Asynchronous discussion forums in the age of AI tutors

Research paper

Executive summary

Generative AI has changed the baseline conditions of teaching and learning. In UK higher education, 95% of surveyed undergraduates reported using AI in at least one way in 2026 and 94% said they used generative AI for assessed work. Across OECD systems, around 37% of lower-secondary teachers reported using AI for their job in 2024. At the same time, rigorous evidence on conversational AI shows both promise and risk: well-designed AI tutoring can improve learning and efficiency, but poorly scaffolded use can raise performance in the moment without improving, and sometimes even harming, later unaided learning. [1]

This changes the educational purpose of asynchronous discussion forums rather than eliminating it. The strongest current evidence suggests that forums still serve functions that AI tutors do not reliably replicate: they support social presence and community, make student thinking visible over time, create durable artefacts for assessment and feedback, enable peer-to-peer explanation and allow slower reflection that can deepen metacognition and transfer. Social presence in online higher education has a moderate positive relationship with learning and satisfaction, while forum design choices such as role assignment, group size, instructor participation and prompt structure shape the quality of discourse and outcomes. [2]

The core conclusion of this paper is that forums are most defensible when they are not treated as generic "participation boards". Their distinctive value is as shared spaces for public reasoning, collaborative sense-making, reflective documentation and community building. AI tutors are strongest as private, immediate and personalised practice tools. Forums are strongest as communal, visible and accountable learning spaces. The most educationally productive model is therefore blended: AI before and after forum activity for rehearsal, feedback and clarification, with forums reserved for comparison of perspectives, synthesis, critique, reflective transfer and instructor-guided community knowledge building. [3]

Introduction

The question is no longer whether students and teachers use AI tutors and conversational systems. They do, and increasingly at scale. Institutional reports from HEPI and Kortext show near-universal student use in UK higher education, while OECD reporting indicates that a substantial minority of teachers already use AI professionally. This matters because AI now performs some tasks that once justified discussion boards, including answering questions, prompting explanations and giving instant feedback. [4]

Yet asynchronous forums are not merely slower versions of chat. Their pedagogical structure is different. Forums are persistent, many-to-many, visible to instructors and peers and paced in "slow time". That means they can preserve a record of how ideas change, surface disagreement, support accountable peer response and provide assessable evidence of participation in a community of inquiry. Junus et al. argue that the lag time and written record of asynchronous discussion allow deeper re-reading, reflection and analysis, particularly valuable where bandwidth is limited. More recent reviews similarly position cognitive presence and social presence as central to meaningful online learning. [5]

This paper argues that in the age of AI tutors, the educational purpose of asynchronous forums is no longer to provide students with basic help or generic interaction. Their stronger rationale is to support public sense-making that is social, inspectable and cumulative. AI tutors may solve individual problems quickly. Forums still matter because they help learners explain, justify, compare, belong and remember together. That distinction is especially important across K-12, higher education and adult learning, where the balance between individual support and communal inquiry differs by context. [6]

Literature review

The last decade of forum research points to a clearer and more selective view of value. Systematic reviews by Fehrman and Watson, Sadaf et al. and Moore and Miller show that asynchronous discussion is most effective when it is deliberately designed to foster cognitive presence rather than left as unstructured posting. A 2025 meta-analysis found that social presence has a moderate positive effect on both learning and satisfaction in higher education online environments, reinforcing the idea that peer visibility and relational discourse are not side benefits, but part of the mechanism of learning itself. [7]

Empirical studies clarify what this looks like in practice. In a MOOC, Chiu and Hew found that forum viewing and commenting predicted peer learning and performance, suggesting that the educational value of forums includes "legitimate peripheral participation" through reading as well as posting. Galikyan et al. analysed 608 MOOC learners and found that the cognitive and social dimensions of forum participation interact, with the social dimension moderating the relationship between low-level cognitive engagement and learning. In higher education, Luo et al. found that assigning simple discussion roles and using smaller groups improved peer interaction and slightly improved learning achievement. In adult learning, Lin and Sun found that different discussion tasks shape interaction differently, with student-generated problem-based case discussion rated most effective and debate least effective. [8]

