Building Prompt Literacy: Empowering EFL Teachers with A Model-Based Approach to Prompt Writing

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Abstract. *This paper shares the lived experiences of English teachers participating in a part of a teacher training initiative financed by the Regional English Language Office (RELO) of the U.S. Department of State in Turkiye. Within the scope of the program, forty volunteer EFL teachers from various educational levels participated in an extensive training program focused on the integration of artificial intelligence into language instruction. Among other parts of the program, this study is concerned with "Model-Supported Prompt Writing Training," part in which participants were introduced with PARTS and TATOO prompt writing models which help teachers write prompts that are tailored to their language teaching settings. During the course, teachers did hands-on activities where they made AI prompts that fit with their teaching goals to make educational materials. Immediately after the training, the participants received an online survey with open ended questions regarding their prompt writing experience to reveal participants' experiences and perceptions on prompt writing with a model. The data obtained from the survey was subjected to thematic content analysis. Emergent themes were found to be aware of prompt specificity, confidence in integrating AI into education, and the transformative impact of structured prompt models. The results indicate a significant shift in teachers' views on artificial intelligence prompts, underscoring the necessity for targeted training in prompt literacy. Therefore, this study's implications have potential to contribute literature on the integration of AI tool into teacher education.*

Key words: *AI in language teaching, teacher training, prompt writing, in-service teachers*

Introduction

Providing effective learning environments that enhance students' educational experiences and develop their skills has been considered to be the primary job of teachers. Especially in the age of increasing technological advancements, the burden on this job has multiplied as they may find the adaptation to this changing landscape in education challenging due to insufficient competence in digital literacy (Seo et al., 2021).

Challenges on the part of teachers have been documented in literature (Akgun & Greenhow, 2022; Sijing & Lan, 2018). Studies indicate that educators must be trained in instructional and theoretical frameworks to identify essential AI competencies for delivering effective lessons (Chiu, 2021; Ng et al., 2022). Therefore, training teachers may enhance their AI literacy, defined as the capacity to utilize AI technologies efficiently and ethically, assess their outcomes, prioritize human involvement in decision-making, and adapt to the growing AI ecosystem (Ng et al., 2023b).

Generative AI (GenAI) has been transforming teaching and learning and has potential to alter teachers' roles. To address this fact, Zhai (2025) proposed a conceptual framework of teacher agency in GenAI contexts, outlining four stages: Observer, Adopter, Collaborator and Innovator, each of which represents increasing levels of engagement and co-creation. This framework emphasizes that teachers should move beyond being passive users of AI tools and evolve into co-creators of knowledge. Depending on this framework, teachers are expected to be collaborators of AI systems while preserving human-centered decision-making. This focus on teacher roles aligns with the prompt-writing model training used in the current study. With the help of such training, teachers can take an active role in shaping AI's output by offering guided suggestions, instead of just accepting generic responses. Consequently, the training fosters agency assisting educators by defining their pedagogical goals, identifying their students' needs, and establishing appropriate ethical boundaries.

AI Literacy in Teacher Education

The integration of AI literacy into teacher education has been advocated by researchers (Daher, 2025) as while AI offers numerous promising benefits, these advantages may remain useless if teachers' roles and competencies are not sufficiently addressed (Ng et al., 2023a). Educators must recognize the limitations and ethical consequences of AI, including its potential for incorrect suggestions and algorithmic biases (Seo et al., 2021). To address these problems, professional learning programs should focus on developing technical competencies while simultaneously fostering ethical awareness and leadership in responsible AI use. Developing educators' digital abilities in AI literacy is crucial for critically assessing, interacting with, and effectively applying AI tools in many situations (Mikeladze *et al.,*2024). Therefore, more training on AI literacy should be targeted to scaffold teachers' digital competencies.

