive responses to students' immediate learning needs and instead function as a cognitive scaffold that actively supports the formation of systemic thinking.

The theory of scaffolding was first introduced by Wood, Bruner, and Ross [10], drawing upon the psychological foundation of Vygotsky's [11] concept of the Zone of Proximal Development (ZPD). This framework posits that between what learners can accomplish independently and what they can achieve with guidance lies a zone of potential development—within which the teacher provides calibrated support to promote growth. In the context of AI-mediated education, teacher presence represents an evolutionary reconfiguration of scaffolding: it extends beyond the transmission of content to encompass cognitive companionship, metacognitive prompting, and systemic design within the learning environment.

4.2 Three Dimensions of Teacher Presence: Demonstrative, Feedback, and Reflective

In AI-integrated classrooms, the scaffolding role of the teacher assumes new dimensions. Traditional scaffolding emphasized helping students complete learning tasks; in contrast, the AI era demands that scaffolding focus on helping students understand the logic of AI-generated knowledge. The teacher's responsibility is no longer confined to instructing how to use AI but rather to guiding students in understanding why AI produces particular responses—thus fostering a transparent relationship between algorithmic operations and cognitive processes [1]. Through such guidance, students develop reflective awareness and evaluative judgment in their engagement with AI, nurturing both the consciousness and competence of systemic learning [4].

Building upon the earlier discussion of pedagogical interventions and the systemic thinking framework, teacher presence can be conceptualized across three progressive levels:

(1) Demonstrative Presence — At this initial level, the teacher models the process of interacting with AI, demonstrating how to pose progressive, layered questions, identify the generative logic of AI responses, and verify their validity. The key function here lies in the visualization of thinking structures, allowing students to observe how cognitive processes unfold in real time [7]. This form of presence transforms abstract thinking into a visible process, making inquiry both observable and learnable.

(2) Feedback Presence — In this stage, the

teacher focuses on students' interactions with AI, analyzing the quality of their prompts and the paths of reasoning that underlie them. Feedback is not limited to correcting factual inaccuracies but serves to reveal cognitive blind spots, helping students move from a mode of problem-solving to one of problem-finding [11]. Such targeted feedback shifts the teacher's role from evaluator to cognitive guide, fostering students' awareness of their own inquiry logic.

(3) Reflective Presence — At the most advanced level, the teacher guides students to reflect critically on their AI-assisted learning behaviors. This includes analyzing how AI contributes to or distorts their cognitive processes and identifying the boundaries of AI's pedagogical role. Through this meta-cognitive reflection, students transition from outcome-oriented learning to process-oriented understanding, thereby stabilizing the development of systemic thinking [3]. Reflective presence thus becomes a catalyst for sustained cognitive autonomy and self-regulated learning in AI-mediated environments.

4.3 The Fading Presence Mechanism and Dynamic Learning Structure

These three forms of teacher presence—demonstrative, feedback, and reflective—do not constitute a fixed linear sequence but rather a recursive and evolving cycle. Within this cycle, teachers continuously adjust the intensity of scaffolding, forming what can be described as a mechanism of "fading presence" [7]. In the early stages of learning, the teacher provides strong cognitive support to help students construct foundational thinking frameworks. As students' capacity for systemic thinking matures, the teacher gradually withdraws this support, shifting roles from active instructor to learning monitor and instructional designer. Ultimately, students are able to independently engage in AI-mediated dialogue, conduct critical analyses, and integrate knowledge across disciplines—achieving a transition from AI dependence to AI co-thinking [8].

This theoretical framework reveals the intrinsic logic linking teacher presence and systemic thinking: through scaffolded intervention, teachers activate students' cognitive systems, transforming learning into a self-generating, self-correcting, and self-integrating process. In this model, AI is redefined as a cognitive amplifier, while the teacher assumes the role of regulator and designer of the learning system [6]. Hence, in the age of AI, teachers are no longer mere transmitters of information or supervisors of tasks, but constructors of cognitive architecture. Their presence does not lie in managing the classroom but in illuminating the structures of thought.

This framework not only responds to the practical challenges of contemporary education but also provides an operational pathway for pedagogical innovation in AI-mediated contexts. By consciously calibrating the strength of scaffolding, the frequency of feedback, and the depth of reflective mechanisms, teachers can help students gradually construct systemic thinking structures. In doing so, education transitions from knowledge transmission to cognitive generation, establishing a robust theoretical foundation for the forthcoming Systemic Thinking-Oriented Pedagogical Model (STOP Model).

5. Teaching Innovation: Designing a Systemic Thinking-Oriented Pedagogical Model (STOP Model)

The cultivation of systemic thinking does not emerge spontaneously; it requires intentional structural guidance embedded within instructional design. The integration of AI necessitates a pedagogical shift—from task-oriented teaching to thinking-oriented teaching, and from an emphasis on learning outcomes to an emphasis on cognitive processes. Consequently, constructing a classroom model that centers on systemic thinking, operates through teacher presence, and leverages AI as a cognitive partner, has become a critical direction for reform in higher education during the AI era [3].

