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ARTICLE

Needs Analysis of Pre-Service ELT Teachers in the Context of AI-Empowered English Teaching: A Qualitative Study in China

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ABSTRACT

With the rapid development of artificial intelligence (AI) technology, its application in English Language Teaching (ELT) has become increasingly widespread. As future English teachers, graduate students majoring in English Pedagogy are a critical force in promoting AI-empowered teaching; therefore, the most preliminary and basic part to address this aim is to comprehend their perception of AI-empowered teaching. This study employs a qualitative approach to explore the attitudes and specific needs of 9 graduate students regarding AI-empowered teaching in a Chinese institution. The findings unveil that pre-service teachers generally value the potential of AI applied in ELT for differentiated learning and streamline the creation of educational materials and other skills demanded in the 21st century, upon the thematic analysis of the data set. However, the lack of systematic training and practical opportunities may hinder their progress in AI-empowered teaching; thus, they expect to be provided with curriculum guidance, skill training, and resource support to enhance their AI teaching competencies. The study suggests that institutions need to cater to their needs by integrating AI-empowered teaching modules into curricula, strengthening practical components, and fostering pre-service teachers' AI-empowered teaching capabilities. The study concluded by providing the direction for further research as expanding the sample size and employing a mixed research method to boost the generalizability of the findings.

Keywords: Artificial Intelligence; English Language Teaching; Pre-Service Teachers; Needs Analysis; Qualitative Research

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1. Introduction

Today, AI (artificial intelligence) greatly impacts society, businesses, and schools [1], which has significantly accelerated "Digital Transformation" [2]. In the field of education, the application of AI has completely transformed traditional ELT teaching methodology. Concerning the context of China, the Central Government is now actively enforcing numerous policies to promote educational technology empowered by AI technology, which promotes English Language Teaching (ELT), an irreplaceable component of higher education, to accelerate the adoption of AI tools [3].

In the English Language Teaching (ELT) field, AI (such as chatbots, intelligent tutoring systems, speech and image recognition methods, and machine learning algorithms) can help differentiate instruction, monitor teaching and learning, provide timely assistance to learners, and simplify and optimize teaching materials, thereby improving classroom efficiency [4]. As future English teachers, graduate students majoring in English Pedagogy are totally involved at the forefront of this digital transformation. Although the use of AI technology is a novelty for them. They surely need to adapt to the future trends in the ELT domain, and developing the ability to implement AI-empowered teaching for their future English teaching careers is of great significance, which requires specific training and significant time to understand, master, and leverage its use effectively.

However, AI remains an emerging field in China, with its application in many fields, such as English language education, still in its infancy despite its immense potential. Therefore, how to apply AI to English teaching remains a challenge both for practitioners and students, primarily because it requires teachers' preparedness and institutional support. Additionally, there are no organized methods in place in the current teacher education programs to give pre-service teachers AI literacy in ELT pedagogical skills [5]. Therefore, this exploratory research aims to probe into the ELT pre-service teachers regarding their points of view about AI-AI-empowered teaching based on their current experience, and specific needs in AI-empowered English teaching by answering the following research questions:

1. What are the perceptions of graduate students toward AI in ELT?
2. What specific needs do they have to enhance their AI-empowered teaching competencies?

The group of graduate participants in the study was interviewed individually to elicit rich and resourceful data, which was subsequently transcribed into texts and thematically analyzed by ATLAS. ti software version 25 to dig into their perceptions and needs in this domain. The study exploratorily recruited a group of graduate pre-service ELT teachers and hopefully expanded the existing literature with an underexplored population.

2. Literature Review

2.1. Need Analysis

According to Martins' previous work, "need" was defined as "an obligation, demand, and necessity" [6] (2017, p. 58). The definition of "needs" was then reaffirmed by Sönmez [7] as duties, demands, and necessities. Understanding the needs and desires of students is best achieved through needs analysis, which is regarded as an advanced approach to the educational belief of learner-centered learning. The needs analysis approach, in other words, needs assessment, was well-recognized and applied in the ELT field. It has been extensively analyzed or evaluated in the ESP (English for Specific Purposes) and EAP (English for Academic Purposes) domains.

To create an effective curriculum with the belief of learner-centeredness, the target of the needs analysis is to identify the target language's teaching and learning requirements from the users [7] and, similarly, to learn more about the needs of students [8].

