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# DEVELOPING CRITICAL THINKING AND COMMUNICATIVE COMPETENCE IN PRE-SERVICE ENGLISH TEACHERS THROUGH AN AI-INTEGRATED COURSEBOOK

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**Abstract:** The rapid development of artificial intelligence (AI) is creating new possibilities for language teacher education, particularly in developing critical thinking and communicative competence. This article examines how an AI-integrated coursebook can support these skills among pre-service English teachers. It proposes a pedagogical approach in which learners use AI to question, evaluate, generate, and improve ideas rather than simply obtain ready-made answers. The article introduces a learning cycle of independent thinking, AI interaction, critical evaluation, redesign, communication, and reflection. It illustrates how this approach can be applied through AI verification, decision-making, collaborative problem solving, prototyping, and responsible AI use. Since the coursebook is still under development, the examples are presented as a pedagogical design model rather than evidence of its effectiveness.

**Keywords:** artificial intelligence, generative AI, critical thinking, communicative competence, pre-service English teachers, AI-integrated coursebook, language teacher education

## 1. Introduction

Artificial intelligence (AI), particularly generative AI (GenAI), is increasingly influencing educational practices and the ways in which learners access, process, and produce information. Generative AI tools can provide explanations, examples, alternative solutions, questions, feedback, and simulated interactions, creating new possibilities for language learning and teacher education. At the same time, the increasing availability of AI-generated content raises important questions about learner independence, critical thinking, academic integrity, and the role of teachers in AI-supported learning.

The educational value of GenAI, therefore, does not depend simply on whether learners have access to AI tools. It also depends on how these tools are incorporated into pedagogical tasks. When learners use AI primarily to obtain ready-made answers, the technology may reduce opportunities for independent reasoning. In contrast, activities that require learners to question AI responses, compare alternatives, verify information, justify decisions, and revise their ideas can position AI as a resource within a broader process of learning and reasoning (Liu et al., 2025).

This issue is particularly relevant to pre-service English teachers. Future teachers need more than language proficiency and communicative ability. They also need to analyse information, evaluate evidence, make informed decisions, consider alternative perspectives, solve problems, and communicate their reasoning effectively. Recent research has consequently highlighted the importance of developing AI literacy as part of teacher education, including the ability to evaluate AI outputs and consider ethical, pedagogical, and professional implications (Huang et al., 2025; Prilop et al., 2025; Kohnke et al., 2026). Coursebooks can play an important role in this process because they provide a structured environment in which learning objectives, content, activities, progression, interaction, and reflection are connected. An AI-integrated coursebook can therefore do more than add occasional AI prompts to conventional activities. It

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can deliberately structure moments in which learners first think independently, subsequently interact with AI, critically examine the resulting output, revise their ideas, and communicate their decisions. The coursebook project examined in this article, *Critical-Creative Thinking and Design: An AI-Integrated Course Book*, is designed around critical and creative thinking, problem analysis, decision-making, design thinking, communication, collaboration, and responsible AI use. Its AI Labs are intended to help learners practise English and use AI for checking, generating, comparing, and improving ideas while retaining responsibility for their own work. The current draft also includes activities requiring students to verify AI-generated information, record their AI use, evaluate AI recommendations, test solutions, and reflect on their decisions.

## 2. Theoretical Foundations: Critical Thinking and Communicative Competence

Critical thinking and communicative competence are often discussed as separate educational objectives, but they are closely connected in language teacher education. Critical thinking involves analysing information, examining assumptions, evaluating evidence, considering alternatives, and making reasoned judgements. Similarly, participating in discussion requires not only linguistic knowledge but also the ability to interpret different positions, question claims, justify opinions, and modify one's position when appropriate. The integration of GenAI adds another dimension to this relationship.

Recent research supports the importance of this integration. Liu et al. (2025), in their systematic review of GenAI and critical thinking in EFL education, highlight the need to consider how AI use affects learners' higher-order thinking rather than assuming that technological access automatically produces cognitive benefits. Similarly, Huang et al. (2025) emphasise the development of GenAI literacy among pre-service language teachers, while Prilop et al. (2025) examine AI literacy in teacher education as a multidimensional competence involving technological, pedagogical, and critical dimensions.

## 3. AI-Integrated Coursebook Design

AI integration in a coursebook should involve more than adding prompts such as “Ask AI to…” to existing activities. The central question is not how frequently AI appears in a lesson but what educational function it performs and what learners are expected to do with its output.

