



Philosophical Inquiry in the Age of AI and digital technologies: Critical Thinking Pedagogy for Digital Natives

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Abstract: Generative AI is used by students as a study and writing tool, which could reshape how they read, argue, and evaluate ideas. This change is important in philosophy courses where learning depends on dialogic inquiry, close reading, and evidence-based reasoning. This study investigates how (AI) influences and reshapes the teaching and learning of philosophical inquiry and critical thinking among digital-native university students. Using mixed-methods that combine pre-test and post-test quantitative assessment with interviews and classroom observations, the research examines the extent to which AI-supported dialogic tasks influence argument identification, fallacy detection, inferential reasoning, and conceptual clarity. Quantitative data were analyzed by comparing pre-post gains within and between an AI-supported group and a traditionally taught control group. A sample of 100 students was divided into an AI-supported group and a traditionally taught control group, with post-test findings showing significantly higher gains for the AI group ($d = 2.91$), particularly in inferential reasoning and conceptual clarity. Qualitative data from 20 student and 10 instructor interviews show that learners view AI as a cognitive partner that enhances explanatory clarity, expands interpretive possibilities, and increases confidence in constructing arguments, though concerns appear regarding overreliance. Instructor observations corroborate these patterns, indicating shifts in classroom dynamics. The results show greater engagement and question diversity, but diminished persistence when confronting challenging primary texts. The study concludes that while AI can meaningfully improve critical-thinking development in philosophy classrooms, its pedagogical success depends on structured instructor mediation to preserve deep reading, intellectual struggle, and reflective judgment.

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INTRODUCTION

The rapid development of artificial intelligence (AI) in educational environments raises questions on how universities can sustain meaningful forms of intellectual inquiry in an age of algorithmic reasoning. In disciplines such as philosophy, where rational dialogue, conceptual analysis, and reflective judgment are central, AI's growing presence represents both a challenge and an opportunity for educators. Scholars argue that digital-native learners, students who have grown up immersed in technology, approach information, reasoning, and learning in ways that differ markedly from earlier generations (Prensky, 2010; Yahya et al., 2025; Maati et al., 2025). As these students increasingly rely on intelligent systems such as large language models to explain concepts, generate arguments, and even simulate philosophical dialogues, traditional pedagogical tools may no longer be sufficient. This shift compels educators to redesign the teaching of critical thinking not as a static cognitive skill, but as a dynamic practice shaped by human-machine interactions (Williamson & Piattoeva, 2020; Abdulghani et al., 2025).

Philosophical inquiry has historically relied on dialogic methods such as Socratic questioning, argumentative exchange, and reflective self-examination. However, these methods now intersect with automated reasoning technologies. AI-based tools can generate counterarguments within seconds, simulate ethical dilemmas, and provide instant textual analysis, raising essential questions about intellectual autonomy and epistemic agency. Researchers, such as Floridi (2019) and Danry (2023), highlight that AI is reshaping human reasoning environments, influencing what counts as evidence, justification, or critical assessment. For digital natives accustomed to interacting with AI as cognitive companions, the boundaries between human reasoning and computational assistance have become blurred. Consequently, understanding how to guide students toward authentic philosophical thinking has become a pedagogical priority.

Educational theorists have long emphasized that critical thinking is not merely the mechanical application of rules, but a cultivated disposition grounded in interpretation, evaluation, and intellectual humility (Facione, 2011; Ennis, 2018; Shalghoum et al., 2025). However, AI tools raises concerns that students may circumvent the slow, reflective processes necessary for developing philosophical insight. Studies have shown that reliance on algorithmic systems can diminish deep reading, impede independent problem-solving, and encourage superficial analysis (Carr, 2020; Buckingham Shum & Crick, 2016; Hajijah et al., 2025). In philosophy education, such risks are particularly acute because students must engage directly with abstract concepts, moral reasoning, and complex texts that require sustained intellectual effort. Therefore, a central issue arises: how can philosophy instructors employ AI to enhance critical thinking rather than replace it?

The significance of this study lies in its focus on reimagining philosophical pedagogy for an (AI) and digital academic culture. As universities worldwide adopt AI-driven educational systems, ranging from tutoring interfaces to automated feedback tools, the discipline of philosophy faces an urgent need to articulate new pedagogical frameworks that preserve the depth and rigor of philosophical inquiry (Aini et al., 2025; Abushafa, 2025; Alriteemi et al., 2025). Developing such frameworks matters not only for philosophy as a discipline but also for broader civic and ethical life, since critical thinking cultivated through philosophical study plays a central role in democratic participation, ethical judgment, and responsible technology use (Nussbaum, 2010; Suler, 2022). This research thus contributes to ongoing international

discussions about the future of higher education and the cultivation of intellectual virtues in technologically mediated learning environments.

Thus, the primary aim of this study is to investigate how AI influences students' engagement with philosophical inquiry and to evaluate how critical thinking pedagogies can be redesigned to align with the cognitive profiles and learning behaviors of digital-native learners. The objectives are fourfold: first, to analyze the ways students interact with AI tools while performing philosophical tasks; second, to assess whether AI-supported inquiry enhances or inhibits core critical thinking abilities; third, to explore instructors' perceptions of AI's role in philosophy classrooms; and fourth, to propose a pedagogical model that integrates AI without compromising intellectual autonomy or the depth of conceptual analysis. Through these objectives, the study seeks to offer empirically grounded insights into how AI can become a constructive partner in philosophical education.