Its current meaning is fairly different from its original meaning in the 1960s and early 1970s. At that time, needs analysis was employed to evaluate students' needs in communication and related to some specific learning goals. Since the goal of needs analysis is to learn more about the needs of students, the tasks included in this process have changed significantly in recent years [8].

Among the various objectives of the needs analysis in the educational domain, this study garners students' perception on a potential pre-service teacher training program, which may be carried out according to their current and future needs in the theme of AI-empowered English education, and analyzes the current situation in order to provide insightful opinion [9]. Similarly, Richterich and Chancerel [10] proposed

present situation analysis (PSA), which also focuses on what students prefer to learn.

Typically, there are six steps to conduct need analysis: identifying research goals, ensuring the boundaries on where the needs analysis is to be conducted and the limits of the analysis; determining data collection tool, followed by data collection, assessing the data and concluded by determining the effectiveness of the program [11]. Surveys are regarded as the most popular approaches for gathering data for needs analysis, including questionnaires and interviews. To gather in-depth and rich data of what the pre-service teachers need [9], in-depth interview is an appropriate research tool thus to address the discrepancy between the vital role of AI application in ELT and the lack of effective pre- teacher education to equip them with digital and the relevant pedagogical skills for navigating the AI landscape to facilitate students' academic outcomes [12].

In summary, needs analysis is a widely used approach to achieve the educational belief of learner-centered learning by inquiring about what the graduate students want to face up to the transformational and innovative era of AI technology. By following the structured steps and employing interviews, the pre-service teachers' needs will be identified.

2.2. AI-Empowered English Language Teaching

The rapid advances in AI have inspired and sparked the development and reform in the field of education. Some educational issues were hopefully addressed in numerous scholars' viewpoints [13]. The merits of AI empowered English education embody various pragmatic functions, such as chatbots, intelligent tutoring assistants, an automated assessment tool, a personalized learning engine, a content generator, more sophisticated speech and image recognition methods, and machine learning algorithms.

In the holistic literature review of existing literature from 2015 to 2021 by Sharadgah and Sa'di [14], 64 retained articles after rigorous scrutiny were under a systematic review concerning AI in ELT. It unveils that the future research on AI in ELT is fairly promising. AI facilitates English teaching by boosting learners' English language skills, recognition, attitude, satisfaction, and also optimizes translation and assessment, etc. With regard to the research methodology, researchers prefer the mixed research method, and the research sites are more commonly in institutions. The most chosen sample is student participants. Among the research, most of them are empirical studies on the development of novel AI-based systems or models.

Importantly, the review claims that AI in ELT is still in its infancy, where most researchers are not majoring in the ELT discipline [14]. Concerning teachers' preparation for AI-enhanced English teaching, the relevant researchers are fairly broad and not quite focused, even disconnected from the practical needs of future classrooms [15].

In the more current literature, abundant empirical studies concerning the application of AI-enhanced teaching were conducted in the ELT field. To reduce the inequalities of AI education, integrating AI technology in English Language Arts (ELA) classrooms was intended to be implemented by training teachers to empower effective learning and teaching of AI concepts in U.S. high schools. The study concludes that teachers have significantly increased confidence in presenting and explaining AI topics to students, and they are more capable of helping students with AI concepts after a curricular professional development program [16]. Another study, conducted in Hong Kong, provides current and concrete evidence that AI-generated feedback can significantly improve students' writing and equip them with stronger motivations and engagement in ELT by a mixed-method approach [17] . Besides, the study highlights that even learners generally benefit from AI feedback, some also report it as less personal than human feedback (ibid.) due to the lack of personal nature of AI.

In the theoretical study on AI's integration with ELT, Hockly states that English education will never avoid the development and expansion of AI. Therefore, as an English language instructor, the advantages AI brings to the ELT along with the challenges should be aware of, thus to better adjust to the future with the potential of the emergence of more advanced, even equally intelligent, than human beings over time [18].

In general, the existing literature uncovered that AI is increasingly boosting the ELT outcomes by numerous empirical studies, mostly in tertiary education, particularly in undergraduate groups. However, the positive outcome does not diminish the concerns with AI-integrated teaching in authentic communication, which is caused by AI's impersonal nature.

