

Epistemic Ecologies of English Language Education: AI and the Reimagining of Pedagogic Praxis

Santosh Mahapatra, Cherry Mathew & Aalla Sai Divija Vaishnavi

Abstract

The proposed paper aims to make a case for a transformative approach to English language education (ELE) in light of Elgin's theory of epistemic ecology, which seeks to address the emerging challenges posed by the proliferation of AI tools and technologies. It is pertinent for the ELE community to consider how it can leverage its advantages and overcome the AI challenges by adopting an ecologically viable approach. This article analyses aspects of AI ethics, the classroom integration of AI into methodology, materials, and assessment, and the development of teachers' AI literacy within a theoretical framework grounded in Elgin's theory. It makes a case for a reconceptualised pedagogical praxis that can help teachers and researchers in ELE remain indispensable and relevant.

Keywords: Epistemic ecology, English language education, AI literacy, teachers

Introduction

There was a seismic shift in the epistemological foundations of ELE after the release of GPT-3.5 in late 2022. While many of the earlier revolutionary digital technologies fostered and enabled guided practice, ChatGPT, a generative artificial intelligence tool, altered text generation, meaning-making, and language choices to a great extent. This shift challenged long-held notions of authorship and agency, as well as how languages were learned and used. The tremors of these foundational changes were felt in ELE classrooms, which saw a marked increase in cognitive laziness. Suddenly, text production became easy

and accessible without any prolonged practice. Now, the situation poses an existential challenge to English language teachers and, as a result, AI literacy has been added to the long list of professional competencies they are required to possess. This moment, though it appears to be a technological transition, is an epistemological rupture. It has possible ramifications for how language is understood, learned, and used.

The field of ELE has not been able to respond to AI-led disruptions in a strategic, rational manner. The response is more of a moral panic that has vilified AI. An assumed causal relationship between AI use and academic dishonesty has been established, leading to blanket bans on AI use in educational institutions. A second strand underscores unease about assessment, as educators struggle to cope with the destabilisation of the constructs of validity, authenticity, and language ability. A third strand, driven by a tool-centric approach, emphasises functional AI literacy among educators while overlooking its implications for pedagogy and knowledge production. Despite raising genuine concerns, the lack of cohesion among the arguments has diminished their collective merit and hindered the transformative restructuring of the ELE knowledge base.

This article argues that reductionist strategies and utilitarian measures are insufficient to resolve these problems. Thus, it advocates for a coherent ecological perspective that acknowledges the symbiotic relationship among ethics, pedagogy, technology, and expertise in the ELE landscape. This lens transforms the view of AI as an exogenous disruption into a situated actor enmeshed in dynamic educational ecologies. It affirms faith in the mutually adaptive interaction between AI on the one hand and classroom practices, institutional cultures, and disciplinary values, on the other. The article draws on Elgin's (2025) theory of epistemic ecology, which posits that knowledge is not generated in isolation but arises from the dynamic mutual calibration between epistemic agents and their environments. Knowers act as active participants in shaping, applying, and reconceptualising their epistemic positions. Thus, understanding is advanced through cycles of refinement and extension, and responsible disagreements serve as catalysts in this process, enabling robust testing of accepted views. From this standpoint, educational practices can traverse technological challenges and ensure epistemic progress through critical reflexivity and pluralistic participation. Driven by Elgin's theory, the article proposes a three-pronged analysis of AI

in ELE. First, it outlines the ethical reconfiguration of ELE in response to AI, highlighting issues of authorship, equity, and trust. Second, it examines how the widespread use of AI necessitates a reimagining of pedagogic praxis across teaching methods, instructional materials, and assessment practices. Finally, it proposes a framework for developing teachers' AI literacy, conceived as a form of ecological participation essential to sustaining meaningful, equitable, and responsible English language learning in an AI-mediated world.

Authorship, Integrity, and Epistemic Agency

The integration of generative AI into education necessitates a shift towards "Human-Machine Collaboration" (HMC), in which humans and machines complement each other's strengths to complete academic tasks (Meniado, 2024). This scenario represents a "collaborative division of labor" in which agency is shared among humans and machines, rather than being held solely by an individual author (Barnes & Tour, 2025). Consequently, writing is becoming an "entanglement" of contributors, blurring the distinction between human composition and algorithmic contribution (Babanoğlu et al., 2025). As the lines of ownership blur, the ethical focus shifts to transparency, requiring students to explicitly acknowledge AI's specific role in the writing process (Amini et al., 2025). Thus, traditional framings of misconduct are increasingly becoming insufficient. At the same time, plagiarism remains a primary concern, often viewed as content theft, characterising AI-assisted text production solely as cheating overlooks the complexity of these practices. Reliance on detection tools is problematic due to the occurrence of false positives, which can have negative consequences for students (Yan et al., 2024).