The research is guided by several interrelated questions emerging from contemporary debates in educational philosophy and digital pedagogy. These include: How do digital-native students use AI when engaging with philosophical problems or texts? In what ways does AI reshape argumentative reasoning, conceptual understanding, and the ability to evaluate premises and conclusions? How do instructors perceive the opportunities and risks associated with AI-enhanced philosophical inquiry? And what pedagogical principles are necessary to maintain reflective, dialogical, and autonomous reasoning in AI-mediated learning environments? While many recent studies on AI in higher education focus on writing assistance, language learning, or general student productivity, fewer examine AI use within philosophy classrooms where learning depends on slow interpretation, dialogic questioning, and disciplined justification. Similarly, research on AI and "critical thinking" often relies on perception surveys or broad critical-thinking scales, leaving limited evidence about how AI affects philosophy-specific reasoning practices and how these changes appear in real classroom interaction. These questions therefore guide the study's mixed-methods design and frame its contribution to ongoing scholarly conversations.

In addressing these issues, the study situates itself at the intersection of philosophy of education, critical thinking research, and digital pedagogy. It builds on theoretical foundations that view philosophical inquiry as a form of interpretive engagement grounded in dialogue and reason (Gadamer, 2013; Masuwd, 2025), and integrates this with recent literature on human-AI interaction, which emphasizes hybrid reasoning, augmented cognition, and the cultural implications of intelligent technologies (Luckin, 2018; Kasheem et al., 2025; Alrumayh et al., 2025). However, the present research differs from much of the existing literature by combining (i) a pre-test/post-test comparison between an AI-supported group and a control group, (ii) philosophy-relevant outcomes (argument identification, fallacy detection, inferential reasoning, and conceptual clarity), and (iii) qualitative triangulation through interviews and classroom observations to explain not only whether change occurs but also how and under what conditions.

By combining conceptual analysis with empirical investigation, the research aims to demonstrate that critical thinking pedagogies must evolve not by resisting technological change, but by redefining how students learn to question, argue, and understand in a world where AI has become a pervasive epistemic actor. Through this lens, the study offers a timely contribution to the future of philosophical education and to the broader discourse on teaching

intellectual autonomy in the digital age. In general, the study contributes discipline-specific evidence on AI-mediated philosophical inquiry and clarifies the pedagogical safeguards needed to preserve reflective judgment and intellectual autonomy.

METHOD

This study adopts a mixed-methods research design to examine how artificial intelligence can reshape critical thinking pedagogies within philosophy classrooms populated by digital-native learners. This mixed-methods approach was selected because quantitative pre-test/post-test comparisons can show whether AI-supported instruction produces measurable gains in critical thinking, but they cannot explain the classroom processes that generate those gains. Qualitative interviews and observations therefore complement the statistics by revealing how students and instructors experience AI-mediated inquiry, allowing triangulation and a more credible interpretation of the results. The AI-supported group used ChatGPT as the generative AI assistant during inquiry tasks. Students interacted with the tool to support (i) argument mapping (identifying premises and conclusions), (ii) fallacy checking, (iii) generating counterarguments and objections, and (iv) clarifying key philosophical concepts and distinctions. To protect intellectual autonomy, students were required to justify all claims with evidence from the assigned texts and lecture materials, and assessment focused on the quality of their reasoning rather than the fluency of AI-generated language.

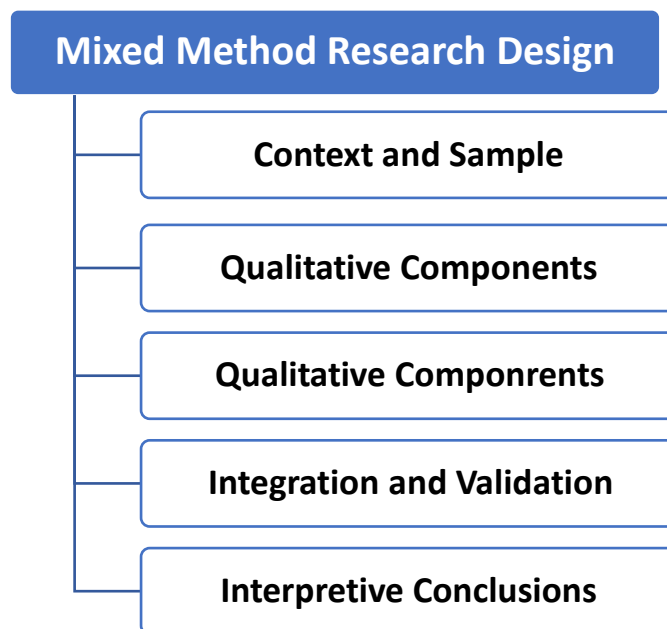


Figure 1. Mixed Method Research Design

The quantitative component evaluates the extent to which AI-supported inquiry tasks influence students' logical reasoning, argument evaluation, and conceptual clarity. A pre-test/post-test design is used with two sections of undergraduate philosophy students at the University of Zawia, Libya: one group using AI-integrated instructional activities and the other receiving traditional instruction. The tests assess core critical thinking indicators, including argument structure recognition, fallacy detection, and inferential judgment. Statistical analysis (t-test and effect size measures) is conducted to compare gains between groups.