2.3. Teacher Perception of AI-Empowered English Language Teaching

The empirical studies conducted in China mainly sample higher education. One study finds that the teacher–student ratio is still low and teachers are struggling to meet the needs of students; therefore, they propose a novel model, which could integrate voice recognition with text-to-speech technology in facilitating the traditional English teaching system. The result suggested that the application of AI technology in English language teaching increases the overall learning outcomes of the learners and frees teachers for pedagogical research [19]. With consideration of teachers' AI literacy or belief, one study aims to find the differences of ELT teachers in AI literacy in terms of age and teaching experience. The researchers conducted a mixed-methods research study among 782 English teachers and revealed the strong associations between AI literacy and teachers' age and teaching experience [20]. Another study situated similarly in China claims that past experiences with Large Language Models (LLM) strongly impact teachers' beliefs in integrating LLMs in ELT, with some concerns about academic integrity and overreliance. Surprisingly, the study finds that teachers' belief has neither a high association with the availability of IT personnel nor infrastructure [21].

With regard to the pre-service teachers' training programs, the criticism, such as out–of–date, 'one-size-fits-all' was commonly perceived, failing to cater to pre-service teachers' specific needs and tackle their challenges [5]. To address the gap between the old-style training program of the pre-service teachers and the rapidly advancing AI technology employed in various educational practices, an empirical study was conducted by providing a well-structured and practical GenAI model [22,23]. In this qualitative case study, to examine the use of micro learning modules in pre-service teachers (ELT undergraduate students), Kohnke et al.found that their competence and confidence in integrating AI into classrooms were facilitated significantly [5].

To wrap up, some research has been conducted on surveys about the AI literacy or belief in AI-integrated English education of ELT teachers; however, there is scarce research on pre-service ELT teachers, particularly the postgraduates. Compared with the studies on the effects of intervention by AI-based models or systems, the theoretical research is less conducted; however, it is still leading the research direction in that AI-empowered ELT is deemed to have a promising future.

3. Methodology

3.1. Research Design

This study was implemented at a Chinese normal university in Sichuan province after the 2024–2025 fall semester (off semester). The university is ranked as mid-tiered, which is a large portion of Chinese tertiary education. To accommodate the fact that participants were back home, thus dispersed across various regions in China, all the one-to-one interviews were conducted online. Afterwards, the records were transcribed into texts. Upon member check, these texts were uploaded to ATLAS.ti 25, and thematic analysis was conducted, followed by the report of the results.

3.2. Participants

Totally, there are 9 participants involved in the semi-structured interview, who are all postgraduate students majoring in English pedagogy. They are highly likely to become English teachers in primary, secondary schools, and institutions in higher education. The sampling techniques employed were purposive sampling, which is regarded as the most popular sampling technique, and aids in identifying the right participants who would be closely associated and may, therefore, respond to the study questions as insiders [24].

This sample size is in line with accepted guidelines for in-depth qualitative research, when obtaining rich, contextual, and profound insights is the aim. Guest et al. [25] state that when the participant group is reasonably homogeneous with regard to the research subject, which is called data saturation—the point at which no new information or themes are seen in the data—can frequently be reached within the first six to twelve interviews. According to Creswell and Poth, qualitative interviews in phenomenological research usually require a sample size of five to twenty-five participants [26]. Considering to represent different grades may have different needs and viewpoints towards AI-empowered ELT, three participants from every grade were recruited. As a small number of male graduate students major in English Pedagogy, only one male was recruited, as he is the only male

student in the whole grade. The situation in the other two grades was the same; however, the other two male students in Grade Two and Grade Three did not accept the interview invitation. Thus, there is one male postgraduate who participated in the interview.

3.3. Instrument

The study employed extensive use of interviews since, according to Richards, they "lie at the heart of qualitative research"[27]. A semi-structured interview is regarded as "the most commonly used type" because of its adaptability and practicality[27]. Researchers of the study prepared an interview protocol, but "interviewers develop and adapt questions as the interview goes along"[28] to better understand how the participants' opinions, attitudes, emotions, and feedback could inspire fresh concepts and viewpoints. The protocol consists of five sections and 13 questions regarding the aspects of personal information inquiry (Questions 1–4) and 9 interview questions (Questions 5–13): perceptions of AI in ELT, personal experience and current practice, specific needs, and additional suggestions. To improve the consistency and reliability of the interview protocol, it was under several rounds of revision by the researchers and then reviewed by two field experts with more than 15 years of ELT experience and PhD certificates. Problematic questions were reworded and supplemented accordingly.