Recent studies also show that forums remain valuable where reflection and situated learning matter. Aderibigbe et al. used forums to document undergraduate workplace learning in an Emirati university and found that students used them to reflect on challenges, share knowledge and connect university learning to professional practice. Kourkouli's work on online teacher communities found that in-depth forum discussion is

promoted by a combination of strong direct instruction and high affective and cohesive social presence. These findings point to roles for forums that are difficult to reduce to one-to-one AI exchange: communal reflection, professional identity formation and knowledge sharing across contexts. [9]

The AI literature presents a different profile. Meta-analytic evidence suggests that AI chatbots can positively affect learning outcomes, particularly in higher education and in short interventions. Primary studies reinforce this. Pardos and Bhandari found that ChatGPT-generated mathematics help produced statistically significant learning gains and performed comparably to human tutor-authored help in their design. Kestin et al. reported large gains for an AI tutor compared with in-class active learning in university physics, with higher engagement and lower median time on task. However, Bastani et al. found that access to GPT-4 without guardrails could improve immediate performance while reducing later unaided performance, a pattern also highlighted in OECD and Stanford syntheses. [10]

A small but growing body of literature examines AI within forums rather than against them. Yoshida et al.'s 2026 scoping review found that AI in discussion forums is used mainly as chatbots, GenAI and recommendation or evaluation tools, most often in student-AI-teacher partnerships where teacher checks remain important. Crucially, the review also reports that research in this area is still immature, often case-based and weak on analysis of the actual scholarly communication produced. This suggests that the strongest future use case may not be replacement of forums by AI, but augmentation of forum learning with AI services around search, clustering, feedback and participation support. [11]

Methodology

This paper uses a rapid narrative evidence synthesis conducted in July 2026. It prioritised English-language sources from 2016 to 2026, with selective use of earlier landmark work only where needed to explain enduring concepts such as the Community of Inquiry framework. Sources were prioritised in this order: peer-reviewed meta-analyses and systematic reviews, recent primary empirical studies, then institutional reports from OECD, Stanford and HEPI where they addressed current adoption and policy conditions. [12]

Inclusion criteria required that sources speak to at least one of the following dimensions: social learning, reflection, assessment, equity, scalability, instructor workload, metacognition or community building. Studies were selected to cover K-12, higher education, MOOCs and adult or continuing education. This is not a formal systematic review or meta-analysis, and the evidence base remains heterogeneous across context, design quality and outcome measures. [13]

Findings

The first enduring purpose of forums is **slow, visible thinking**. Asynchronous writing externalises reasoning in ways that can be reread, questioned and revised. This supports

deliberation and retrospective analysis by both students and instructors. Junus et al. explicitly argue that the delay and written record of asynchronous forums promote critical thought and metacognitive monitoring. Adult-learning research reaches a similar conclusion: forums give learners flexibility, adjustable pace and room to organise thought before contribution. [14]

The second purpose is **social knowledge construction**. AI tutors can personalise dialogue, but they do not automatically create a learning community. By contrast, forum research repeatedly links learning with the interplay of social and cognitive presence. Social presence has a moderate positive relationship with learning and satisfaction, while teacher-community studies show that affective and cohesive discourse are part of what makes discussion educationally effective. In workplace and professional contexts, forums also support belonging, knowledge sharing and identity formation. [15]

The third purpose is **assessment and instructional visibility**. Forums create a semi-public trace of how students reason, respond to others and revise positions. This gives educators a durable artefact for formative assessment, moderation and feedback. It also gives institutions something AI chats often lack: a shared record inside the course environment. That matters more, not less, when AI use is widespread and often occurs outside institutional visibility. HEPI's 2026 survey and the OECD's 2026 Outlook both stress that AI is increasingly used beyond institutional control and that assessment design needs to respond accordingly. [16]

The fourth purpose is **peer explanation and comparison of perspectives**. Studies of MOOC forums, roles and group size suggest that students learn not only by producing answers but by viewing, comparing and responding to others' ideas. Role structures and careful moderation increase participation and interaction, while public instructor presence can increase student-to-student interaction. These are properties of distributed discourse. They are not fully substitutable by a private AI tutor that optimises for one learner at a time. [17]