Complementing the quantitative strand, the qualitative component explores how students and instructors experience and interpret AI-infused philosophical inquiry. Semi-structured interviews are conducted with 20 students and 10 philosophy instructors to capture their perceptions of AI as an epistemic tool, its influence on cognitive engagement, and its role in facilitating or hindering deep questioning. Classroom observations are also carried out across four weeks to document interaction patterns, discourse quality, and the ways AI prompts shape analytical reasoning. Data collection was conducted over 6 weeks, including (i) one week for pre-testing and orientation, (ii) four weeks of the instructional intervention with classroom observations, and (iii) one week for post-testing and interviews. All qualitative data are analyzed using thematic coding, drawing from hermeneutic and constructivist frameworks that emphasize meaning-making, dialogical inquiry, and the interpretive dimensions of philosophical learning. Data validity was ensured through expert review and pilot refinement of the critical-thinking test (content validity), reliability checks (Cronbach's alpha).

The integration of both datasets follows a convergent parallel design, allowing quantitative trends and qualitative insights to be examined side-by-side for triangulation. This design enhances the study's reliability by showing not only whether (AI) affects critical thinking development, but also how learners engage with AI cognitively and philosophically. In general, the methodology provides a sound foundation for understanding the pedagogical transformations required to teach philosophical inquiry effectively in the age of artificial intelligence.

RESULTS AND DISCUSSIONS

Quantitative Findings: Changes in Critical Thinking Performance

1. Pre-Test and Post-Test Comparison

The baseline analysis demonstrated that both groups - students using AI-supported philosophical inquiry tasks and those receiving traditional instruction- began with comparable levels of critical thinking proficiency. Pre-test means showed no statistically significant difference between the AI group ($M = 42.18$, $SD = 6.41$) and the traditional group ($M = 41.76$, $SD = 6.09$), $t(98) = 0.29$, $p = .77$. This confirms that any subsequent variation in performance can be attributed to instructional conditions rather than initial disparities (Facione, 2015; Ennis, 2018). The pre-test assessed multiple components of critical thinking (argument identification, fallacy recognition, inferential accuracy, and conceptual clarity) based on the Delphi Report framework.

Post-test data demonstrated a clear divergence between groups following the four-week intervention. Students in the AI-supported group showed substantial improvement across all tested domains, achieving a mean score of $M = 78.45$ ($SD = 7.12$), whereas the traditional group reached $M = 64.88$ ($SD = 8.03$). An independent-samples t-test confirmed that this difference was statistically significant, $t(98) = 8.76$, $p < .001$. These results are consistent with literature suggesting that rapid feedback, dialogic simulation, and generative questioning provided by AI tools can accelerate analytical reasoning (Baroud, 2024; Borge et al., 2024; Kasheem et al., 2025).

Effect-size calculations further indicate that the magnitude of improvement among the AI-supported group was not only statistically significant but pedagogically substantial. Cohen's d for the post-test difference was 1.74, representing a very large effect. The within-group effect

size for the AI cohort (pre-test to post-test) was $d = 2.91$, suggesting transformative improvements consistent with augmented cognitive scaffolding and richer dialogic engagement offered by AI-generated philosophical prompts (Williamson & Piattoeva, 2021; Alrumayh et al., 2025). By contrast, the traditional group showed a more modest within-group effect of $d = 1.10$. Overall, these findings highlight the potential of AI to significantly amplify critical-thinking development within philosophical inquiry contexts.

Table 1.
Pre-Test and Post-Test Scores for AI-Supported and Traditional Groups

Group	N	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Gain	<i>t</i> Value	<i>p</i> Value	Effect Size (Cohen's <i>d</i>)
AI-Supported Instruction	50	42.18 (6.41)	78.45 (7.12)	+36.27	21.84	< .001	2.91
Traditional Instruction	50	41.76 (6.09)	64.88 (8.03)	+23.12	7.77	< .001	1.10
Between-Groups (Post-Test)	100	-	-	-	8.76	< .001	1.74