3.4. Data Collection

Starting from 30th June, 2025, the semi-structured interviews were administered by appointing different times according to the requirements of the participants until 5th July, 2025. To accommodate the fact that participants were back home, thus dispersed across various regions in China, all the one-to-one interviews were conducted online. This approach can facilitate the recruitment of target participants[29] and effectively overcome the temporal and spatial constraints associated with traditional face-to-face interviews. Moreover, this method provides flexibility and convenience for both researchers and participants.

Voice interviews ranged from 25 to 43 minutes in length and were designed to elicit both general and specific responses, along with participants' demographic information. The questions inquire pre-service teacher participants' perceptions of AI in English Language Teaching, personal experience and current practice, specific needs of institutions and administration, and end with additional suggestions, as presented in the **Appendix A**.

The interviews were audio-recorded and subsequently transcribed and translated, as the students prefer to answer the questions in their native language. It is quite understandable that native language helps them more naturally and smoothly, which facilitates the researchers to identify the nuance difference. Afterwards, these transcripts were returned to the participants for member checking, a process that allows interviewees to review and verify the accuracy of the transcription and the authenticity of their responses. This practice not only enhances the credibility and trustworthiness of the interviews but also ensures that the participants' perspectives are faithfully represented[30], thus preparing well for the upcoming qualitative thematic analysis.

3.5. Data Analysis

The purpose of this analysis was to uncover underlying themes and generate new ideas and perspectives based on participants' responses. To facilitate the theatrical analysis, ATLAS.ti 25 was employed. By following the rigorous steps of repeated reading of the texts, initial coding, grouping codes, and eventually, themes emerged.

Considering the ethnicity of the study, all the participants were informed about the purpose and procedure of the research, and they were aware of the right to participate in the interview or not without any consequences. Consent forms were signed with full agreement to the study and voluntarily. For the sake of their anonymity protection, pseudonyms were employed throughout the study.

3.6. Findings and Discussion

Firstly, the basic information of the interviewees concerning gender, age, and grade. Whether they had English teaching experience and participated in any form of AI-empowered ELT training is presented in the following **Table 1**.

The nine pre-service ELT teacher participants include eight females and one male, aged 23 to 26 years, in their first, second, or final year of a three-year Master's Degree of Education program, specializing in English-language ped-

agogy. According to their self-report, most of them have experience in English teaching (n = 7); however, only two postgraduate students admitted that they had some exposure to AI-empowered ELT training.

Table 1. The demographics of the student participants.

Participants	**1A**	**1B**	**1C**	**2A**	**2B**	**2 C**	**3A**	**3B**	**3C**
Gender	male	female	female	female	female	female	female	female	female
Age	25	23	24	24	25	25	25	26	26
Grade	One	One	One	Two	Two	Two	Three	Three	Three
Teaching experience	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AI-empowered ELT training	No	No	Yes	No	No	Yes	No	No	No

Following the understanding of the basic information of the interviewees, the interview transcripts were subjected to initial coding, which resulted in 46 opening codes concerning the experiences of using AI in participants, teaching, the merits and weaknesses of AI-empowered ELT, and the needs in an AI training program. Then, the opening codes were grouped into code groups in response to the two research questions.

For RQ1, concerning the attitudes towards the role of AI in ELT, all participants agreed that AI would efficiently boost the teaching outcomes in terms of speed, convenience, diversity, etc. However, they admitted some concerns are haunting their perceptions toward AI-empowered teaching. Therefore, two themes answer this research question: the advantages of AI-empowered ELT and the weaknesses of AI-empowered ELT based on their perceptions, which are shown in **Tables 2** and **3**.

Table 2. Theme One and the relevant codes.

Theme	**The Advantages of AI-Empowered ELT**				
Code groups	Generating interesting teaching activities.	Designing teaching plans.	Generating rich teaching resources.	Convenience and fast	Excelling at designing classroom introductions.
Extracts	These AI-generated tasks are highly feasible and have been well-received in the classroom. (2C)	I once used Deepseek to do the teaching plan, and it's good. (3A)	AI tools can provide teachers with a large amount of topic-related material in a short period of time. (2A)	AI tools are easy to use and very fast. (2B)	…mainly use AI in the introductory part of teaching, mainly to attract students' attention. (1C)
	I used ChatGPT to help me design teaching activities when preparing lessons. (2C)	A teacher suggested that we do the plan via AI, good for novice students. (1A)	Doubao offers a lot of teaching materials, especially the texts. (1B)	AI effectively reduces lesson preparation time. (3A)	It plays an important role in the classroom introduction phase. (2B)

Table 3. Theme Two and the relevant codes.

