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THE ROLE OF AI ASSISTANCE FOR ENGLISH PRE-SERVICE TEACHERS DURING TEACHING PRACTICE

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Abstract : Utilizing Ai in teaching preparation is an innovation and has a significant effect on the teaching-learning process. Yet, it poses a high risk for teachers' pedagogical quality and teachers' autonomy. This study adressess on how English pre-service teachers utilize Ai and the challenges they encounter during their teaching practice program. This qualitative study involved five English pre-service teachers who were placed in different cities of East-Java. Their digital traces in interacting with Ai are being recorded and analyzed to describe the roles of Ai assistance in their instructional design, and a semi-structured interview to dig more their challenges. The findings reveal that the role of Ai evolve fours stages: a quick content generator, automatted formatter, a teaching partner and a cognitive scaffolder. With the guidance of advisors and mentorship, the pre-service teacher can apply the RTCC formula in their advanced use of using Ai. However, several challenges emerged, such as technical difficulties in formulating prompts, worrieness of inaccurate pedagogical decisions of Ai response to meet students' needs and over-dependency on Ai which leads them to distrust human experience and proffesional expert. While Ai offers efficiency in preparing lessons, designing teaching activities and assessing, English pre-service teachers must have critical judgment to evaluate Ai's content, also considering previous teaching experiences.
Keywords : Artificial Intelligence, Pre-Service Teacher, Teaching Practice

INTRODUCTION

In the 21st century, the myriad benefits of Artificial Intelligence (AI) on human beings are undeniable. It has grown rapidly in recent years. AI is no longer sophisticated technology but a present daily reality. It transforms all aspects of human life, such as industry, medicine, education, science, and others life. Due to these, people can see AI easily and clearly everywhere. Including foreign language learning, especially on EFL sphere. AI tools such as ChatGPT, Grammarly, and Quillbolt assist teachers significantly in complying with the needs of the teaching-learning process. (Saiful, 2023)Nowadays, EFL teachers do not think hard about how to arrange lesson plans, decide teaching procedures, and conduct assessments. AI tools provide innovative answers for more meaningful and enjoyable learning experiences when teachers use them with appropriate prompts. (Zhang et al., 2025) These learning approach fosters meaningful and enjoyable experiences which are also in line with the current Indonesian curriculum. Equally important, English pre-service teachers as EFL teacher candidates also experience the great benefits of AI in the process of learning how to teach effectively. Teaching practice, as a compulsory activity that they must have done often, requires challenging how to apply and practice their pedagogical knowledge.

As AI become more and more sophisticated, it is important to understand how this technology alters and transforms professional roles, especially in teaching. (Antonio et al., 2025)Nowadays, the

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role of AI in the classroom is not as simple as a projector or digital library, but it takes an advanced position as a teaching partner. People frequently misunderstand that AI will take over teachers' roles, but instead, AI works side by side with teachers in assisting teachers' jobs to establish teaching-learning more interactive, more joyful, and more effective.(Sposato, 2025) Moreover, being a teacher nowadays does not matter about teaching and assessing students' competence; a huge teaching administration sometimes drains teachers' energy. The partnership pattern between teachers and AI would be very beneficial for teachers.(Lucas et al., 2025) One of the clearest examples of AI as a teaching partner is in lesson planning. Before AI, teachers might spend hours thinking, designing, creating, and revising lesson plans for ninety minutes of teaching. Now, a teacher only types a simple prompt, "create for me a lesson plan for English teaching-learning about passive voice for a class of 30 intermediate students," then the teacher receives a detailed, systematic, creative, and innovative lesson plan. It assists teachers so much in reducing their burden with teaching workload.(Lucas et al., 2025) AI here acts as a co-planner that handles basic structure ideas, while the teachers can adjust the result with their real classroom management needs, students' needs, and the content quality. In addition to planning lesson structure, AI is also effective in assisting teachers in developing content material. (Ishmuradova, 2025) A common thing in the classroom is that students have different levels and learning style which makes it tough for teachers to create the worksheet only done by a teacher. With AI assistance teacher can simplify the worksheet for students with low competence and create a more challenging and critical worksheet for students with advanced competence. The teacher might type a prompt, "simplify the vocabulary of this text," or "create for me three critical questions related to this text.