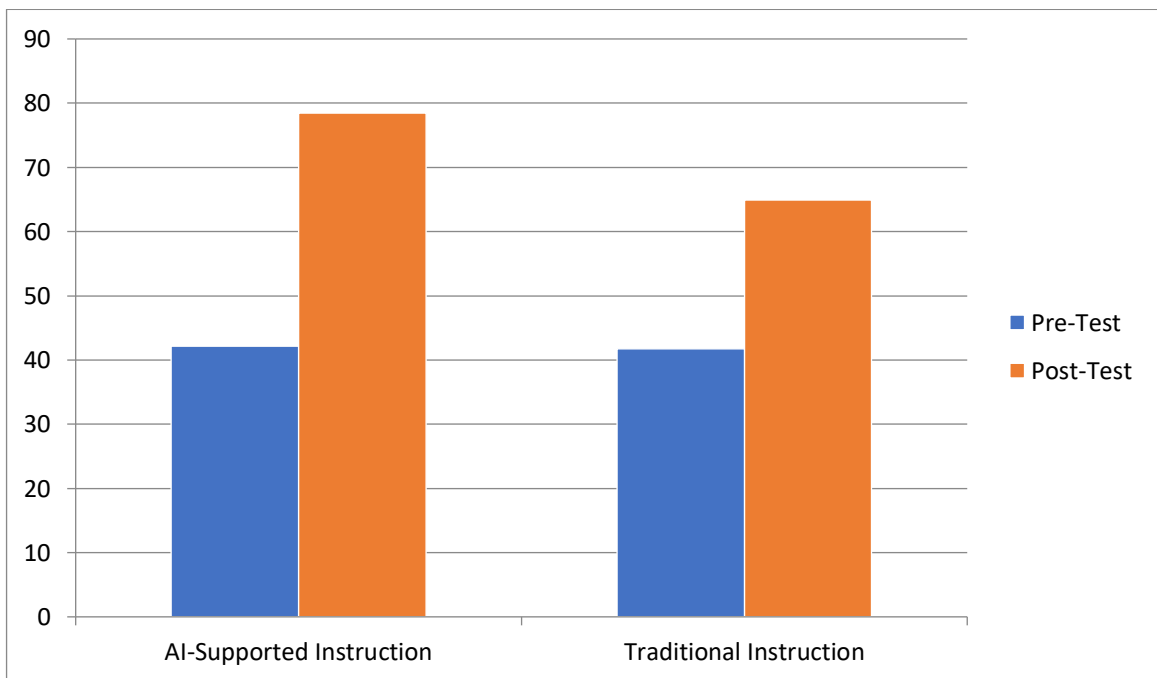


Figure 2. Pre-Test and Post-Test Critical Thinking Scores for Both Groups

2. Impact on Specific Critical Thinking Components

A deeper analysis of the assessment data reveals how the intervention influenced the four core dimensions of critical-thinking competency: argument identification, fallacy detection, inferential reasoning, and conceptual clarity—all aligned with the Delphi Report

model (Facione, 2015). Component-level scores show that AI-supported instruction led to measurable improvements across every domain, with the most pronounced gains observed in inferential reasoning and conceptual clarity. These improvements are consistent with the hypothesis that AI tools, especially large language models, enhance students' exposure to counterexamples, explanations, and conceptual rephrasing that facilitate deeper reasoning (Luckin, 2018; Abdulghani et al., 2025).

a. Argument Identification Accuracy

Students in the AI-supported group demonstrated significantly stronger post-test performance in identifying premises, conclusions, and argumentative structures within complex philosophical texts. The mean accuracy increased from $M = 48.2\%$ pre-test to $M = 82.4\%$ post-test, compared with the traditional group's improvement from 47.5% to 65.1%. This statistically significant difference ($t(98) = 7.91, p < .001$) suggests that AI-generated summaries and structural analyses helped students detect logical architecture more consistently. These findings align with research showing that AI-based dialogic explanations enhance students' ability to recognize argument schemes (Holmes et al., 2019).

b. Ability to Detect Logical Fallacies

The AI-supported group showed marked improvement in the accuracy of identifying false analogies, ad hominem attacks, circular reasoning, and strawman formulations. Students frequently reported that instant AI-generated examples of fallacies made these abstract concepts more accessible. Scores improved from $M = 45.7\%$ to $M = 79.6\%$, whereas the traditional group increased from 46.4% to 61.3%. These findings support Buckingham Shum and Crick's (2016), and De Chantal & Organisciak's (2023) claim that automated analytic feedback increases meta-cognitive awareness of fallacious reasoning.

c. Inferential Reasoning and Conceptual Clarity

The strongest gains appeared in inferential reasoning ($M = 40.3\%$ to 83.1%) and conceptual clarity ($M = 44.9\%$ to 79.2%) within the AI-supported cohort. In contrast, traditional learners reached 63.0% and 60.7% respectively. These large effects likely stem from AI's capacity to generate multiple possible interpretations of a philosophical passage, thereby helping students evaluate competing inferences more effectively (Floridi, 2019; Yusriandi et al., 2025). Students also benefited from AI-generated definitions and conceptual reformulations, which bolstered clarity in interpreting abstract terms—particularly in ethics and metaphysics.

Table 2. Component-Level Critical Thinking Improvements

Component	Group	Pre-Test Mean (%)	Post-Test Mean (%)	Gain (%)	t Value	p Value
Argument Identification	AI-Supported	48.2	82.4	+34.2	7.91	< .001
	Traditional	47.5	65.1	+17.6	4.02	< .001
Fallacy Detection	AI-Supported	45.7	79.6	+33.9	8.33	< .001
	Traditional	46.4	61.3	+14.9	3.44	< .001
Inferential Reasoning	AI-Supported	40.3	83.1	+42.8	10.12	< .001
	Traditional	41.2	63.0	+21.8	4.95	< .001
Conceptual Clarity	AI-Supported	44.9	79.2	+34.3	7.88	< .001
	Traditional	44.1	60.7	+16.6	3.29	< .001