Training Teachers: Prompt Writing

Prompt engineering is the composition, refinement, and optimization of human-defined inputs to get high-quality outputs from generative AI models (Velasquez-Henao et al., 2023). Therefore, skilled prompt engineering is essential for acquiring greater information from generative AI models. Prompt engineering or prompt literacy, is the art of crafting, developing, and assessing inputs that produce accurate, usable, and pedagogically aligned outputs from generative AI systems like large language models (LLMs). Recent research highlights that teachers need to be proficient in prompt-writing for three reasons: (a) they will use LLMs to make lesson plans, tests, and feedback (Park & Choo, 2024; Rahman & Lee, 2024); (b) their students will use the same tools, so they will also need help figuring out how to use them (Lee & Palmer, 2025; Carolus et al., 2023); and (c) the way prompts are worded and structured greatly affects the accuracy, bias, and practicality of AI results (Ng et al., 2023c; Zhou et al., 2025).

Some studies show that teachers' prompt writing in GenAI should be facilitated with training. The impact of even small interventions has been noticeable in enhancing instructors' AI literacy and confidence. Davila-Moran et al. (2025) found that a short prompt-engineering workshop improved pre-service teachers' self-efficacy and reduced technology-related anxiety, illustrating that practical, experiential exposure is both feasible and effective.

The implementation of heuristic frameworks to enhance teachers' prompt writing has been discussed. Park and Choo (2024) advocate for structured models like PARTS (Persona, Aim, Recipient, Task, Structure) to assist educators in formulating precise, focused suggestions. Park and Choo (2024) also proposed an IDEA framework for Prompt Engineering which involves (a) **I**ncluding essential PARTS, (b) **D**eveloping CLEAR prompts, (c) **E**valuating outputs and Refining prompts, and (d) **A**pplying the output with accountability. Dickey and Bejarano's (2023) GAIDE framework similarly highlights the necessity for alignment between prompt design and curricular objectives, emphasizing the pedagogical rather than sole technical aspects of prompt writing. Although these heuristics offer easy entry points, critics warn that frameworks may oversimplify if not accompanied by reflective practice and incremental improvement (Baytas & Ruediger, 2025).

Methodology

Research Design

This study, a part of teacher training program supported by the U.S. Department of States' Regional Language Office (RELO) in Turkiye and coordinated by İzmir Economy University, adopted a qualitative, instrumental case study design (Stake, 1995). The case in this study is teacher training on model-based prompt writing. The purpose of this research is to use this training as an instrument to get deeper insights into how structured prompt models (PARTS and TATOO) shape EFL teachers' awareness and perceptions while integrating AI into their language teaching. The qualitative design was used as it is considered to be suitable for capturing participants lived experiences and reflections (Creswell & Poth, 2018).

Participants

Participants were chosen via voluntary sampling from educators enrolled in the AI-focused teacher training program. Out of 135 volunteers, 40 volunteers were chosen depending on their convenience for 10 hours online and face to face sessions. Of these, 28 were female and 12 were male. The majority (34 teachers) were employed in the Turkish Ministry of National Education, while the remaining 6 were serving at the university level. Their teaching experience ranged between 5 and 12 years, representing a diverse group of practitioners across different educational contexts. To ensure anonymity, participants were coded as *Participant 1–40*.

The Training Procedure

The training program was part of an overall initiative to use AI in language teaching. The overall training involved "Ethical Use of AI, Prompt Writing, Teaching Receptive Skill with AI, and Teaching Productive Skills with AI. The current study is concerned with a specific module, titled "Model-Supported Prompt Writing Training," in which trainees were introduced with two prompt writing models: the PARTS and TATOO frameworks (See table 1 and 2)

Table 1 PARTS Model for Prompt Writing

Persona: Identify your role.	
Aim: State your objective.	
Recipients: Specify the audience.	
Theme: Describe the style, tone, and any task parameters	
Structure: Note the desired format of the output.	