Equally important, the great benefits of AI are not only for in-service teacher whose massive teaching hours, but also for English teacher candidacy as known as English pre service teacher who must complete a teaching practice program (PLP; Pengenalan Lingkungan Pra-sekolahan).(Ayduğ & Altınpulluk, 2025)This mandatory activity often presents some hard circumstances that are hard to overcome without AI assistance. They are required to apply the pedagogical knowledge that they have learned during the lectures. Their lack of ideas, limited experience, and teaching anxiety prevented them from accomplishing teaching practice projects and assignments. AI assistance enables establishing English pre-service teacher confidence and reduces their anxiety in designing lesson plans, developing teaching material, and generating questions for assessments.(Blonder et al., 2025)

On the other hand, the role of AI in supporting English pre-service teachers has two pivotal standpoints. A positive view is that AI assists pre-service teachers to give new ideas in designing teaching activities, saving their time to design worksheets, and creating a scoring rubric. The Answer of AI on the right side assists English pre-service teachers to save time in designing lesson plans and teaching activities, generate ideas on teaching content and assessment, and also improve text accuracy. AI, such as Grammarly, also helps pre-service teacher to correct their ungrammatical texts, which gives

them more accurate English sentences rather than manually.(Sadaf et al., 2025) While a negative view is that pre-service teachers might be too dependent on AI and unable to develop their own creativity, and the results produced by AI might be inappropriate for students' characters and their local needs. This gap raises questions on how AI should be used wisely and effectively for pre-service teacher during their teaching practice.(Sadaf et al., 2025). Moreover, the use of AI might pose a risk for English pre-service teachers' pedagogical knowledge and their autonomy. It might hinder them from being creative in arranging teaching-learning. AI response might be inappropriate for what the curriculum needs and the students' profiles. Therefore, English pre-service teachers need proper guidance to make them survive in the age of AI while overshadowing their pedagogical competence.(Antonio et al., 2025)

Due to these, it's urgent to conduct immediate and focused attention on how English Pre-Service teacher process AI. Several previous studies discovered what AI can give, but less illustrate the reality of how English Pre Service teacher utilize and make judgments of AI response which enables high-risk in teaching practice content. It leads crucial pedagogical gap, which English pre service teacher prefer using AI to complete teaching practice tasks faster rather than as a teaching partner to build their critical pedagogy. As Jere (2024) emphasized, the use of ChatGPT raised pre-service teacher laziness in writing academically and less critical thinking in developing lesson plan which suits with students' learning needs. In a similar vein, Zhang et al. (2025) affirmed that it is important for pre-service teachers to have metacognitive awareness to evaluate critically what AI-generated output in designing teaching, instructional and material. They must be able to mediate between improper Ai result with their pedagogical competence.(Zhang et al., 2025) to be specific, Hastomo (2024) highly encouraged pre-service teachers to activate their critical thinking style in organizing ideas from what AI has generated to prevent over-dependency. (Hastomo et al., 2024)

EFL in the Indonesian context, especially in Gresik, East Java, where people are mostly known as the industrial city, has a high literacy in technology use, including in the educational context. This social phenomenon should have become all people who become involved in educational aspects, either secondary, especially tertiary students, and teachers, as technology-savvy. In fact, in real-life situation not all of them can adapt well to the rapid development of AI. Thus, it is important to explore the role of AI in how it affects pre-service teachers' readiness of becoming the future English teachers and how an education university program can guide their students in using AI wisely. To address this gap, this study aims to explore the actual practice of how English Pre-Service teacher as they utilize AI assistance during their compulsory teaching practice program. It will investigate deeply into how English Pre-Service teachers' prompts assist them in teaching practice and their challenges in prompt formulation.

METHOD

A case study was employed in this study since the purpose is to explore and understand the phenomenon of the complexity AI integration into teaching practice. This design research aims at describing systematically and actually the reality that occurs in the field without variable manipulation

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and hypothesis testing.(Bowen, 2009) The data is words in a narrative way and an image. A case study has been considered that matches this research purpose, since it enables to do profound investigation into a specific contemporary phenomenon. In this research is AI assistance is in the actual life of teaching practice. The design is appropriate to obtain comprehensive data from a few informants to achieve holistic comprehension related to their strategy and challenges. (Maxwell, 2014)Seven English pre-service teachers took part in this study. The five students' consideration is based on the research goal to obtain deep and detailed descriptions of their individual experiences. Their activities in using Ai during teaching practice are recorded.

Participants were selected using purposive sampling. They are considered appropriate to accomplish some criteria. The criteria are, first, English pre-service teachers are under going in teaching practice program. They are coming from some universities in Gresik, East Java and are placed in some regions in East Java schools, such as in Gresik, Surabaya, Tuban, Bojonegoro, and Lamongan. This placement in different cities might have various students' profiles and needs. It will yield rich data as qualitative research characters. Secondly, the English-pre service teachers who are actively and highly using generative Ai tools such as ChatGPT and Gemini and other AI-powered software such as Quilbolt and Grammarly to prepare their lessons, materials and teaching activities.