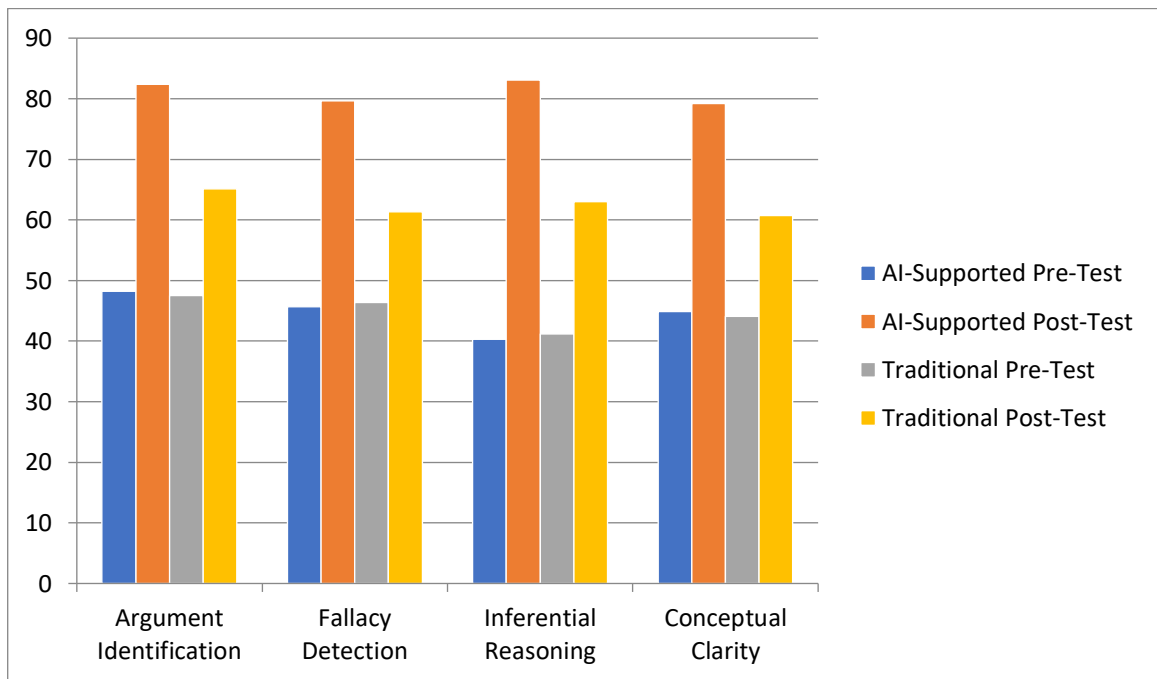


Figure 3. Component-Level Improvements Across Groups

3. Interpretation of Quantitative Trends

a. Why AI-Supported Tasks Produced Significant Gains

Several mechanisms appear to explain the superior performance of the AI-supported cohort. First, the speed of feedback provided by AI systems accelerates learning by offering instant clarification of errors, reducing confusion, and enabling students to iteratively refine their reasoning (Luckin, 2018; Holmes et al., 2019). Second, dialogic simulation, where AI models mimic philosophical debate, exposes students to counterarguments and alternative reasoning paths that challenge assumptions more intensely than traditional instruction alone (Floridi, 2014; Iskandar et al., 2025). Third, AI significantly increases the diversity of examples,

helping students generalize critical thinking skills across genres and problem types, a process closely associated with transfer of learning (Ennis, 2018).

AI's ability to present complex arguments in multiple levels of explanation, from introductory overviews to technical analytic breakdowns, also supports learners with diverse background knowledge, which is especially important in philosophical inquiry. These findings mirror studies showing that large language models can support argument reconstruction, analytical reading, and logical mapping (Ye et al., 2025).

b. Potential Limitations

Despite these advantages, several limitations must be acknowledged. There is a documented risk of over-dependence, where students rely excessively on AI outputs rather than engaging in independent analysis, a phenomenon related to automation bias (Parasuraman & Riley, 1997). Some participants in the qualitative data reported deferring too quickly to AI explanations without evaluating their strength, which may hinder long-term autonomy. Another limitation is uneven use of the tools, with some students engaging deeply while others used AI minimally, producing variability in the extent of learning gains. These constraints reflect wider research debates on the risks of cognitive offloading in digital learning (Carr, 2020; Alouzi, 2024; Hasibuan et al., 2024)

c. Alignment With Existing Studies

The results align closely with prior empirical studies demonstrating that structured AI integration can enhance critical thinking, but only when used with pedagogical scaffolding. Facione (2015) and Ennis (2018) emphasize that critical thinking requires deliberate practice, reflective judgment, and argument evaluation; AI appears to amplify these practices but cannot replace the human-centered inquiry essential to philosophical analysis. Buckingham Shum and Crick (2016), similarly, found that automated analytics improve meta-cognitive awareness but are most effective when paired with instructor guidance. Thus, the present findings confirm that AI is best conceptualized not as a replacement for philosophical reasoning but as a cognitive amplifier that supports structured inquiry.