At the same time, forums are **not** best at everything. AI tutors are stronger for immediate challenge-response cycles, error correction and individual pacing. The strongest recent AI studies show substantial gains in tightly designed settings. But the same literature sets clear boundaries: if AI does the cognitive work for students, learning may not transfer when support is removed. K-12 evidence also suggests that AI can dominate dialogue and elicit less student-generated content than human facilitation, especially for affective and future-oriented reflection. [18]

Discussion

Taken together, the evidence suggests that asynchronous forums have become **more specialised**, not obsolete. Their educational purpose now lies less in replacing office hours or answering routine questions and more in organising collective inquiry. In other words, AI tutors are increasingly good at helping a learner think *with* a tool, while forums

remain valuable for helping learners think *with and against other people*. That distinction has implications across sectors. [19]

In K-12 settings, forums and structured asynchronous discussion can protect student voice from being overshadowed by conversational AI, particularly where teachers want evidence of reading response, civic discourse or reflective growth. Liao's elementary book-talk study is a warning that conversational fluency is not the same as pedagogical fit: the AI sustained longer exchanges, but teacher-led discussion elicited more student contribution and deeper emotional and future-oriented reflection. [20]

In higher education, the widespread student use of AI makes forums more useful as **process-oriented assessment spaces**. The aim should not be counting posts. It should be requiring students to compare perspectives, cite peers, expose reasoning and document revision. This raises the evidentiary value of the task and aligns better with a world in which students can obtain private AI assistance at any time. [21]

In adult and continuing education, forums remain particularly strong for flexibility and work-integrated reflection. The ability to connect practice experiences, workplace problems and peer responses over time is a core strength that AI tutoring can support but not replace. [22]

Practical recommendations for educators and institutions

For educators, the strongest design principle is to reserve forums for tasks that benefit from **public, comparative and cumulative reasoning**. Use them for case comparison, reflective transfer, peer critique, debate with evidence, workplace reflection and collaborative synthesis. Use AI tutors before or after the forum for private rehearsal, quick clarification, misconception checking or drafting alternative explanations. [23]

For forum design, evidence supports a compact set of practices: small groups where appropriate, explicit prompts, clear rubrics, assigned roles where helpful, visible but not overwhelming instructor presence and regular synthesis posts that close the loop. Student-generated problem-based cases appear especially promising for adult learners, while public instructor replies can increase peer interaction relative to private grade comments. [24]

For institutions, the priority is governance and integration. AI should not be treated as an external threat while forums remain unchanged. Institutions need aligned LMS design, AI literacy support, assessment guidance, privacy safeguards and staff development. They should also protect equitable participation by maintaining low-bandwidth asynchronous options and ensuring that students who arrive with weak AI experience or limited confidence are not disadvantaged. [25]

Limitations

The evidence base has important limits. Direct head-to-head comparisons of asynchronous forums and AI tutors are scarce. Forum research is still weighted toward

higher education, MOOCs and self-report or content-analysis designs. AI studies are newer and often stronger experimentally, but they are frequently short-term, domain-specific or based on bespoke systems not yet widely available. Stanford's 2026 review explicitly notes that rigorous K-12 evidence remains thin. Yoshida et al. also show that AI-supported forum research often relies on ambiguous case-study cohorts and under-analyses the actual quality of discourse. [26]

Conclusion

Asynchronous discussion forums still serve a distinct educational purpose in the age of AI tutors, but only when used for what they are uniquely good at. Their value lies in creating visible, social and assessable spaces for reflection, explanation, disagreement, community and collective memory. AI tutors now outperform forums for instant, individualised help. Forums still outperform AI tutors for accountable discourse, peer comparison, durable reasoning traces and community formation. The most defensible future is therefore not forums or AI, but forums **because** of AI: as the public counterweight to private conversational assistance and as the place where learning becomes shared, inspectable and educationally meaningful. [27]