The research preparation starts from identifying pedagogical challenges faced by English pre-service teachers in integrating AI into their teaching models. This study utilized two main instruments: digital trace analysis (DTA) and semi-structured interviews. The DTA was used to capture authentic trace on how English pre-service teacher make interaction with generative AI such as ChatGPT and Gemini Ai in formulating their prompts and their results. The semi-structured interview to explore more English pre-service teachers' techniques in adjusting prompts and their teaching practice needs, as well as how they do a critical evaluation of what Ai produced. Thematic analysis was employed to analyze data. It is done systematically, which is initiated by coding and labelling significant patterns related to quick setting and pedagogical decision making. The patterns were categorized into some themes which illustrate the role of AI assistance. In the final, the findings referred to previous studies to ensure a strong and credible interpretation.

FINDINGS AND DISCUSSION

This is an important finding in understanding how English Pre-service teacher did interaction with OpenAI during their teaching practice. Coding data was done to organize massive and complex data from digital trace analysis. The digital trace analysis was driven by five English pre-service teacher who agreed to share and use their activities in Ai to be investigated in this study. Moreover, reduction data is used to select and organize data from the interview section. To make the data easier and clearer, the participant's name was shortened to protect their privacy and to explain in detail.

Table 1. Participants' Initial Name

No	English Pre-Service Teachers' Initial Name	Schools' Location	Schools' Qualification

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1.	AMS	Surabaya	High Qualified
2.	EDS	Lamongan	Qualified
3.	NM	Bojonegoro	High Qualified
4.	SZ	Tuban	Qualified
5.	FM	Gresik	Non-Qualified

1. The Practical Use of Ai in Teaching Preparation

In the initial stage, all English pre-service teacher typed very simple and immediate prompt which directed to their need. There is no specific prompt which formed several sentences, only one to two sentences.

AMS : *Tolong buatkan saya aktivitas mengajar selama 90 menit tentang expalanation text!*
EDS : *Saya akan mengajar kelas 8 SMP tentang report text, bisa buatkan saya materi penjelasan yang menarik*
NM : *Materi saya hari ini adalah passive voice, tolong buatkan saya materi penjelasan, aktivitas mengajar dan soal-soal passive voice untuk pertemuan pertama mengajar!,*
SZ :*apakah kamu mengetahui tentang text caption mapel Bahasa Inggris kelas XI, text caption yang dimaksud seperti apa? Kalua diajarkan bagaimana caranya, jelaskan!"*
FM :*Sebutkan 3 aktivitas yang menyenangkan dan tidak membosankan untuk mengajar materi grammar "past perfect tense" untuk anak SMA kelas 11*

As the paragraph above explained, the prompts that English pre-service teachers formulated indicated that they lack experience in utilizing Ai. Different sentences but a similar pattern, which reflects that they considered open Ai as a quick content generator. They depend on what Ai yielded without completing with specific details which address students' profiles and local needs. Their prompts reflected that they have insufficient knowledge on how to formulate a form precisely, as it's the result given. As Jere (2024) emphasized, the quality of Ai response is fundamentally determined by the quality of the prompt they typed. If a pre-service teacher typed an ambiguous, vague and meaningless prompt, the Ai reponse inventably produce poor output and falls short of expectations.(Jere & Bessong, 2024). A recent study by Damla (2025) affirmed that, in the future, the ability in formulating prompt will not be viewed as merely a technical skill but also as an essential pedagogy competence for modern teachers. Pre-service teachers' ability in formulating suitable prompts might achieved desired learning instruction.(Ayduğ & Altınpulluk, 2025)

Another finding shows that English pre-service teachers began to make advanced interactions by uploading a lesson plan template. Nevertheless, they were still trapped in superficial prompts, very short and not specific.