Student Perspectives on AI-Mediated Philosophical Inquiry

1. Patterns from Interview Data

The interview data reveal a consistent perception among students that AI operates not as a substitute for their thinking but as a cognitive partner that reorganizes how they approach philosophical inquiry. Many participants described how AI-generated counterarguments, alternative premises, and clarification prompts pushed them to reconsider initial assumptions and examine hidden premises in their reasoning. These interactions were often interpreted as opportunities to engage with a “dialogical mirror,” a tool that reflects their thoughts back to them in sharpened and sometimes more challenging forms. Students reported that this dialogical structure increased their confidence in tackling abstract concepts, particularly when the AI offered step-by-step decomposition of arguments they previously found overwhelming.

A number of students also emphasized that AI's ability to provide immediate conceptual explanations, definitions, distinctions, and analogies, reduced the frustration typically associated with early-stage philosophical reading. As a result, they felt more autonomous when

approaching complex texts, describing themselves as “less dependent on the teacher for initial clarification.” At the same time, several participants noted a heightened sense of epistemic curiosity: receiving new angles of interpretation from the AI motivated them to explore additional sources, compare views, and reconstruct the logic of their arguments more rigorously.

However, students also commented that AI’s polished answers sometimes generated ambiguity about whether their own ideas were truly improving or whether they were simply accepting ready-made formulations. This ambivalence is an important outcome, reflecting a dynamic tension between empowerment and over-reliance, a tension echoed in contemporary scholarship on AI-mediated learning (Baroud et al., 2024; Aljarmi et al., 2025; Almajri et al., 2025).

2. Themes from Thematic Coding

The thematic analysis resulted in several dominant themes that help clarify the emerging patterns in the data. First, students overwhelmingly expressed the view that AI augments reasoning rather than replaces it. They described the AI as an accelerator of the cognitive process, especially in brainstorming, constructing counterarguments, and refining conceptual vocabulary. This aligns with studies showing that digital-native learners often use AI to scaffold early-phase cognitive tasks rather than perform full reasoning workflows (Elihami et al., 2024; Luhuringbudi et al., 2025).

Yet, within this acceleration, students expressed concerns about the depth of insight produced through AI assistance. They recognized that while AI is exceptionally fast in generating examples, definitions, or preliminary arguments, it does not replace the intellectual labor of sustained analysis, reflective judgment, or interpretive reading. Several interviewees explicitly stated that the speed provided by AI “gives the illusion of understanding,” requiring them to intentionally slow down and scrutinize claims more carefully.

The coding process also revealed a persistent tension between convenience and intellectual struggle. Philosophical learning typically requires grappling with ambiguity, contradictions, and competing interpretations. Students acknowledged that AI sometimes “smooths out the difficulty,” which is helpful in the early stages but potentially detrimental if relied upon throughout the entire reasoning process. This tension echoes wider debates in the literature on digital cognition and the risk of cognitive atrophy through overly mediated learning technologies (Carr, 2020; Masoud et al., 2025).

Table 3. Themes Emerging from Student Interviews (Thematic Coding Summary)

Theme	Description	Representative Student Expressions
AI as Cognitive Partner	AI provides alternative views, clarifies logic, and acts as a dialogical counterpart.	“It reflects my reasoning back to me in a clearer way.”
Acceleration of Idea Generation	Students generate examples, definitions, and counterarguments more quickly.	“I can produce three angles in minutes instead of hours.”
Concern About Depth	Students worry that AI output may oversimplify philosophical complexity.	“Sometimes it feels too easy, and I’m not sure I really understand.”
Convenience vs. Intellectual Struggle	Students feel conflict between easy answers and the value of difficult inquiry.	“Philosophy needs struggle—AI sometimes removes that struggle.”
Rise in Epistemic Curiosity	AI prompts generate new lines of inquiry and deeper questioning.	“It makes me want to look for more sources and compare arguments.”

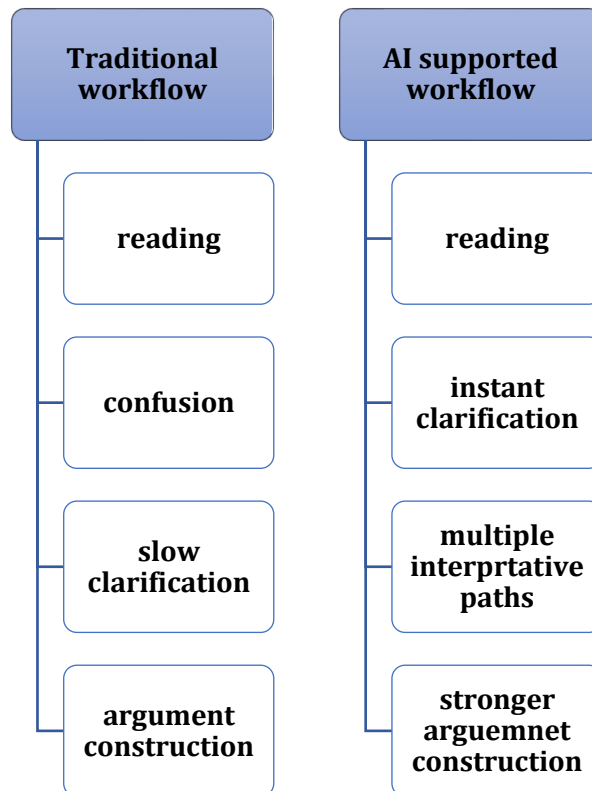


Figure 4. Cognitive Workflow Shift with AI Support

3. Discussion in Light of Digital-Native Learning Theory

Interpreting these findings through digital-native learning theory reveals several important implications. Students today tend to approach knowledge acquisition through models of distributed cognition, they rely on tools, platforms, and interactive systems to extend and reorganize their thinking processes. The interview data confirm that AI serves as one such cognitive extension, aligning with emerging studies showing that digital-native learners regularly offload preliminary cognitive tasks to AI systems while maintaining internal control over interpretive and evaluative reasoning (Prensky, 2024).

