Prompt Engineering, AI, and the Future of English Education for K-12

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Abstract

As generative AI becomes embedded in classrooms, the act of prompting—using natural language to instruct an intelligent system—emerges as a new form of literacy alongside reading and writing. This paper argues that English language education in elementary and secondary schools should formally incorporate AI-based prompt engineering. Doing so would cultivate students' abilities in clarity, context, creativity, and critical reasoning. Evidence from peer-reviewed studies in AI literacy, language learning, and AI-assisted writing supports a pedagogical shift toward structured prompt practice (Long & Magerko, 2020; Kasneci et al., 2023; Kohnke et al., 2023; Li et al., 2024; Lo et al., 2025).

1. Introduction

Students increasingly engage with AI systems to brainstorm, summarize, and edit text, yet most English curricula treat this as peripheral rather than integral. If English education reframes these interactions as literacy practices, students can learn to direct AI through purposeful language rather than rely on it passively. AI literacy—defined as the ability to understand, use, and critically evaluate AI systems—maps directly onto English competencies such as audience awareness, tone, genre, and structure (Long & Magerko, 2020). By embedding prompt engineering into English instruction, schools can teach not only how to communicate to others but also how to communicate through intelligent systems.

2. Evidence Base

Research in human-AI communication supports the inclusion of prompt-based instruction. Long and Magerko (2020) identified core competencies of AI literacy—evaluation, communication, and creativity—that directly correspond to skills used in effective prompting. In applied linguistics, Kohnke et al. (2023) and Li et al. (2024) found that students interacting with AI chatbots improved vocabulary, discourse strategies, and self-reflection, especially when guided to revise prompts iteratively. Meanwhile, Kasneci et al. (2023) documented both opportunities and ethical challenges of large language models in education, emphasizing the need for explicit instruction to manage bias and dependency. Finally, Lo et al. (2025) conducted randomized trials showing that structured AI feedback improved essay revisions, suggesting that iterative prompting can reinforce writing pedagogy.

3. Rationale

Prompting functions as a form of rhetoric. Framing an AI's role ("act as a debate coach") requires the same awareness of audience and purpose that classical rhetoric demands (Kasneci et al., 2023). The iterative refinement of prompts mirrors the process-writing model of drafting and revision (Lo et al., 2025). Furthermore, composing and adjusting prompts builds metalinguistic awareness—students must articulate tone, register, and constraint explicitly (Kohnke et al., 2023). Finally, critical engagement with AI outputs strengthens evaluative thinking as learners assess credibility, detect bias, and cross-verify evidence (Long & Magerko, 2020). In this sense, teaching AI prompt engineering reinforces rather than replaces foundational English skills.

4. Developmental Learning Outcomes

In upper elementary grades (3–5), instruction should focus on understanding what AI can and cannot do. Students can practice simple role prompts—such as asking an AI to "explain like a museum guide"—and learn to limit length or vocabulary for clarity (Long & Magerko, 2020; Kohnke et al., 2023). In middle school (6–8), learners should begin composing structured prompts that include task, context, and criteria. Keeping a prompt-revision log allows them to observe cause-and-effect relationships between language precision and output quality. They can also use AI feedback for revision and critique (Lo et al., 2025). By high school (9–12), students should develop multi-turn prompt chains for argumentation, synthesis, and style transfer. These tasks reinforce evidence-based reasoning while requiring explicit citation of AI-assisted material and reflection on bias (Kasneci et al., 2023; Li et al., 2024).

5. Pedagogical Framework: The ARCED Model

To guide the integration of prompt engineering into English instruction, this paper introduces the ARCED Model—Articulate, Reference, Construct, Evaluate, and Document—a recursive pedagogical sequence that aligns traditional composition pedagogy with AI-mediated writing practices.

Students begin by Articulating their intent: they define the communicative purpose, audience, and desired output. This stage emphasizes rhetorical awareness and goal setting, foundational to both classical composition and effective AI interaction (Kohnke et al., 2023). They then Reference relevant materials—texts, datasets, or contextual inputs—to anchor the AI's responses in verifiable information (Li et al., 2024). During Construction, learners design and deliver the actual prompt, specifying tone, constraints, and stylistic requirements in a manner consistent with their intended outcome (Long & Magerko, 2020).

Next, students Evaluate the AI's response for factual accuracy, coherence, and ethical reliability, revising prompts iteratively based on observed strengths and deficiencies (Kasneci et al., 2023). Finally, they Document their interaction process, explaining how prompt adjustments shaped the evolving text and reflecting on their learning outcomes (Lo et al., 2025).

The ARCED model transforms prompt engineering into a structured literacy process that reinforces composition theory while cultivating critical AI fluency. It ensures that AI use in

language education remains transparent, reflective, and evidence-based—bridging linguistic intention with machine interpretation through iterative reasoning and revision.

6. Assessment and Implementation

Assessment should value both process and product. A prompt portfolio—containing initial prompts, iterations, and critiques—demonstrates growth in precision and rhetorical control (Long & Magerko, 2020). Writing quality can be measured using blind rubrics to isolate the effect of revision cycles (Lo et al., 2025). Reflection essays assessing bias and fact-checking habits verify critical literacy (Kasneci et al., 2023; Li et al., 2024). Implementation can proceed in phases. The first semester should focus on teacher training and establishing ethical use policies. A second year can integrate prompt-engineering lessons into existing writing and reading units, ensuring equitable access to AI tools. At scale, districts can offer elective courses such as "The Rhetoric of Prompting," sharing exemplar prompt sets and rubrics for consistency (Kohnke et al., 2023).

7. Equity and Ethics

Expanding AI instruction must not exacerbate inequality. Schools should provide managed AI accounts to ensure privacy and equitable access while maintaining analog alternatives for students without connectivity (Kasneci et al., 2023). Lessons should address bias explicitly by teaching verification and perspective-checking strategies (Li et al., 2024). Academic integrity can be protected through required prompt logs and AI-use statements appended to all assignments (Lo et al., 2025).

8. Limitations and Future Research

Although the evidence base for AI-enhanced learning is growing, longitudinal data in K–12 settings remain limited. Future studies should track how structured prompting influences writing fluency, transfer across disciplines, and long-term critical thinking (Li et al., 2024; Lo et al., 2025). Further, controlled comparisons between AI-integrated and traditional writing instruction could clarify whether improvements stem from feedback speed, linguistic scaffolding, or student motivation. Additional research should also examine teacher preparedness, resource access, and the role of metacognitive instruction in developing sustainable AI literacy across socioeconomic contexts.

9. Conclusion

Prompt engineering is, at its core, an exercise in language and reasoning—making it a natural extension of English education. Embedding AI interaction into writing and reading curricula can enhance conventional literacy outcomes while preparing students for a society where human-AI dialogue is routine. By adopting structured models like ARCED, integrating ethical safeguards, and emphasizing metacognitive reflection, educators can transform AI from a novelty into a formative instrument of linguistic growth. The empirical literature (Long & Magerko, 2020; Kohnke et al., 2023; Kasneci et al., 2023; Li et al., 2024; Lo et al., 2025) demonstrates that teaching students to think about language as instruction builds both human expression and machine understanding—a dual literacy essential for the coming era.

References

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