SZ : *baca dan pahami template RPP yang sudah saya upload. Buatkan saya RPP seperti template tersebut untuk materi Caption Text yang sesuai dengan pilar pembelajaran mendalam!*
EDS : baca dan pahami template RPP yang sudah saya upload. Materi pembelajaran saya adalah report text tentang "Pollution" buatkan saya RPP/Modul ajar yang sesuai dengan dokumen yang sudah saya upload. Jangan sampai ada bagian yang terlewatkan!
AMS : dokumen yang saya attach adalah template kosong Modul Ajar atau RPP Deep Learning. Tolong buatkan saya RPP persis seperti itu untuk materi "explanation text"!
NM : Dear ChatGPT, tolong buatkan saya RPP Passive Voice dengan template modul ajar deep learning seperti yang sudah saya upload. Untuk 90 menit pembelajaran yah!
FM : apakah kamu tau template RPP Pembelajaran mendalam?
Yah, hampir sama dengan template guru pamong saya dan template RPP dari kampus saya. Baik akan saya upload, template RPP Pembelajaran mendalam.
OK, buatkan saya RPP seperti yang kamu Analisa tentang materi pembelajaran Bahasa Inggris "Past perfect tense"

The prompts above reveal a pattern "template-matching" once the file of the lesson plan template is uploaded. Pre-service teachers assume that Ai will automatically provide a response that fits with the specific format. They rely on a Ai that might handle the structure of the lesson plan accurately.

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However, as Blonder (2025) warned Ai can not occupy the absence of pedagogical gaps without clear and specific prompts as input instruction.(Blonder et al., 2025) There is no specific guidance for pre-service teachers, which might lead them to Ai-dependency or an unrefined response which only imitates the template without giving a meaningful learning instruction based on deep learning features. The tendency to rely on Ai to hand over lesson plan matters demonstrate bias pedagogical(Akbay, 2023). Simply, pre-service teachers believe that Ai could automatically accomplish their wants correctly, as only they have uploaded a template. They assume that Ai has grasped their teaching-learning goals. Nonetheless, Ai only imitates the documents' template. The consequence is that pre-service teacher who frequently missed the critical review process are going to loss their agency and autonomous.(Lucas et al., 2025)

By the second week of teaching practice, a significant interaction occurred in how pre-service teachers formulated the prompt for designing an assessment. The digital traces revealed that the pre-service teacher began to implement a more structured prompt technique. The technique used was known as "RTCC; Role-Task-Content and Constraint", specifically for designing formative assessment. Pre-service teachers claimed that they were assisted and guided by their teacher's advisor. Relying on the interview section, the improvement was not accidental, the guidance during teaching practice among the supervisor (DPL; Dosen Pembimbing Lapangan) and the mentor teacher (Guru Pamong). The section of advisors and mentor teachers helped students to understand more in formulating Ai more specifically to generate more accurate responses. The pedagogic discussions and guidance are crucial during teaching practice. Pre-service teachers might have a lack of experience, while advisor and mentor teachers have more experience in handling students and preparing lessons. This stage leads students to enhance their TPACK pedagogy. As Sadaf (2025) asserted, adequate knowledge in TPACK for pre-service teachers leads them to strengthen their agency and build self-efficacy. (Sadaf et al., 2025)

NM : Saya adalah Guru Bahasa Inggris dan saya sedang mengajar grammar Bahasa Inggris materi Passive Voice (Role). Buatkan saya 10 soal Error analysis untuk level peserta didik kelas 8(Task), gunakan daily vocabulary (Content) dan berikan sekaligus kunci jawabannya! (Constraint)
SZ : Saya adalah Guru Bahasa Inggris dan mengajar Caption Text.(Role) Baca dan pahami Caption text yang sudah saya upload!(task) Lalu buatkan 5 soal open-ended yang menguji critical thinking siswa!(Content) Buatkan juga saya rubrik penilaiannya! Buatkan sesederhana mungkin!(Constraint)
EDS : Saya adalah Mahasiswa Pendidikan Bahasa Inggris yang sedang melakukan "Teaching Practice" dan materi yang saya sampaikan tentang "Report Text" dengan topik poluution.(Role) Saya ingin membuat 3 soal Case study yang relevan dengan real-life situation!(Task) Bantu buatkan saya ya!

From these three interactions, it is indicated that pre-service teachers began to utilize Ai more professionally as pre-service teachers. Based on the interview result, these three teachers did a deep review and attempted to estimate whether their students were able or not able to answer the question from Ai generate. They revise the vocabulary to be simpler and change some terms that students might not know the meaning. The act of checking and revising the content serves as evidence in teachers' agency and their critical evaluation. Pre-service teachers transform from passive receivers to active filter Ai response. As Krushinskaia (2026) postulated, metacognitive awareness on external assistance during teaching practice is significant in building accurate and obvious teachers' instruction in the