The current coursebook is designed around three principles.

### 3.1 Learner Thinking Should Precede AI Interaction

The first principle is that learners should have an opportunity to generate ideas, analyse a problem, or make an initial decision before consulting AI. This protects learner agency and creates a basis for comparison.

For example, students may first generate possible solutions individually before discussing them with peers. AI can then be introduced to provide additional perspectives or alternatives. The difference is significant: students are not asking AI to produce their thinking from the beginning; they are comparing AI-generated possibilities with their own reasoning.

### 3.2 AI Output Should Become an Object of Critical Evaluation

The second principle is that AI output should itself become material for analysis. Students can examine whether an AI response is accurate, sufficiently supported, relevant, biased, too general, or appropriate for the task.

The coursebook explicitly introduces responsible AI practices such as checking claims against reliable sources, identifying possible bias, protecting privacy, maintaining transparency, and retaining authorship and agency.

This transforms AI from an answer-producing mechanism into an object of critical inquiry.

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### 3.3 AI Interaction Should Lead Back to Human Thinking and Communication

The third principle is that AI interaction should not become the endpoint of the activity. After using AI, learners should return to human discussion, decision-making, revision, presentation, or reflection.

The proposed learning cycle can therefore be represented as:

**Independent Thinking → AI Interaction → Critical Evaluation → Redesign → Communication → Reflection**

Each stage serves a different purpose. Independent thinking establishes learner ownership. AI interaction introduces additional information or perspectives. Critical evaluation examines the quality of AI output. Redesign requires learners to revise their ideas. Communication provides an opportunity to articulate and defend decisions. Reflection encourages learners to consider how AI affected their thinking and what they ultimately decided themselves.

## 4. Practical Application in the AI-Integrated Coursebook

The proposed approach is operationalised through activities in the current coursebook draft. Rather than separating critical thinking, communication, design, and AI literacy into independent components, the activities connect them through structured sequences.

### 4.1 Developing Critical Evaluation through AI Verification

One recurring principle is that students should formulate their own ideas before consulting AI and subsequently verify AI-generated information. In the introductory AI Lab, students create their own prompts and compare AI responses with information from the lesson. They identify ideas that match the source, distinguish additional claims, verify uncertain information, improve their prompts, and compare the resulting outputs. They also record their process in an AI Use Log.

### 4.2 Using AI to Support Decision-Making Rather Than Replace It

A second example involves AI-supported decision-making. Students ask AI to provide advice concerning a fictional university case. They then evaluate individual suggestions and decide whether to **accept, change, or reject** them, providing reasons based on evidence. This requires students to distinguish between a plausible suggestion and a justified recommendation.

The pedagogical emphasis consequently shifts from **“What answer did AI provide?”** to **“What do I think about this answer, and why?”**

### 4.3 Integrating Critical Thinking, Communication, and Collaboration

The coursebook also develops critical thinking through human interaction. In one activity, students individually generate ideas about how a university could support first-year students, discuss their ideas in groups, establish priorities, and present their decisions. Other groups then evaluate which priority they find most convincing and explain why. This sequence combines independent reasoning with communication and collaboration. Students generate alternatives, negotiate their value, reach a collective decision, and justify that decision to others.

### 4.4 AI-Supported Design, Testing, and Redesign

The integration of critical thinking, communication, design thinking, and AI becomes particularly visible in the prototyping activities. Students create a low-fidelity prototype, test it with peers, observe points of difficulty, distinguish evidence-based observations from personal preferences, and make improvements. AI is introduced after this human-led testing process.

Students can then use AI as an educational design reviewer. The task requires them to provide information about the target users, learning problem, prototype, and actual test results. AI is instructed to identify possible weaknesses and suggest improvements without inventing user feedback. Students subsequently decide which suggestions to accept, reject, or modify.

## 5. Pedagogical Implications and Design Considerations

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The coursebook design suggests several implications for AI integration in language teacher education. These should be understood as pedagogical propositions rather than empirically validated outcomes because the coursebook is currently under development.

**5.1 AI Integration Should Be Task-Driven**

AI should be introduced in response to a clearly defined learning purpose rather than simply because the technology is available. The coursebook connects its AI Labs to existing activities and uses AI for functions such as checking ideas, generating alternatives, obtaining feedback, questioning assumptions, and improving drafts. This approach may help future teachers develop an understanding of **when and why** AI can support learning rather than focusing exclusively on prompt-writing skills.