To support teachers prompt writing in designing effective prompts for AI-assisted material development PARTS model (Persona–Aim–Recipients–Theme–Structure) was used. This model offers teachers a systematic structure that promotes clarity, contextual appropriateness, and pedagogical alignment when writing prompts for AI enhanced digital tools.

1. **Persona:** For this section, teacher identifies the role to be assumed by AL tool (e.g., "act as an English teacher," "act as a materials designer," or "act as a debate moderator"), which will guide the tool to generate responses aligned with pedagogical needs.
2. **Aim:** In this section, the overall objective of the course is written (e.g., "to create vocabulary practice for A2 learners" or "to design a reading comprehension activity"), which ensures that the material to be generated has a clear instructional purpose.
3. **Recipients:** In this section, target learners are specified (e.g., "high school students at A2 CEFR level," "CEFR B1-level adult learners"), which guides AI tool to tailor the content to learners' age, proficiency level, and learning needs.
4. **Theme:** This section involves specification of desired tone, style and parameters (e.g., "use simple and engaging language," "focus on academic writing," or "use a humorous

and creative style"), which ensures that the material meets the linguistic appropriateness and contextual relevance.

5. **Structure:** In this section, the preferred format for the output is specified (e.g., "design a gap-fill exercise," "present a dialogue," or "write a short passage followed by three comprehension questions"), which results in generation of outputs that are ready for classroom integration.

This model is chosen because it aligns with the principles of prompt literacy (Carolus et al., 2024; Long & Magerko, 2020), which highlights that structured and explicit prompts lead to higher-quality AL generated materials. Such prompt models can empower teachers with **agency and control** in the AI-material design process (Giannakos *et al*., 2024).

Table 2 TATOO Model developed by Brent Warner

🔔 Task	Big picture – what do you want the bot to do?	
🎭 Actor	Who is the bot supposed to act as? (e.g., Teacher with a PhD, Instructional Designer, Historical figure)	
🎯 Target	Who is it communicating to? What details are important to clarify about the user? What communication style do they respond to?	
🗣️ Translation	Is it OK for the bot to support the target with their L1 (first language)?	
🔎 Objective	What is the goal of the responses? Should it correct every mistake, highlight common errors, or provide guidance?	
🎁 Output	What exactly should the bot produce? (e.g., conversation, essay, lesson plan). Specify length, format, and expectations.	

The TATOO model (Task, Actor, Target, Translation, Objective, Output), similar to PARTS model, offers a structured framework to guide teachers in composing effective prompts for AI-assisted material design.

The training was conducted in three main phases to ensure participants gained both theoretical knowledge and practical competence in AI-based prompt writing.

1. **Theoretical Input Sessions**
   - Teachers were introduced to the key concepts of AI integration in education and the foundations of prompt literacy.
   - The sessions provided an overview of models for effective prompt construction, including the **PARTS** and **TATOO** frameworks.
2. **Hands-On Workshops**
   - Participants practiced generating prompts aligned with their own instructional goals.
   - Teachers were instructed to download or make a copy of a prepared Google Doc template containing a structured table for prompt writing and evaluation.
   - The following steps guided their practice:
     1. Using either the PARTS or TATOO model, write a prompt for an activity, lesson plan, reading, or other instructional material.

2. Enter the prompt in the designated table.
3. Submit the prompt to ChatGPT or another AI-enhanced tool.
4. Evaluate the output generated by the AI in relation to the instructional goal.
5. If time allowed, refine the original prompt based on the quality of the AI's response.
6. Insert the AI output into the corresponding section of the table for record-keeping.

3. **Collaborative Exercises**
    - Teachers engaged in group discussions to refine and compare their prompts.
    - Peer feedback was used to evaluate the clarity, effectiveness, and classroom applicability of the generated outputs.
    - The collaborative process encouraged knowledge sharing and the co-construction of best practices for prompt-based instructional design.