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classroom. (Krushinskaia et al., 2026) in line with critical evaluation, which was done by pre-service teacher, Ismail (2019) emphasized the pedagogical competence and skill affect what teachers decide in the classroom to address their unique students' needs and profiles. (Ismail & Jarrah, 2019) by actively modifying vocabularies and terminologies in the form of a prompt, pre-service teachers demonstrated that they not only followed the sophisticated technology but also take account the artificial intelligence, also known as "human-in-the-loop"(Transparency et al., 2025). Human in the loop is an action to prevent bias which was occurred by the result of Ai response and human understanding. (Transparency et al., 2025)

2. Challenges Faced by English Pre-Service Teachers in Applying AI Results to Their Teaching Preparation

Based on the interview result, English pre service teacher hindered the three main challenges during their teaching practice in terms of utilizing Ai.

a. Technical Barriers

The first major challenge identified based on the interview section relates to the technical prompt formulation. Writing short and immediate prompts has been a habit for Pre-service teacher. They prefer to write "an instant prompt" before the teaching practicum program they took. These five English Pre-Service teacher are accustomed to not writing specific, detailed and structured requests into open Ai. This was made worse by a lack of simple technical knowledge, such as using the "Shift+Enter" command to create new lines for additional and structured input rather than pressing "Enter" directly. As a result, the prompt was too brief, and its response can not meet complex instructional needs. These findings align with what Purnamaningwulan (2024) was concerned about regarding the specific prompt instruction. She emphasized that pre-service teachers must be able to formulate clear, obvious and understandable prompt instruction to obtain high quality pedagocical response. (Purnamaningwulan et al., 2024). As a consequence, if teachers are not able to formulate a good prompt. The Ai response will not accommodate the learning objectives and students' needs. Thus, it can limit Ai to become a pedagogic partner in teaching and learning.

b. Difficulties in Determining the Pedagogical Suitability

The second challenges confront by English pre-service teacher was deciding whether the response of Ai can meet their students' needs or not. A lack of experiences cause this perplexity. From this standpoint, pre-service teachers often struggle with pedagogic decision-making. Such as deciding the variety and level of vocabulary or reading text would be matched with students' ability, it was too easy or too difficult. Moreover, Ai has a global context, and it tends to be a "Western context"; the differences between local and international culture must be highlighted. When pre-service teacher commands to make a descriptive text or a report text,

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the Ai frequently responds out of context, such as a snowy day, having a dog as a pet, cooking pork and other cultural gaps. Ai can generate content easily and quickly, but it does not guarantee the content will be understood by local students. Due to this, the teacher must check all sentences in detail. As noted by Chiu (2024) AI did not have any sociocultural awareness. It forces pre-service teachers to ensure the lesson remains relevant and understandable by local students. (Chiu, 2024) The pedagogical content knowledge (PCK) has an essential role to assist teacher organizing, developing and adjusting Ai response into their teaching-learning.

c. Over-reliance on Ai and decreased trust in one's own ability

The most serious challenges identified were the emergence of "cognitive laziness" and a decrease in significant self-confidence in designing teaching activities and assessments. Since Ai can give respons in a few seconds, this eminence causes students accept the Ai response without any critical evaluation. Although they have learned the RTCC formula, they claimed that they often miss and skip the technique. The over-reliance on Ai will not make Ai as teaching partner. It tends to weaken pre-service teachers' ability to think critically and design teaching activities creatively. (Akbay, 2023) This dependency also impacted to students' professional self-confidence and learning autonomy. Pre-service teachers often think that their ideas are not better than Ai has. It caused them to feel unable to teach without AI assistance. Another consequence was that the English pre-service teacher created a trust gap among advisors and teacher mentors. Pre-service teachers prefer to consider what AI suggests rather than real-experience from practical experiences and emotional intelligence that human experts provide. This phenomenon might fail to develop "teachers' intuition," which is needed to manage the real-classroom.

This study explores how English pre-service teachers utilize Ai during their teaching practice. It reveals four roles of Ai assistance: a quick content generator, an automated formatter, a teaching partner, and a cognitive scaffolder. In the beginning, pre-service teachers began to use Ai with simple, short and unstructured prompts. As time goes by, with advisors' and mentor teachers' guidance, they know the RTCC formula to yield better responses. However, some challenges were identified that pre-service teachers did not have a basic knowledge of technical prompt formulation, such as "shift+enter", difficulties in deciding whether the response has been matched to students' profiles and needs, and over-reliance on Ai which led to some trust issues. Future research should more conside the potential effects of the long-term impact of Ai utilization for novice teachers. Also, the consideration to develop a specific module guideline to utilize Ai for pre-service teachers during teaching practice that can help pre-service teachers balance Ai efficiency and pedagogic judgment. Additionally,

investigating Ai integration for teachers in rural areas is also highly encouraged, to portray geographical context will provide broader comprehension.