The core premise of this model lies in redefining classroom roles and structures: the teacher acts as a designer of learning systems, while students become constructors of thought who engage in collaborative learning with AI. Through the deliberate design of task chains, feedback loops, and reflective guidance mechanisms, teachers help students progressively develop capabilities for structured inquiry, cross-domain integration, and meta-cognitive reflection. This pedagogical framework not only extends the foundational principles of scaffolding theory [6,10], but also aligns with Laurillard's notion [6] of teaching as a design science—that is, teaching as a systemic

process of design, feedback, and iterative refinement.

Building upon the earlier "Demonstration–Feedback–Reflection" triadic mechanism of teacher presence and the "Structure–Connectivity–Reflexivity" tri-dimensional framework of systemic thinking, this paper proposes the Systemic Thinking-Oriented Pedagogical Model (STOP Model), which can be articulated through four key stages (see Table 2):

5.1 Problem-Chaining

Rather than assigning conventional, task-based exercises, teachers employ systemic chains of inquiry to guide students in formulating progressively complex questions around a central theme. For instance, a surface-level prompt such as "How does AI generate an answer?" can evolve into deeper inquiries like "What is the underlying knowledge structure behind AI's reasoning?" and "How does that structure differ from the epistemic logic of my own discipline?" This process enables students to construct a "problem tree" that moves from surface questioning to structural reasoning [8].

At this stage, teacher presence takes the form of demonstration and inspiration, as teachers model effective questioning techniques and make their own cognitive processes visible. Through explicit modeling and metacognitive prompts, teachers help students see the pathways of thought rather than merely the outcomes of answers. In doing so, the classroom shifts from reproducing information to cultivating inquiry as a systemic habit of mind.

5.2 Interactive Feedback

Following students' interactions with AI, teachers engage in a process of interactive feedback, analyzing their AI dialogue records—including both prompts and outputs—to identify the hierarchy, logic, and potential blind spots in their questioning. Teacher feedback in this phase goes beyond evaluating the accuracy of content; it emphasizes the coherence and systemic quality of students' thinking [1].

For example, when students' inquiries remain at the level of factual retrieval, teachers may respond with higher-order prompts such as:

"Can you compare AI's responses from different perspectives?" or

"What assumptions might be hidden in AI's answer?"

This form of thinking-visualized feedback transforms learning from a passive reception of information into an active process of cognitive revision. It helps students externalize their reasoning, reflect on their own questions, and gradually develop the capacity to think systemically and critically in collaboration with AI.

5.3 Reflective Learning Log

Students are required to submit a "Reflective Learning Log" alongside each assignment, documenting how AI was utilized during their learning process, what strategies were employed, and how their thinking evolved over time. This mechanism fosters continuous awareness of one's own learning and promotes the development of metacognitive capacity [2].

At this stage, teacher presence takes the form of reflective presence [3]. Through reviewing and discussing students' learning logs, teachers help learners recognize the limitations and potential biases of AI-mediated learning. This reflection-centered practice encourages students to develop a critical distance between technology and cognition, transforming AI from a passive learning assistant into an object of critical inquiry. In doing so, reflection becomes a means of cognitive regulation and intellectual autonomy rather than mere self-reporting.

5.4 Fading Scaffolding

As students' systemic thinking competence strengthens, teachers gradually withdraw the scaffolds—shifting from direct instruction to indirect stimulation, and from explicit supervision to implicit design [7, 11]. At this stage, the teacher assumes the role of a learning ecosystem designer, orchestrating the structure and rhythm of interactions between students and AI rather than intervening in each learning episode.

Through this process of fading scaffolding, students transition from AI users to AI collaborators, acquiring the ability to independently construct, validate, and reorganize knowledge systems. This marks the realization of genuinely systemic learning, in which cognition becomes distributed yet self-regulated [6]. The gradual withdrawal of teacher scaffolding does not imply pedagogical absence but signals a higher-order instructional design—one that ensures the persistence of

cognitive autonomy even after explicit guidance recedes.

Table 2. Overview of the Systemic Thinking-Oriented Pedagogical Model (STOP Model)

Stage	Teacher Role	Instructional Strategy	Student Cognitive Goal	Core Learning Outcome
1. Problem-Chaining	Demonstrator	Constructing a problem tree through systemic questioning	Developing awareness of structured inquiry	Visualization of cognitive pathways
2. Interactive Feedback	Observer	Analyzing AI interaction processes (prompts and outputs)	Identifying cognitive blind spots and conceptual connections	Progression in the logic of questioning
3. Reflective Learning Log	Facilitator	Reflecting on AI usage and patterns of thought	Cultivating metacognitive awareness	Developing reflective and self-regulated learning
4. Fading Scaffolding	Designer	Adjusting scaffolding intensity and promoting independent learning	Integrating knowledge autonomously and innovatively	Formation of systemic learners

The proposed model achieves innovation on three interrelated levels of educational practice:

(1) Reconstruction of Learning Objectives — shifting from the acquisition of knowledge to the cultivation of systemic understanding;

(2) Transformation of the Teaching Process — moving from teacher control to cognitive co-construction between students, teachers, and AI;

(3) Reform of Assessment Methods — evolving from outcome-oriented evaluation to process-oriented reflection.