Data Gathering

Perceptions of trainee teachers were immediately taken after *Model-Supported Prompt Writing Training* module to capture their authentic and spontaneous reflections. The participants were invited to share their experiences via Google Forms which was pre-designed before the training session. Besides some demographic questions, the form only asked only one question: "How did using the PARTS and TATOO models influence the way you think about writing prompts for AI tools compared to your previous practices?". The participants were asked only one general question to avoid overburdening them and they had already completed an intensive training session.

Data Analysis

The elicited data was subjected to content analysis to identify recurring patterns and themes within the open-ended responses (Creswell & Poth, 2018). All responses were exported into a document and assigned to participant codes (*Participant 1–40*).

Findings and Discussion

The first emergent theme was found to be **efficiency and time saving**. **27 participants (67.5%)** emphasized efficiency, time savings, and creativity when using structured prompt-writing models. Following are some responses from participants:

> "One of its biggest advantages is time-saving and being able to access a lot of information in a short time" (Participant 14).
>
> "It was a very productive experience... creating a lesson plan that suits the characteristics and needs of the students is more advantageous than using readily available materials" (Participant 15).
>
> "I used to always start by writing a general prompt and then build on it. I can say that using the PARTS prompting model saved me time" (Participant 30).

This finding indicates how structured prompt writing activity acted as scaffolds in saving teachers' time and energy when creating materials. In line with multiple studies indicating that GenAI is taking over routine production or analysis leaving teachers engage with their pedagogical practices more time (Karaman & Göksu, 2024), this finding shows that AI can significantly decrease cognitive and temporal load teachers previously had with lesson planning. Efficiency can also be linked with creativity instructional designs as teachers can automatically generate texts drafts, activity templates, or quiz items by tailoring the content for their learners. For instance, **Giannakos et al. (2024 argued that AI both accelerates content creation and**

enables teachers to focus on innovative pedagogical practices.

In the context of this study, the teachers' main focus on efficiency indicates that structured prompt-writing models (e.g., PARTS, TATOO) served as successful scaffolds by helping them produce **faster and clearer outputs** but also empowered them to exercise greater creativity and adaptability in their material development. This suggests that teacher professional development initiatives should emphasize structured frameworks that can serve as guides to foster teachers' knowledge of prompt engineering while creating course materials.

Another emergent theme was found to be **"Specificity and Structure Awareness".** 18 participants (45%) highlighted the importance of clear, structured prompts for generating relevant and accurate outputs.

> "A guiding model for writing correct and purpose-appropriate prompts, helps us understand the key points that should be included in a prompt" (Participant 38).
>
> "The PARTS model completely clears our minds when creating writing guidelines, allowing us to create what is desired step by step and in an organized manner" (Participant 17).
>
> "Clearly defining components such as goals, target audience, role, task, and scope ensured that the content generated by artificial intelligence was more consistent and aligned with expectations" (Participant 3).

The second emergent theme underscored the importance of clarity, specificity, and structural awareness when composing prompts for AI tools. Teachers noted that using structured models such as PARTS and TATOO to develop intended materials. This finding is consistent with research findings on prompt literacy, which emphasizes that the quality of AI generated output is strongly dependent on the clarity and specificity of user input. Long and Magerko's (2020) conceptualization of AI literacy involves both the knowledge of technical knowledge and the ability to communicate effectively with AI systems. In essence, this study revealed the power of structured frameworks which have potential to provide a cognitive scaffold that help teachers write their intentions more explicitly, which in turn, can result in better goal-oriented outputs. This view can be supported by **Mikeladze *et al.*, (2024) who noted in their critical review of AI competence frameworks that structured engagement with AI promotes** transparency and decreases misalignment between teacher objectives and AI outputs.

Given emphasis on efficiency of structured input suggests that providing teachers with prompt models do more than streamline interactions with AI. They actively improve teachers' AI literacy and professional agency by leading them critically shape outputs for their unique teaching contexts.

Another theme was "**Cautions and Risks".** 15 participants (37.5%) expressed concerns regarding overreliance, ethical issues, and mechanical/unnatural outputs.