REFERENCES

Akbay, B. (2023). *ARTIFICIAL INTELLIGENCE LITERACY AND ANXIETY LEVELS OF PRE- SERVICE SCIENCE TEACHERS : 18*(4), 318–333.

Antonio, J. K. T., Dimatatac, M. F. L., Prias, J. M., & Ramos, J. C. M. (2025). *Pre-service Teachers ' Use of ChatGPT and Acquired Moral Dissonance*. *14*(4), 73–98.

Ayduğ, D., & Altınpulluk, H. (2025). Are Turkish pre - service teachers worried about AI ? A study on AI anxiety and digital literacy. *AI & SOCIETY*, *40*(8), 5823–5834. https://doi.org/10.1007/s00146-025-02348-0

Blonder, R., Feldman, Y., & Rap, S. (2025). Are They Ready to Teach ? Generative AI as a Means to Uncover Pre - Service Science Teachers ' PCK and Enhance Their Preparation Program. *Journal of Science Education and Technology*, *34*(6), 1301–1310. https://doi.org/10.1007/s10956-024-10180-2

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Chiu, T. K. F. (2024). *The impact of Generative AI (GenAI) on practices , policies and research direction in education : a case of ChatGPT and Midjourney*. *4820*. https://doi.org/10.1080/10494820.2023.2253861

Hastomo, T., Mandasari, B., & Widiati, U. (2024). *Scrutinizing Indonesian pre-service teachers ' technological knowledge in utilizing AI-powered tools*. *18*(4), 1572–1581. https://doi.org/10.11591/edulearn.v18i4.21644

Ishmuradova, I. I. (2025). *Pre-service science teachers ' perception on using generative artificial intelligence in science education*. *17*(3).

Ismail, S. A. A., & Jarrah, A. M. (2019). Exploring pre-service teachers' perceptions of their pedagogical preferences, teaching competence and motivation. *International Journal of Instruction*, *12*(1), 493–510. https://doi.org/10.29333/iji.2019.12132a

Jere, S., & Bessong, R. (2024). *Exploring Pre-Service Teachers ' Perceptions of ChatGPT Integration into Physical Sciences Teaching : A Case Study at a Rural South African University*. *23*(11), 464–486.

Krushinskaia, K., Elen, J., & Raes, A. (2026). Pre-service teachers ' agency during their interactions with generative AI while designing for learning – a process view on Intelligent-TPACK. *Computers and Education Open*, *10*(July 2025), 100325. https://doi.org/10.1016/j.caeo.2025.100325

Lucas, M., Bem-haja, P., Zhang, Y., Llorente-cejudo, C., & Palacios-rodríguez, A. (2025). Computers and Education : Artificial Intelligence A comparative analysis of pre-service teachers ' readiness for AI integration. *Computers and Education: Artificial Intelligence*, *8*(March), 100396. https://doi.org/10.1016/j.caeai.2025.100396

Maxwell, J. (2014). Designing a Qualitative Study. In *The SAGE Handbook of Applied Social Research Methods* (Issue July). https://doi.org/10.4135/9781483348858.n7

Sadaf, A., Maxwell, D., Küplüce, C., & Holz, H. (2025). Relationship between pre-service teachers ' perceived competencies , affective dispositions , and readiness to use artificial intelligence : A study informed by the intelligent-TPACK. *Computers and Education Open*, *9*(July), 100305. https://doi.org/10.1016/j.caeo.2025.100305

Saiful, J. A. (2023). Eco-ELT for environmental research and praxis in ELT. *Journal on English as a Foreign Language*, *13*(2), 373–398. https://doi.org/10.23971/jefl.v13i2.6335

Sposato, M. (2025). Artificial intelligence in educational leadership : a comprehensive taxonomy and future directions. *International Journal of Educational Technology in Higher Education*, 1–18. https://doi.org/10.1186/s41239-025-00517-1

Transparency, A., Metrics, F., Mitigation, B., & Learning, R. M. (2025). *Research Paper Title : Human-in-the-Loop AI : Enhancing Transparency and Accountability Abstract : 2343*(05), 574–585.

Zhang, Y., Tian, H., & Lu, J. (2025). *The relationship between higher-order thinking and problem-solving skills development among pre-service teachers using generative AI : an analysis based on moderated mediation*.