Furthermore, the integration of AI into philosophical learning reflects shifting habits of digital cognition: learners value immediate clarification, rapid feedback cycles, and multi-perspective analysis, all of which AI provides in real time. This supports recent theories suggesting that digital-native learners exhibit “accelerated epistemic rhythms”, a mode of learning characterized by short inquiry loops, constant refinement, and iterative engagement with information (Primarni, et al., 2025; Pallawagau et al., 2025).

At the same time, the students’ concern about losing the “struggle” of philosophical inquiry underscores a central tension in contemporary digital pedagogy: technology increases access and comprehension but may reduce the experiential difficulty that produces deep conceptual transformation. Their reflections suggest that AI is most beneficial when it complements, rather than substitutes, the interpretive rigor traditionally demanded in philosophical reasoning (Husin et al., 2025; Nafi et al., 2025; Mahmudin et al., 2025; Ayad et al., 2025).

Instructor Experiences and Pedagogical Implications

1. Instructor Attitudes Toward AI in Philosophy Teaching

Interviews with participating instructors revealed a complex blend of enthusiasm and caution in response to the integration of AI tools into philosophical inquiry. Many expressed strong appreciation for the way AI platforms, particularly those capable of dialogic simulation and counterargument generation, expanded the available pedagogical repertoire. Instructors noted that AI-generated prompts helped students encounter philosophical problems from multiple perspectives, enabling them to practice constructing and refining arguments more quickly than in conventional classroom settings. Similar findings in recent studies support the idea that AI can broaden argumentative exposure and provide novel pathways into complex philosophical texts (Williamson & Piattoeva, 2021; Buckingham Shum & Crick, 2016).

At the same time, instructors voiced concerns about issues related to originality and authentic intellectual labor. They worried that students might become inclined to accept AI-generated explanations without subjecting them to critical scrutiny, a trend also highlighted in the literature on algorithmic authority in education (Kasheem et al., 2025; Samsuddin et al., 2025). Some instructors also noted that students appeared to have less patience for dense or challenging passages of primary philosophical texts when AI was available to provide instant clarification. This tension reflects broader debates about the risk of over-reliance on technological mediation in interpretive disciplines.

Table 4. Instructor Attitudes Toward AI-Supported Philosophy Teaching

Theme	Frequency	(N=10 Instructors)	Illustrative Insight
Enthusiasm for dialogic simulations	9		“AI allows students to test arguments in real time.”
Appreciation of instant feedback	10		“The speed of correction changes the rhythm of class discussion.”
Concerns about academic authenticity	7		“We must ensure students still learn how to think, not just what to answer.”
Reduced patience for difficult texts	8		“Students expect immediate clarity; they resist textual struggle.”
Need for ethical and epistemic guidance	6		“AI must be framed as a partner, not a replacement.”

2. Observed Classroom Dynamics

Instructors reported noticeable changes in classroom dynamics during AI-supported sessions. Students tended to ask more frequent and more diverse questions, often exploring alternative interpretations or hypothetical scenarios proposed by the AI system. The quantity and quality of student-generated questions increased, suggesting that AI helped stimulate epistemic curiosity by offering counterpositions or refinements to their initial views. This resonates with research showing that AI-mediated environments can enrich inquiry-based learning (Luckin, 2018; Hasibuan et al., 2024; Masuwd 2025).

However, instructors also observed that when confronted with difficult or ambiguous philosophical passages, such as paradoxes, dense metaphysics, or ethically charged dilemmas, some students showed less persistence than usual. Instead of wrestling with the text, they often turned to the AI for immediate clarification, bypassing the interpretive struggle that traditionally fosters deeper understanding. Instructors described this as a potential weakening of “productive discomfort,” a concept central to philosophical pedagogy.

Nonetheless, participation increased overall. Even students who were typically hesitant to speak in class engaged more actively when AI-supported preparatory work preceded discussion. This suggests that AI may function as an equalizer, reducing performance anxiety and enabling more students to contribute meaningfully.