> "This model can serve as a draft for creating lesson plans... but teachers need to improve their command experience and AI literacy for better quality results" (Participant 16).
>
> "Sometimes generative AI tools use very mechanical expressions, which are quite far from a human touch" (Participant 27).

This theme revealed concerns about overreliance **on AI, ethical issues, and the mechanical or unnatural quality of AI-generated outputs**. While efficiency and specificity and structure opportunities were celebrated by most of them, this theme reflects teachers' awareness of the limitations **and potential dangers** of adopting AI tools in education. The concern about overreliance can also be found in literature. **Giannakos et al. (2024)** asserted that although generative AI can improve productivity, it also risks increasing dependency, which in turn leads to diminished creativity and critical thinking if educators and learners use it uncritically. To address this problem, **Rana *et al.*, (2025)** argues that competence frameworks must both balance technical and pedagogical benefits preserving teachers' judgment and autonomy. Teachers also reported that AI output sometimes are **mechanical or unnatural, which can be connected with studies on teacher-student interaction. In a study, Seo et al.**

(2021) observed that AI responses can be impersonal or formulaic when students tend to communicate. This resonates with teachers' reflections in the current study, where outputs were sometimes considered detached from the real life and creativity of human teaching.

Another theme was found to be **"Confidence in AI Integration".** 12 participants (30%) reported increased confidence in integrating AI into their teaching after training.

> "I think my experience has been quite productive and effective... When all the details were entered through the PARTS model, I received more suitable and efficient responses from the target audience, which made me think I can do it" (Participant 8).
>
> "Seeing that I can generative materials with clear outputs, I felt more confident so I can use it as these kinds of models make our lives easier. It saves us time and can guide us" (Participant 24).
>
> "It was a very beneficial experience for me... "I learned new applications and models that I can use in my teaching experience, which made me feel more capable" (Participant 22).

This emergent theme showed that guided practice and structured frameworks like PARTS and TATOO reduced uncertainty and scaffolded their knowledge on how AI can be aligned with their pedagogical goals. Confidence theme emerged among these participants indirectly shows that how they were previously unaware of the fact that writing detailed prompt is essential for material generation in language teaching. With the intervention in the current study, they felt more capable of experimenting with AI and embedding it into authentic classroom tasks. This finding resonates with what Seo et al. (2021) demonstrated. They showed that AI can reshape learner-instructor dynamics, but the main success depends on teachers' confidence and willingness to use AI tools as pedagogical partners.

Confidence can also be linked to **AI literacy frameworks**. For example, the UNESCO (2024) *AI Competency Framework for Teachers* involves self-efficacy in using AI and Meta-AI literacy Scale developed by Carolus et al. (2023) has subscales on self-efficacy and Self-competency, all of which shows that gaining confidence in AI utilization is a factor that is sought in teacher education.

Transformative Impact on Practice was another theme**.** 6 participants (15%) described the experience as transformative, changing their approach from trial-and-error to systematic prompt writing.

> "When we provide a more detailed and structured prompt to AI, we observed that the AI tends to give us more extensive answers... making clear what we truly want from the outset" (Participant 40).
>
> "It was a very enlightening experience for me... these kinds of applications provide us teachers with great advantages" (Participant 25).
>
> "While I don't see any significant disadvantages, I do believe this model needs to undergo continuous change and flexibility" (Participant 17).

The final emergent theme shows that the training did not only provide new skills but reshaped teachers' underlying orientation to AI, positioning them as purposeful designers rather than passive users of generative tools. This finding aligns with literature on teacher professional identity and change in the context of digital innovation. The notion of transformation also relates to teacher agency. Frøsig and Romero (2024), in their framework of hybrid intelligence for learning design, emphasize that teachers gain agency when AI tools are framed as partners in co-design rather than as external substitutes. Teachers in the current study reflected this idea: by moving away from ad hoc prompting toward structured frameworks, they reported gaining control, confidence, and creativity, suggesting that transformative practice is closely tied to professional empowerment. In short, while only a minority explicitly described their experience as transformative, other emergent themes such as efficiency, confidence has shown that teachers had deeper pedagogical shifts when trained on prompt writing, suggesting that structured models not only support efficiency and confidence but can also foster long-term change in professional practice.