**5.2 Learner Agency Must Remain Central**

The coursebook repeatedly positions students as final decision-makers. In AI-supported planning activities, for example, students identify assumptions made by AI, determine which suggestions fit their priorities, and decide whether to keep, adapt, or reject them.

This principle is particularly important for pre-service teachers. If AI becomes the primary source of decisions, learners may become dependent on automated suggestions. Requiring students to justify acceptance or rejection of AI output instead positions AI as a resource within professional reasoning.

**5.3 AI Literacy Should Be Integrated with Critical Thinking**

The coursebook treats AI literacy and critical thinking as interconnected competencies. Students are required to verify claims, identify unsupported information, question assumptions, consider bias, and reflect on their own use of AI. Its responsible-use framework also emphasises transparency, privacy, fairness, and human agency.

This is consistent with recent research arguing that teacher education should prepare future teachers not only to operate generative AI systems but also to evaluate their outputs and understand their ethical and pedagogical implications (Huang et al., 2025; Prilop et al., 2025; Kohnke et al., 2026).

**5.4 Communication Should Remain a Human Activity**

AI-supported language practice should not replace meaningful human communication. The coursebook includes AI-supported speaking and feedback activities, but these are embedded within discussion, collaboration, negotiation, presentation, peer evaluation, and reflection.

This distinction is important for communicative competence. AI can provide additional opportunities for language practice, but communicative competence also involves responding to real interlocutors, negotiating meaning, interpreting different perspectives, and adapting communication to collaborative contexts.

**5.5 Reflection and Documentation Should Make AI Use Visible**

The coursebook uses an AI Use Log and a Responsible AI Use Log to make students' interaction with AI visible. Students record prompts, summarise outputs, explain verification procedures, document revisions, and reflect on what they contributed independently.

**5.6 Assessment Should Value Reasoning as Well as Products**

If AI can generate polished explanations, texts, ideas, and solutions, assessment based only on final products becomes increasingly problematic. AI-integrated learning therefore requires greater attention to reasoning and process.

The activities in the coursebook respond to this challenge through justification, verification, comparison, peer evaluation, decision-making, revision, and reflection. Students may be required to explain why they accepted an AI suggestion, why they rejected it, what evidence supported their decision, or how testing changed their solution.

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## 6. Conclusion

The integration of artificial intelligence into English language teacher education requires more than providing learners with access to generative AI tools. It requires learning activities that preserve learner agency, promote critical evaluation, and create meaningful opportunities for communication. This article has examined how an AI-integrated coursebook can be designed to support these aims by connecting critical thinking with communicative competence among pre-service English teachers. The proposed approach positions AI as a learning resource rather than a substitute for learners' thinking. The framework of **Independent Thinking → AI Interaction → Critical Evaluation → Redesign → Communication → Reflection** provides a pedagogical sequence through which students can use AI to generate alternatives, assumptions, obtain feedback, and improve their ideas while remaining responsible for their own decisions.

The coursebook examples demonstrate how this approach can be operationalised through AI verification, evidence-based decision-making, collaborative problem solving, prototyping, testing, redesign, and responsible AI documentation. These activities suggest that AI literacy can be integrated with language development and higher-order thinking rather than treated as a separate technological skill. A central implication is that pre-service English teachers need to learn not only how to formulate effective prompts but also how to evaluate AI-generated information, identify limitations and unsupported claims, communicate their judgements, and make independent pedagogical decisions. In this sense, effective AI integration is fundamentally a matter of pedagogical design rather than technological access. The coursebook presented in this article is still under development. Therefore, the examples discussed should be interpreted as illustrations of an intended pedagogical approach rather than evidence of demonstrated learning outcomes. Future empirical research should investigate how students interact with these activities, whether the proposed learning cycle contributes to measurable changes in critical thinking and communicative competence, and which forms of teacher guidance and assessment are most effective in AI-integrated language teacher education. Overall, an AI-integrated coursebook should not encourage students to think less because AI can produce answers quickly. Instead, it should create structured opportunities for learners to **think first, question AI, verify information, communicate their reasoning, revise their ideas, and remain responsible for their decisions**. For pre-service English teachers, such an approach can provide a foundation for developing the critical, communicative, and responsible use of AI required in contemporary educational contexts.

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