As text generation becomes automated, ethical obligations shift from simple ownership to "validation and source verification" (Amini et al., 2025). Because AI can generate misleading or fabricated content, the learner's primary duty becomes a rigorous critical evaluation of outputs rather than passive consumption. Transparency has emerged as a critical metric of integrity, in which students are expected to disclose how AI was used in text creation rather than asserting sole authorship (Amini et al., 2025). However, to maintain epistemic responsibility, learners must avoid blind trust in these "black-box" systems, which can diminish innovation and critical thinking. Instead, it is important to cultivate AI literacy. Effective AI engagement involves human-in-

the-loop (HITL) and machine-in-the-loop (MITL) systems, ensuring that humans retain control over complex tasks such as formulating ideas, creating foundational arguments, and drafting text, while leveraging AI for mundane tasks like identification of grammatical mistakes and organisational inconsistencies, and generation of references and formatting of the texts in prescribed styles (Meniado, 2024).

Equity, Linguistic Justice, and Epistemic Asymmetries

The integration of AI in ELE risks exacerbating existing inequities through differential access, creating a “digital divide” in which advanced language-learning tools are often restricted to well-resourced institutions or individuals. Socioeconomic disparities may limit students from under-resourced backgrounds from accessing paid or restricted versions of AI, while their wealthier peers use premium platforms (Amini et al., 2025). This financial and infrastructural disparity suggests that the best-performing innovations remain broadly accessible only to “WEIRD” (Western, Educated, Industrialised, Rich, and Democratic) societies, thereby widening global educational gaps (Yan et al., 2024).

Ethical concerns regarding “linguistic justice” are paramount, as most Large Language Models (LLMs) are trained on predominantly English datasets, which may introduce biases against non-native speakers. This training bias reinforces dominant English norms and enforces a “standard” ideology that elevates specific varieties of English while delegitimising other varieties used worldwide (Crompton et al., 2024). More critically, AI systems are predominantly trained on datasets that reflect dominant English norms and Global North epistemologies. As a result, AI-generated feedback and model texts often privilege standardised linguistic forms while marginalising multilingual, localised, and translanguaging practices (Yan et al., 2024) that are often situated within Global South educational contexts. For English language learners, particularly in Global South contexts, this can reinforce deficit-oriented views of language use and subtly delegitimise local varieties of English. Consequently, the process erodes epistemic diversity in English-language classrooms and normativises dominant linguistic and cultural knowledge.

Surveillance, Trust, and Moral Economies of ELE

The proliferation of generative AI has driven rapid adoption of detection

tools, fostering a culture of suspicion in educational environments. While institutions use tools like Turnitin to maintain academic integrity, this atmosphere of surveillance extends to educators, who often treat their own use of generative AI as a “dirty little secret,” concealing valid pedagogical applications to avoid the stigma of being perceived as lazy or professionally incompetent (Barnes & Tour, 2025). Consequently, the fear of judgment drives AI usage underground, preventing open dialogue about its benefits and rational institutional AI policy-making. To mitigate these harms, ethics in ELE must be reframed as relational and dialogic rather than imposed. Mouta et al. (2025) advocate for “dialogic ethics” fostered through experiential learning, in which stakeholders actively debate and redefine AI challenges rather than passively adhere to top-down regulations. This approach aligns with “human-centered AI,” in which teachers retain control, using AI as a collaborator to enhance instruction rather than as a replacement (Babanoğlu et al., 2025).

Ethics as an Ecological Problem

Viewing AI ethics through an ecological lens reveals that ethical tensions are often symptoms of disrupted epistemic ecologies rather than isolated individual failings. In other words, ethical tensions such as misuse and overreliance often arise from a poorly designed epistemic environment comprising tools, norms, institutional practices and so on. This kind of misalignment can derail how information is generated and applied. Considering that pedagogy, technology, and context are fundamentally intertwined, ethical decision-making cannot be separated from the complex, relational, and contextual factors that shape the educational environment. Consequently, the agency must be understood in an ecological context, which makes it not merely an inherent individual trait but one that emerges from the dynamic interaction between personal capabilities and the structural environmental factors that either facilitate or constrain ethical action. Since ethics is enacted in the classroom, the following section examines the implications of AI integration for methods, materials, and assessment within evolving epistemic ecologies.

AI and Teaching Methodologies

The thrust in the 2000s was to put students’ communicative demands at the forefront and to make the methodology immediate and relevant to learners’ contexts. However, with the advent of AI-mediated production

in the 2020s, the move has begun to treat communicative practice as something that the machine understands through its mediation with the teacher. Written fluency in language has reached a level of disbelief since the students started resorting to Generative AI for content. The effort to learn and master language skills has given way to alternatives, where prompts are widely used to achieve ends rather than as means. It was only through live classroom interactions that the teachers could assess whether the written fluency was genuine or aided by AI.