To summarize the findings, a graphic organizer was developed from findings (See figure 1).

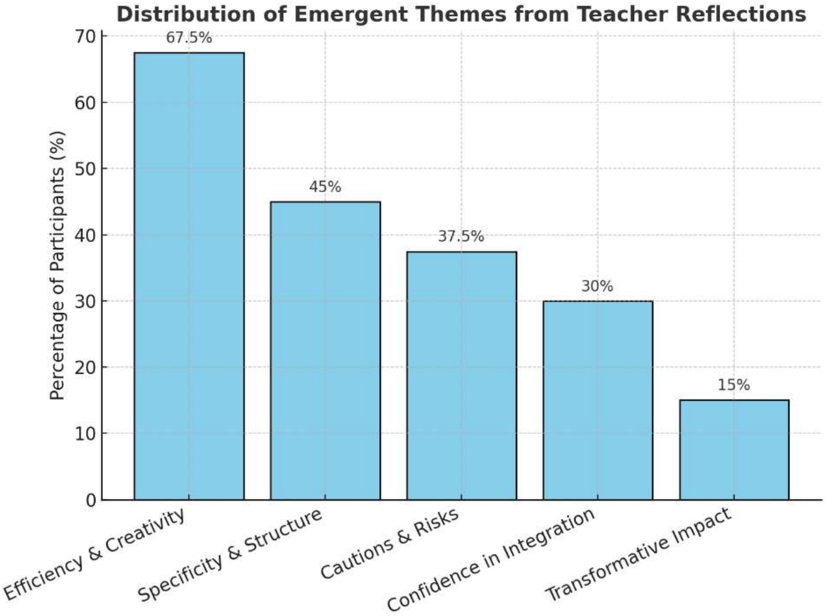

Figure 1. Distribution of Emergent Themes

All emergent themes—**Efficiency and Time-Saving, Specificity and Structure Awareness, Cautions and Risks, Confidence in AI Integration,** and **Transformative Impact on Practice**—have offered a holistic picture of how structured prompt-writing training shaped teachers' perceptions of AI in education.

Conclusion

Grounded in frameworks of AI literacy (Long & Magerko, 2020; UNESCO, 2024), Meta-AI literacy Carolous et al. (2023) and teacher agency (Frøsig & Romero, 2024), the current study revealed how structured prompt writing training facilitated English teachers' awareness on detailed prompt writing. The theoretical lens underscored that teachers require both technical competence and critical awareness to integrate AI meaningfully into pedagogy. The emergent themes_ efficiency and time-saving, specificity and structure awareness, cautions and risks, confidence in AI integration, and transformative impact on practice_ highlight that structured models can enhance productivity and precision, foster teacher confidence, and, in some cases, transform professional practice. At the same time, concerns about ethical issues, overreliance, and mechanical output underline the importance of critical reflection and responsible use. The study has also highlighted that prompt writing models acted as cognitive and pedagogical scaffold, which empowered teachers to generate AI outputs in line with their instructional goals. Taken together, the study contributes to the growing literature on AI and teacher professional development activities by showing that systematic and structured prompt writing process can bridge the gap between **trial-and-error use of AI and purposeful detailed integration, which offers a pathway toward developing** critical and AI-literate educators