The underlying logic of this model is that teacher presence activates students' systemic thinking, AI functions as a cognitive tool that amplifies their reasoning capacity, and the scaffolding mechanism ensures that learners sustain reflectivity and independence amid the complexity of technological learning environments [3,4].

This systemic thinking-oriented pedagogy not only responds to the pedagogical challenges posed by AI but also provides a replicable and adaptable pathway for higher education practice. Ultimately, its goal is to cultivate learners who can harness AI rather than depend on it—students who use technology to extend, not outsource, their cognition.

As Senge [8] insightfully observes, systemic thinking is the capacity to see the whole. In the age of AI, teacher presence becomes the light that enables students to perceive that whole—illuminating the interconnections among knowledge, thought, and technology.

6. Conclusion: Presence, System, and the Future Direction of Learning

The rapid advancement of AI technologies has redefined learning—one of humanity's oldest intellectual practices. As the cost of information generation approaches zero, the value of thought generation has become ever more pronounced. Within this transformation, the relationships between teachers and students, between knowledge and technology, and between learning and thinking are undergoing profound reconstruction.

Through classroom observations of the AI-generated assignment phenomenon and a three-stage pedagogical intervention, this study illuminates a central insight: AI does not deprive students of the ability to learn; rather, it exposes whether they truly possess the capacity for systemic thinking. Teacher presence emerges as the decisive force that enables students to move from using AI to understanding AI, and from depending on tools to mastering cognition.

Findings reveal that the core challenge in AI-mediated learning does not stem from the technology itself, but from a de-systematization of the learning process—students are increasingly capable of generating knowledge but struggle to explain how that knowledge is connected. This form of surface cognition reduces learning to mechanical reproduction rather than cognitive growth.

Through the deliberate construction of cognitive scaffolds, the orchestration of thinking-oriented feedback, and the design of reflective spaces, teacher presence re-centers students within the learning system. It enables them to comprehend both the generative logic of AI and the architecture of their own thinking. This study

further confirms that in the age of AI, teachers' core competence lies not merely in their technical proficiency, but more importantly in their capacity to sustain the meaning of learning within complex human–AI interactions.

Systemic thinking provides a new value coordinate for this educational transformation. As an approach to understanding complex learning relationships, its core lies in seeing the whole, identifying interconnections, and grasping dynamic balance. In higher education, this capacity signifies a fundamental epistemic shift: students no longer seek only answers, but strive to comprehend the systemic logic that underlies those answers. The findings of this study demonstrate that when teachers intervene through a fading *presence mechanism—structured* around the cycle of demonstration, feedback, and reflection—students progressively develop abilities in systematic inquiry, cross-disciplinary integration, and metacognitive reflection. Within such a framework, AI ceases to function merely as a tool for text generation; it becomes a mirror that makes thinking visible, enabling students to perceive the architecture and limitations of their own learning processes.

This finding carries significant implications for higher education. First, the teacher's role is shifting from knowledge transmitter to designer of learning systems. Rather than providing answers, teachers are expected to design "chains of inquiry" and "learning pathways" that stimulate systemic thinking. Second, the focus of evaluation should move from outcomes to processes, emphasizing the depth of questioning, progression of thinking, and reflective ability demonstrated in students' engagement with AI. Finally, higher education institutions must reappraise the importance of teacher presence—not merely as a form of classroom management, but as the intellectual and human anchor of the learning ecosystem.

The introduction of AI confronts education, for the first time, with the possibility of automated learning—yet it also compels us to re-examine the unique value of human thought. Technology can generate text, but it cannot generate meaning; it can compute answers, but it cannot understand questions. The essence of learning remains understanding, and understanding arises only through the genuine resonance of thought between teachers and students. Teacher presence marks the starting point of that resonance. It is not merely an act but a conviction—the belief that learning must be guided and illuminated, and that students, even in the age of AI, still possess the potential to become thinkers.

Future higher education should be grounded in systemic thinking, anchored in teacher presence, and supported by AI as a cognitive partner, forming what may be called a symbiotic learning system. In this system, AI amplifies information, teachers illuminate structure, and students generate meaning. As this study concludes:

The key to learning in the age of AI lies not in whether students can use AI, but in whether they can see the system of knowledge through it. Teacher presence is not about operating for students—it is about illuminating the architecture of their thought.

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