With widespread use of AI, teachers too run the risk of over reliance on AI in all contexts, which is seriously detrimental to their ability to think independently. Such situations have also led to them becoming overdependent on the knowledge that AI generates. When teachers no longer exercise their judgment to sift through the content that actually has value and instead embrace everything, without questioning or thinking about it, they risk overscaffolding and epistemic dependency.

Opposed to this bleak prospect is the use of AI for building conceptual understanding through step-by-step prompts. This strategy could primarily be based on behaviouristic principles underpinning tailored feedback and personalised learning pathways. The dialogic nature of the AI engages students in the co-construction of knowledge at an appropriately paced rate, promoting critical thinking and epistemic agency through iterative exchanges. Thoughtful and personalised feedback can be used to promote reflective practice and facilitate meta-thinking.

AI in Materials Design

The advent of AI has made it easier to produce pedagogic materials for English language classrooms. Teachers with the right prompts can easily generate materials, which has led to critics questioning the quality of these materials. Very often, such materials need not align neatly with the standards and expectations of the learners' actual language use settings. If these materials are left unprocessed, they could also raise concerns about their authenticity, as they are machine-mediated on training data that may not often reflect learners' linguistic circumstances. In this scenario, teachers can critically mediate the process. At the outset, they can make reflexivity a precondition for acceptability. The continual questioning of what these materials facilitate or hinder can further

epistemic progress. An immediate follow-up step could be to embed an iterative cycle involving generation, adaptation, evaluation and improvement. This will foster the creation of materials that are relevant to learners' language needs, socio-cultural context of use, and linguistic aspirations. The results of such materials (task) creation process can ensure situated engagement and construction of authenticity as a result of collaboration between the teacher and students. Thus, AI-generated language-learning materials can be reframed as sites of critical enquiry rather than perpetrators of bias, exclusivity, and cognitive laziness.

AI and Assessment Practices

Teachers are now faced with the daunting task of assessing genuine demonstrations of language use in the era of AI. Take-home assignments and projects may return work created with AI assistance, making it impossible to differentiate between individual language performance and AI-generated output. It becomes challenging to determine the extent to which the student's work is AI-generated and how much is produced without relying on AI and plagiarism-detection tools, which has led to the reintroduction of sit-down assessment models that do not use technology, gadgets, or the internet to evaluate learning. Learners are discouraged from using any form of technology in order to find answers. The assessment questions have been revised to encourage higher-order thinking, rather than merely requiring the reproduction of memorised texts. This scenario presents a unique case system that requires rethinking traditional forms of assessment. It is high time that teachers view it as a process-oriented rather than a product-oriented mode of assessment, as is currently the case. English language learning must be reconceptualised as a series of learning milestones to determine whether learners have achieved mastery of the stages of communicative competence, thereby making them eligible for the next level. It also needs to be reflective, with a strong emphasis on thinking about learning rather than the learning itself. Since generative AI tools are trained on dialogic models, interaction with them can be central to the assessments. Teachers can scaffold learners to ask the right questions and to engage in conversations with AI models. There is ample empirical evidence supporting the positive impact of AI-mediated interactive feedback on language learning. Students can be encouraged to submit reflective reports on how they are using AI to enhance their language use. Such

reports can include the prompts used to obtain feedback, the use of feedback to improve language output, and possible negative impacts, such as cognitive laziness, the lure of unethicity and the uncritical acceptance of AI-generated feedback. In many ESL/EFL scenarios, multimodal prompts, such as audiovisual clips, images, and realia, are being used to elicit authentic language from learners as part of efforts to curb the unethical use of AI.

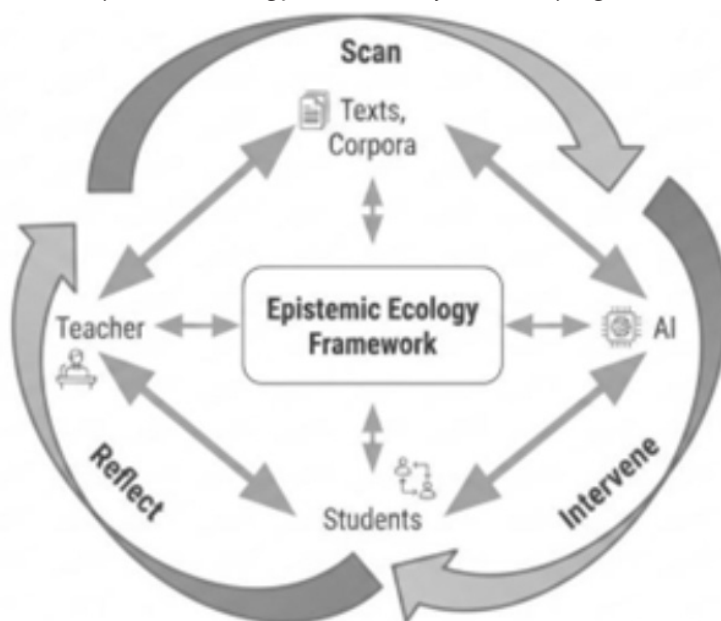
Epistemic Ecology Framework for Developing AI Literacy