Theme	**The Weaknesses of AI-Empowered ELT**				
Code groups	Lack of emotion in conversation	The potential threat to personal information	Focus on form rather than content.	Fake information provided by AI	Reliance on AI
Extracts	Lack of emotion. (1B)	It's scary to put all personal information into AI. (1A)	When grading, AI puts too much emphasis on language form, and insufficient attention is given to the content of the essay. (1A)	… the authenticity of all information cannot be guaranteed. (2A)	AI tools can easily lead to lazy thinking among students and teachers. (1C)
	AI cannot accurately capture students' emotional changes like teachers can, nor can it provide emotional feedback to students through body language or eye contact like teachers can.. (3B)	The security of AI tools in terms of personal information protection is still unknown, so when we use AI tools to analyze students' learning, it may lead to the leakage of student information. (2A)	Sometimes, essay correction is too mechanical, focusing only on whether the grammar is correct without considering the overall content and the emotions conveyed by the student. (3B)	The information may be fake. (3C)	Students or teachers may become overly reliant on AI tools. (3C)

The mixed attitudes toward AI-assistance ELT were manifested in the concerns the pre-service teachers hold. They thought AI lacks emotion in conversation, which may cause misunderstanding and a lack of emotional bond compared with student-teacher communication. The potential threat to personal information also needed attention, and while AI tools grade assignments, especially the compositions, they pay more attention to form rather than content, and neglect the meaning or emotions expressed. Notably, the information provided by AI may be false, and further, the reliance on AI tools.

For RQ 2, the needs for AI-empowered ELT by the postgraduate students are mostly about three themes. The first two themes are about the AI- empowered ELT that they regard as significant to obtain, and the last theme is concerning what the institutions could provide for them in order to achieve the competences. The first theme is the competence to facilitate students' English learning by AI, which emerged from four initial codes, which is shown in **Table 4**.

The need for AI-empowered ELT competence by the postgraduates is also embodied in the pedagogic skills for themselves, which is the competence to teach English by employing AI (Theme Four), emerging from 3 initial codes as shown in **Table 5**.

Table 4. Theme Three and the relevant codes.

Theme	**The Competence to Facilitate Students' English Learning by AI**			
Code groups	Explaining basic knowledge points	Providing context for learners	Interacting with students promptly	Offering more methods for learners' language skill training
Extracts	…using AI to explain basic knowledge points. (3C)	I would like to use AI to enrich English teaching contexts. (1B)	It should be an active participant. It can respond to everyone's requests or other feedback. (2C)	AI could be used to train students in listening, speaking, reading, and writing. (2C)
		AI can provide digital humans or simulate real-life scenarios, enabling students to experience an immersive English learning environment. (2C)	AI can compensate for the shortcomings of teachers who cannot guide students anytime, anywhere. (1C)	I want to provide students with interesting and reasonable tasks, which students can submit to AI for continuous practice and reinforcement after completion. (3B)

Table 5. Theme Four and the relevant codes.

Theme	**The Competence to Teach English by Employing AI**			
Code groups	Utilizing AI for high-quality teaching materials	Designing teaching activities by employing AI	Using AI to prepare lessons in a targeted way.	Writing effective and clear prompts.
Extracts	…the ability to obtain teaching resources using AI. (1A)	Then I hope to use AI to generate richer and interesting learning activities that are appropriate for the students' learning stage. (2C)	…can help me automatically organize students' mistakes and analyze the knowledge points where they often make mistakes, so that I can prepare my lessons accordingly. (3B)	For example, to teach us how to input instructions to AI to more efficiently complete our teaching activities…(2C)
	AI will improve the organization and quality of teaching resources for teachers. (3A)	The teaching activities are important to attract learners, and AI may help me with them. (1B)	I want AI tools to analyze students' answers to accurately identify areas of weakness and assist me in analyzing the overall learning situation of the class, and generate data reports. (3C)	Learning to write AI commands. (3C)
	I hope AI can help me organize learning materials for interdisciplinary teaching more quickly. (2B)		A personalized instructional design capability is what I want to learn, utilizing AI to generate personalized teaching plans based on specific instructional needs…(1B)	

To achieve their goals to master the skills in AI-empowered English teaching, they suggested some measures to be taken by the institutions, which are manifested in Theme Five in the following **Table 6**, including four codes.