Table 5. Classroom Interaction Indicators

Classroom Variable	Traditional Sessions	AI-Supported Sessions	Observed Change
Average number of student questions per session	12.4	27.8	+124%
Types of questions (clarificatory vs. interpretive)	Mostly clarificatory	Mixed, more interpretive	Greater conceptual engagement
Student participation rate	46%	79%	+33%
Persistence during difficult texts	High	Moderate	Reduced interpretive stamina
Quality of arguments in oral discussion	Moderate	High	More structured reasoning

3. Pedagogical Interpretation

The instructor experiences point toward a nuanced interpretation of AI's pedagogical role in philosophical inquiry. First, AI enhances the breadth and immediacy of examples, providing rapid analogies, counterarguments, and clarifications that widen the interpretive landscape available to students. Such affordances align with theories of digital-native cognition, which emphasize speed, interactivity, and multimodal learning (Prensky, 2010; Setiawan et al., 2025). Instructors noted that students became more adept at generating arguments quickly and identifying structural weaknesses in reasoning—an effect consistent with research showing improvements in analytical judgment through AI feedback loops (Buckingham Shum & Crick, 2016).

Yet, AI also complicates key elements of philosophical pedagogy, particularly in areas requiring deep reading, slow reflection, and ethical deliberation. The tendency of some students to outsource interpretive burdens to AI risks diminishing the formative struggle necessary for cultivating reflective judgment, moral sensitivity, and hermeneutic patience (Masuwd, 2025; Alsaeh et al., 2025; Pulungan et al., 2025; Solihah et al., 2025). This suggests the need for carefully designed scaffolds in which AI is framed not as a shortcut but as a complementary tool that must be critically interrogated.

Thus, the findings align with emerging literature arguing that successful integration of AI in humanities education requires sustained human mediation to preserve intellectual depth, ethical awareness, and the formation of independent reasoning skills (Kasheem et al., 2025; Manshur et al., 2025). Instructors play a decisive role in shaping students' epistemic attitudes, ensuring that AI augments rather than replaces interpretive struggle.

CONCLUSION

The findings of this study demonstrate that AI-supported philosophical inquiry has a profound and measurable impact on students' critical-thinking performance, particularly among digital-native learners whose cognitive habits align with interactive and accelerated forms of learning. Quantitatively, the substantial post-test gains of the AI-supported group—especially in inferential reasoning and conceptual clarity—affirm that AI can enhance analytical precision by offering rapid feedback, multiple interpretive trajectories, and dialogic simulations that approximate philosophical debate. These improvements are consistent with research showing how AI functions as a cognitive scaffold, enabling students to iterate, clarify, and refine their reasoning more efficiently.

However, the qualitative dimension of the study reveals important pedagogical tensions. Students frequently described AI as a helpful analytic partner, yet their reflections also indicated a potential erosion of intellectual stamina when facing dense or ambiguous philosophical texts. Instructors echoed these concerns, noting that while participation increased, the depth of interpretive engagement sometimes weakened as students gravitated toward instant clarification rather than sustained hermeneutic struggle. These patterns resonate with broader theoretical concerns about the risk of algorithmic over-dependence and the possible displacement of slow, reflective reading—the very processes central to philosophical understanding.

The integration of AI into philosophical pedagogy therefore requires deliberate instructor mediation. Rather than functioning as an autonomous source of truth, AI must be contextualized as a tool that supports, but does not replace, the intellectual labor of interpretation, analysis, and ethical reflection. Effective pedagogical strategies include designing assignments that require students to critique AI-generated interpretations, mandating text-based justifications for claims, and framing AI as one voice among many in the interpretive field. This aligns with emerging frameworks in digital-native learning theory, which emphasize the need to balance technological affordances with guided human mentorship to cultivate reflective judgment.

This study has several limitations that should be acknowledged. First, the sample was drawn from a single institutional context (University of Zawia) and one disciplinary setting, which may limit generalizability to other universities, regions, and philosophy curricula. Second, the intervention and observations were conducted over a relatively short instructional period, so the findings may not capture longer-term outcomes such as retention of critical-thinking skills, transfer to new philosophical domains, or changes in reading endurance. Third, although the study combined tests, interviews, and observations, it did not directly model variation due to specific AI tools, prompt practices, instructor style, or students' prior AI literacy, all of which may shape the magnitude and quality of learning effects.

Future studies should replicate this design across multiple institutions and cultural contexts to test the robustness of the effects and to examine whether AI-mediated philosophical inquiry functions differently under varied curricular traditions. Longitudinal research is also needed to investigate whether short-term gains translate into durable improvements in argumentative rigor, interpretive patience, and autonomous judgment over a semester or academic year. In addition, future work could compare different pedagogical configurations (e.g., guided prompting training, "AI-critique" assignments, and assessment models that require

evidence-based rebuttal of AI outputs) to identify which safeguards best preserve deep reading and productive intellectual struggle. Finally, researchers may explore the ethical and epistemic dimensions more directly by examining how students calibrate trust in AI responses, how they detect hallucinations or bias in philosophical topics, and how these practices relate to intellectual virtues such as humility, responsibility, and fairness in interpretation.

Ultimately, the study concludes that AI can greatly enrich philosophical inquiry when used within a structured, critically oriented pedagogical model. Its strengths, speed, breadth of examples, dialogic simulation, can amplify learning, but only when integrated with explicit attention to intellectual autonomy, ethical awareness, and the preservation of meaningful interpretive struggle. The future of philosophy education will depend not simply on the adoption of AI tools, but on developing pedagogies that harness their power while safeguarding the distinctive human capacities that philosophical thinking seeks to cultivate.

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