Empirical studies snapshot

Author and year	Context	Method	Sample	Key findings
Junus et al. 2019 [28]	First-year computer science, Indonesia	Quasi-experimental CoI training	89 students	CoI training increased metacognitive ability and improved answers to open questions requiring argument, even though exam averages did not significantly differ.
Chiu and Hew 2018 [29]	Two US MOOCs in humanities and art	Learning analytics and regression	Two MOOC datasets	Viewing forum messages predicted peer learning and performance more strongly than commenting, showing value in reading as well as posting.
Galikyan et al. 2021 [30]	MOOC environment	Content analysis and regression	608 learners	Cognitive and social forum dimensions interact. Low-level cognitive engagement is negatively associated with performance and social participation

Author and year	Context	Method	Sample	Key findings
				moderates that relationship.
Lin and Sun 2022 [31]	Graduate adult learners in fully asynchronous online course	Survey-based quantitative study	Two course sections, 28 enrolments	All four discussion formats supported interaction, but student-generated problem-based case discussion was rated most effective and debate least effective.
Luo et al. 2023 [32]	Undergraduate blended course	Randomised factorial experiment	112 participants	Simple role structures increased participation and peer interaction. Groups of three showed slightly better learning achievement than medium-sized groups.
Pardos and Bhandari 2024 [33]	Mathematics learning support	Controlled efficacy study	274 learners	ChatGPT-generated hints produced statistically significant learning gains and performed comparably to human tutor-authored help.
Bastani et al. 2024 [34]	High school mathematics	Field experiment	Nearly 1,000 students	GPT-based tutors improved immediate performance, but unrestricted GPT use reduced later unaided performance. Safeguarded tutoring mitigated much of the harm.
Kestin et al. 2025 [35]	University physics	Randomised crossover trial	316 students overall	AI tutoring produced larger learning gains than in-class active learning, higher engagement and lower median time on task, but only in a tightly scaffolded design.

Comparative analysis

The table below synthesises the current evidence base. It is interpretive rather than meta-analytic and should be read as a design guide rather than a ranking.

Pedagogical dimension	Asynchronous forums	AI tutors	Design implication
Social learning	Strong for peer explanation, perspective-taking and social presence, which is linked to learning and satisfaction. [36]	Weaker by default because interaction is usually one-to-one and not community-forming. [37]	Use forums for comparison, critique and collaborative synthesis.
Reflection	Strong because lag time and written records support rereading, revision and slower thought. [14]	Moderate: can prompt reflection, but often optimised for immediate response. [38]	Put reflective prompts and transfer tasks in forums, not chat alone.
Assessment	Strong for visible reasoning traces and formative moderation inside the LMS. [39]	Variable. Powerful when intentionally designed, but much use happens outside institutional visibility. [40]	Assess thread quality, revision and peer response rather than post count.
Equity	Flexible, low-bandwidth and schedule-friendly, especially for adult learners and constrained contexts. [14]	Can widen access to help, but depends on devices, literacy and tool quality. OECD and HEPI both flag uneven support and institutional inconsistency. [40]	Keep low-tech asynchronous pathways and provide AI induction.
Scalability	Good for cohort knowledge sharing, but moderation can be burdensome. [41]	Excellent for instant, personalised response at scale. [42]	Use AI for first-line support and forums for higher-value communal tasks.
Instructor workload	Moderate to high unless prompts, roles and summarising routines are carefully designed. [43]	Can reduce repetitive support work, though governance and checking still matter. [44]	Shift staff time from answering routine questions to moderating quality discourse.
Metacognition	Strong when roles,	Potentially strong, but risk	Use AI for

Pedagogical dimension	Asynchronous forums	AI tutors	Design implication
	prompts and reflection phases are built in. [45]	of "metacognitive laziness" if students offload thinking. [46]	scaffolding, then require public justification in forums.
Community building	Core strength, especially in professional and work-integrated contexts. [9]	Weak unless embedded in broader human structures. [47]	Treat forums as community infrastructure, not disposable add-ons.