The analysis of an ethical conundrum and the approach to teaching, materials design, and assessment in ELE in a milieu dominated by AI indicates that a reconceptualisation of pedagogic praxis in ELE is an unavoidable need. At the heart of this need is a viable plan to improve teachers' AI literacy. Elgin's theory of epistemic ecology provides a ground for developing a framework to enhance English language teachers' AI literacy, particularly in the Indian context. Elgin's conceptualisation posits that knowledge construction is an ecological act involving a dynamic interaction of agents, tools, norms, and environments. Epistemic growth is an iterative process laced with values. Sustenance of this growth entails generativity of knowledge, rather than attainment of absolute truths. When English language classrooms are viewed as epistemic ecologies, they become networks that enable inquiry rather than merely serve to internalise a set of grammatical principles. The emergence of AI has fundamentally altered this ecology. It has dethroned the teacher as the sole arbiter of linguistic norms and problematised the student's role as a mere receiver of knowledge. Now, the teacher must mediate epistemic interactions and decide how and when AI can productively support language learning. Similarly, he/she is expected to ensure that students verify AI-generated output and learn to use it ethically. Consequently, language learning has become a process of learning to navigate, regulate, and critically engage with the immediate and vast flow of information. It extends beyond linguistic fluency to encompass ethical judgment.

The ecological understanding can be enacted pedagogically through an iterative model of pedagogic practice comprising scanning, intervention, and reflection. Scanning involves identifying risks and opportunities associated with the use of AI in language learning contexts. Intervention enables students to corroborate AI output with other reliable sources

of information, such as corpus tools. In the reflection stage, the teacher evaluates the quality of learning and student achievement to gauge the effectiveness of the previous stages. These stages make a loop for sustainable praxis.

Figure: *Epistemic Ecology Framework for Developing Teachers' AI Literacy*



Within this framework (see the Figure above), English language teachers' AI literacy extends beyond functional AI literacy to encompass critical digital literacy in a post-digital ecosystem (Mahapatra & Koltovskaia, 2025), the ability to navigate AI-infused learning environments with responsibility, reflexivity and agency. Being responsible entails ethical discernment, i.e., an understanding of authorship, accountability, data privacy, and equity. Critical digital literacy also constitutes an ecological competence, i.e., the ability to make informed pedagogic judgments about the regulation of AI use, thereby enhancing students' English-language proficiency and simultaneously preventing cognitive laziness. The third aspect of teachers' AI literacy requires them to act as stewards of the ecology and advise on symbiotic and invasive behaviours of AI. While symbiotic behaviours include functions such as brainstorming and feedback on language use, invasive behaviours often involve

uncritical acceptance of AI-generated content and the substitution of human thinking. This model of AI literacy requires the support of other English language teachers, teacher educators and researchers, who are equivalent to Elgin's wider epistemic networks.

Conclusion

This article has argued that the proliferation of AI has led to an epistemological transition in ELE, exposing the insufficiency of the banning of tools, employing a detection-driven mechanism, and promoting tool training. Drawing on Elgin's epistemic ecology, it proposes integrating ethics, pedagogy, and AI literacy as interdependent dimensions of the English language teacher's knowledge base. Here, questions of authorship, equity and trust converge with the transformation of teaching methods, materials and assessment. Within this framework, English language teachers' AI literacy is conceived as an ecological competence comprising reasonable judgement, mediation and reflexivity along with functional AI literacy. With this reconfigured pedagogical praxis, ELE can remain critically flexible to navigate fast-paced epistemic changes and paradigm shifts, and English language teachers can meaningfully contribute to the process.

Future researchers can empirically extend the framework, especially in Global South contexts. Considering how multimodal communication in academic and professional spaces has impacted language use, researchers can investigate the effectiveness of this framework in explaining the multimodal turn.

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Santosh Mahapatra is an Associate Professor at BITS Pilani Hyderabad Campus. His research interests are AI in education, language assessment and language policy.

santosh@hyderabad.bits-pilani.ac.in

Cherry Mathew is an Associate Professor at Shivnadar University, Chennai. Her research interests are teacher education, educational technology and heutagogy.

cherrym@gmail.com

Aalla Sai Divija Vaishnavi is a PhD student at BITS Pilani Hyderabad Campus.

p20230450@hyderabad.bits-pilani.ac.in