Implications

This study revealed important implications for both teacher professional development and further research in AI integration. Overall, the urgent need for prompt training in Turkish context has been revealed. Teachers' emphasis on efficiency and time saving indicates that structured prompt models, like the ones mentioned in the study, may be systematically integrated into training programs to help teachers develop materials with relatively shorter time and with better alignment with teachers' course objectives. The theme of specificity and structure awareness has also highlighted the need for detailed training which moves beyond general AI training and instead cultivate explicit skills in structured, goal-oriented prompt writing to achieve more efficient outputs. Additionally, the concerns raised on the risks of overreliance on AI outputs underscore the need for critical thinking skills over generated outputs, which may not always be appropriate to classroom contexts. Therefore, teachers should be equipped with strategies to critically evaluate AI outputs, ensuring that technology supports rather than undermines educational integrity. The theme confidence in AI integration shows the effectiveness of guided, hands-on practice on increasing teachers' self-efficacy. Teacher training programs should therefore provide more opportunities for hands on practice with AI tools. The previously mentioned trial-and-error approach was claimed to be overcome by structured prompt training, which showed the transformative impact of practice.

When everything is considered, these implications suggest that effective teacher training should involve a balanced approach in which practical skill-building, ethical literacy, and professional agency are considered.

References:

Akgun, S., & Greenhow, C. (2022). *Artificial intelligence in education: Addressing ethical challenges in K–12 settings. AI & Ethics, 2*(3), 431–440. https://doi.org/10.1007/s43681-021-00096-7.

Baytas, C., & Ruediger, D. (2025, May 1). *Making AI Generative for Higher Education: Adoption and Challenges Among Instructors and Researchers*. https://doi.org/10.18665/sr.322677

Carolus, A., Binder, J., & Muench, F. (2024). *Measuring AI literacy skills (MAILS): Development and validation of a scale*. Computers & Education, 206, 104903. https://doi.org/10.1016/j.compedu.2023.104903

Carolus, A., Koch, M. J., Straka, S., Latoschik, M. E., & Wienrich, C. (2023). *MAILS – Meta AI literacy scale: Development and testing of an AI literacy questionnaire based on well-founded competency models and psychological change- and meta-competencies*. *Computers in Human Behavior: Artificial Humans, 1*(2), 1–10. https://doi.org/10.1016/j.chbah.2023.100014

Carolus, J., Schmidt, A., & Novak, T. (2023). AI prompt literacy in secondary schools: Needs, practices, and challenges. *Computers in the Schools*, 40(3), 200–220. https://doi.org/10.1080/07380569.2023.1987654

Chiu, T. K. F. (2021). A holistic approach to the design of artificial intelligence (AI) education for K–12 schools. *TechTrends***,** 65(5), 796–807. https://doi.org/10.1007/s11528-021-00637-1

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.

Daher, R. (2025). *Integrating AI literacy into teacher education: A critical perspective. AI and Education Journal*. https://doi.org/10.1007/s44163-025-00475-7

Davila-Moran, R. C., Sanchez Soto, J. M., Lopez Gomez, H. E., Silva Infantes, M., Arias Lizares, A., Huanca Rojas, L. M., & Cama Flores, S. J. (2025). *Brief prompt-engineering clinic substantially improves AI literacy and reduces technology anxiety in first-year teacher-education students: A pre–post pilot study. Education Sciences, 15*(8), 1010. https://doi.org/10.3390/educsci15081010

Dickey, E., & Bejarano, A. (2023). *GAIDE: A framework for using generative AI to assist in course content development* . arXiv. https://doi.org/10.48550/arXiv.2308.12276

Frøsig, T. B., & Romero, M. (2024). *Teacher agency in the age of generative AI: Towards a framework of hybrid intelligence for learning design* [Preprint]. *arXiv*. https://doi.org/10.48550/arXiv.2407.06655

Giannakos, M., Azevedo, R., Brusilovsky, P., Cukurova, M., Dimitriadis, Y., Hernández-Leo, D., Järvelä, S., Mavrikis, M., & Rienties, B. (2024). The promise and challenges of generative AI in education. *Behaviour & Information Technology.* Advance online publication. https://doi.org/10.1080/0144929X.2024.2394886

Karaman, M., & Göksu, I. (2024). Are lesson plans created by ChatGPT more effective? An experimental study. International Journal of Technology in Education, 7(1), 107–127. https://doi.org/10.46328/ijte.607

Lee, J., & Palmer, C. (2025). Prompting the future: Supporting students' engagement with generative AI tools. *Journal of Digital Learning*, 18(1), 33–49.

Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1–16). Association for Computing Machinery. https://doi.org/10.1145/3313831.3376727

Mikeladze, T., Meijer, P. C., & Verhoeff, R. P. (2024). A comprehensive exploration of artificial intelligence competence frameworks for educators: A critical review. *European Journal of Education, 59*(3), e12663. https://doi.org/10.1111/ejed.12663

Ng, D. T. K., Lee, M., Tan, R. J. Y., Hu, X., Downie, J. S., & Chu, S. K. W. (2023). *A review of AI teaching and learning from 2000 to 2020. Education and Information Technologies, 28*(7), 8445–8501. https://doi.org/10.1007/s10639-022-11491-w

Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023a). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. *Educational Technology Research and Development, 71*, 137–161. https://doi.org/10.1007/s11423-023-10203-6

Ng, D. T. K., Luo, W., Chan, H. M. Y., & Chu, S. K. W. (2022). *Using digital story writing as a pedagogy to* *develop AI literacy among primary students. Computers & Education: Artificial Intelligence, 3*, Article 100054. https://doi.org/10.1016/j.caeai.2022.100054

Ng, D. T. K., Smith, J. A., & Lee, C. (2023b). Conceptualizing teacher AI competencies: Towards a comprehensive framework for AI literacy in education. *Educational Technology Research and Development*.

Ng, W., Ali, N., & Goh, T. (2023c). Rethinking prompt writing for AI education: Ethical and practical considerations. *International Journal of Artificial Intelligence in Education*, 33(4), 413–430. https://doi.org/10.1007/s40593-023-00322-0

Park, J., & Choo, S. (2024). Generative AI prompt engineering for educators: Practical strategies including PARTS and IDEA frameworks. *Journal of Special Education Technology, 40*(3), 411-417. https://doi.org/10.1177/01626434241298954

Rahman, A., & Lee, Y. (2024). Teachers as prompt designers: Training educators to use LLMs in language education. *Journal of Educational Technology & Society*, 27(2), 88–104.

Rana, V., Verhoeven, B., & Sharma, M. (2025). *Generative AI in design thinking pedagogy: Enhancing creativity, critical thinking, and ethical reasoning in higher education. Journal of University Teaching and Learning Practice, 22*(4). https://doi.org/10.53761/tjse2f36

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education, 18*(1), 1–23. https://doi.org/10.1186/s41239-021-00292-9

Sijing, L., & Lan, W. (2018). Artificial intelligence education ethical problems and solutions. In 2018 13th International Conference on Computer Science & Education (ICCSE) (pp. 1–5). IEEE.

Stake, R. E. (1995). *The art of case study research*. SAGE.

UNESCO. (2024, August 8). *AI competency framework for teachers*. United Nations Educational, Scientific and Cultural Organization (UNESCO). https://unesdoc.unesco.org/ark:/48223/pf0000391104

Velasquez-Henao, J., Smith, R., & Liu, T. (2023). Prompt engineering practices for educators: A systematic review. *Computers & Education: Artificial Intelligence*, 4, 100095. https://doi.org/10.1016/j.caeai.2023.100095

Zhai, X. (2025). *Transforming teachers' roles and agencies in the era of generative AI: Perceptions, acceptance, knowledge, and practices*, arXiv preprint arXiv:2410.03018.

Zhou, Y., Tran, M., & Liang, X. (2025). Structuring prompts to reduce bias in LLM outputs: A pedagogical perspective. *AI and Ethics*, 6(1), 90