Visual synthesis

Indicative comparison of pedagogical strengths

Figure: Author synthesis of relative pedagogical strengths based on the recent literature. Ratings are interpretive and not direct effect sizes. They reflect the evidence that forums are relatively stronger for social learning, reflection, community and auditable discourse, while AI tutors are relatively stronger for immediacy and individual scalability. [48]

Blended model: AI supports private practice and immediate feedback, while forums carry the heavier work of public reasoning, community and visible assessment. This sequencing is consistent with OECD guidance on pedagogical intent, Bastani et al.'s caution about unsupported offloading and Yoshida et al.'s finding that AI-in-forum models still rely heavily on teacher mediation. [49]

Supporting presentation

Title slide

- **Title:** Asynchronous discussion forums in the age of AI tutors
- **Subtitle:** What educational purpose remains, and how should institutions redesign for it?
- **Presenter note:** Forums are not obsolete. Their value has shifted from routine interaction to visible, communal and assessable reasoning. [50]

Executive summary slide

- AI tutors now provide fast, personalised and scalable support
- Forums still matter for social presence, reflection, community and assessable discourse
- Best model is not substitution but functional differentiation
- Recommended principle: **AI for private practice, forums for public reasoning** [51]

Why this question matters slide

- 95% of UK undergraduates report some AI use and 94% use generative AI for assessed work
- Around one in three lower-secondary teachers across OECD systems report AI use
- Institutions therefore need activities that remain meaningful when instant conversational help is always available [52]

What the forum literature says slide

- Social presence has a moderate positive relationship with learning and satisfaction
- Cognitive presence depends heavily on task structure and facilitation
- Role assignment and small groups improve participation and peer interaction
- Problem-based case discussions are especially effective for adult learners [53]

What the AI tutor literature says slide

- AI chatbots show positive learning effects in meta-analysis
- ChatGPT-generated maths help can match human-authored help
- Carefully designed AI tutors can outperform active learning in tightly bounded tasks
- Unrestricted AI can improve short-run performance while harming later unaided learning [54]

Comparative table slide

Dimension	Forums	AI tutors
Social learning	Strong	Limited by default
Reflection	Strong	Moderate
Assessment visibility	Strong	Variable
Equity and flexibility	Strong in low-bandwidth and adult contexts	Strong when access and training exist
Scalability	Good for cohort knowledge	Excellent for individual support
Instructor workload	Higher moderation load	Lower routine support load
Metacognition	Strong when structured	Strong only with safeguards

Dimension	Forums	AI tutors
Community building	Core strength	Weak unless embedded

- Presenter note: the choice is not binary. Different tools serve different pedagogical functions. [55]

Key evidence slide

- **MOOCs:** forum viewing and contribution patterns predict learning and performance [56]
- **Higher education:** CoI training improves metacognition and quality of argument [28]
- **Adult learning:** problem-based case discussions outperform debate for perceived effectiveness [31]
- **K-12 AI caution:** elementary AI "book talk" produced longer conversations but less student voice and weaker deep reflection [20]

Case studies slide

- **Case study: high school maths**
- GPT Base and GPT Tutor improved immediate performance
- Only safeguarded design reduced later harm when students worked unaided [34]
- **Case study: Emirati university internships**
- forums supported asynchronous reflection on workplace challenges and skills transfer [57]
- **Case study: online teacher communities**
- strongest in-depth discussion occurred when direct instruction was combined with cohesive and affective social presence [58]

Recommended design practices slide

- Use forums for tasks that require comparison of perspective, evidence and revision
- Ask students to bring an AI-assisted draft, confusion or counterargument into the forum
- Use small groups, role prompts and explicit rubrics
- Grade quality of synthesis, response and reflection, not mere frequency
- End each cycle with instructor synthesis and next-step guidance [59]

Implications for institutions slide

- Redesign assessment for visible process and collaborative reasoning
- Provide AI literacy and forum-participation guidance together
- Retain inclusive, low-bandwidth asynchronous options

- Integrate AI ethically inside LMS workflows where possible rather than leaving all use external and invisible
- Invest in staff development for moderation, summarising and governance [60]

Next steps slide

- Audit existing discussion boards: remove low-value "post once, reply twice" tasks
- Pilot blended workflows: AI rehearsal → forum reasoning → instructor synthesis
- Track not just participation counts, but discourse quality, transfer and belonging
- Commission research on direct comparisons of forum-only, AI-only and blended designs across K-12, HE and adult learning
- Fill evidence gaps on long-term transfer, equity and scholarly communication quality [26]

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