Table 6. Theme Five and the relevant codes.

Theme	**Expectations for School Support**			
Code groups	Policy support for promoting AI usage	Pre-service teacher training in AI empowers ELT	Opportunities for practice with improvement feedback	AI software purchase
Extracts	The university should promote the use of AI tools such as Yuka Classroom, Learning Pass, and Grading Network throughout the school, making AI a tool to assist our teachers in their teaching. (1A)	Institutions should cultivate prospective teachers' abilities, such as helping me understand some AI tools that are currently more suitable for English teaching activities. (1C)	Provide us with a practical setting or English teaching practice activities that allow us to personally engage in teaching activities that combine AI with English instruction, and provide timely feedback. (3C)	I only hope that the university can provide us with free access to some popular AI tools to assist with classroom teaching. (2B)
		I want institutions to provide teachers with some guidance on AI-related teaching theory, such as how to better promote teachers' professional development and how to better integrate innovative or cutting-edge teaching methods into our teaching activities. (2A)	Invite some experienced middle school teachers to share how they use AI in teaching, since we haven't had much experience in the classroom, and just listening to experts talk about theory can be a bit abstract. Wish the teachers would give us useful feedback (3B)	I also hope that the institutions purchase the relevant hardware and software, as some paid tools are really unaffordable for students. (3B)

Concerning the results of the interview transcripts, the pre-service teachers have optimistic opinions about AI tools generally, such as helping timely grading and feedback to learners' assignments, especially in writing, which aligns with Chan et al.'s study, stating that AI-generated feedback can significantly improve students' writing and equipped them with stronger motivations and engagement in ELT[17]. The pre-service teachers have a comprehensive knowledge about AI applications and hold the positive belief that it will be further integrated with our lives and teaching careers. Similarly, Lang et al. claim some educational issues were hopefully addressed in numerous scholars' viewpoints[13]. The positive attitudes towards teaching and learning are also partly in line with Sharadgah and Sa'di[14] after a thorough systematic review of the existing literature, stating that AI facilitates English teaching by boosting learners' English language skills, recognition, attitude, and satisfaction. Empirically, the attitudes of the pre-service teachers align with Zhang and Cao in the belief that AI technology in English language teaching increases the overall learning outcomes of the learners and frees teachers from many replaceable burdens[19], in line with Tatar[16]. The results also support Hockly with his statements about the opportunities, along with the challenges AI will bring to us[18].

Some challenges are also evident, such as the concerns about excessive reliance on AI, the fabricated information provided by AI, and the lack of authentic communication in AI-empowered teaching because of the impersonal nature of AI. The findings are partly in line with Gao et al., who reveal teachers' concern about overreliance[21]. Besides, pre-service teachers' concerns about the lack of authentic communication in AI- empowered teaching support Chan et al.'s statement that learners report AI's feedback as less personal than human feedback[17]. Therefore, it is important to help pre-service teachers mediate between automated and human feedback through training.

The needs and expectations of the pre-service teachers are in accordance with Kohnke et al.'s claims that the institutions employ outdated programs, failing to cater to pre-service teachers' specific needs and tackle their challenges[5]. In this qualitative research, the participants similarly announced their urgent need to be equipped with advanced AI technology for future career development, which should be catered to by the institutions. Interestingly, the findings are in contrast with Gao et al.'s that teachers' belief in the AI-empowered ELT does not correlate with the IT (Information technology) personnel and infrastructures[21] . Besides, they suggested some detailed request for improvement in the ELT

pre-service teacher program, such as "I wish the program train us to inputting commands to AI to make our teaching activities more efficient, or to provide us with AI tools that are suited to ELT", and "training programs still need teach methods for combining them with teaching activities, other than we struggle to learn by ourselves, after all, in the competitive job market, AI applications are the necessary and inevitable" (2A).

4. Conclusions

This study investigates the perceptions and needs of ELT pre-service teachers in the domain of ELT in the Chinese EFL context. The analyses of the qualitative data collected from nine one-to-one interviews demonstrated that all participants agreed that AI would efficiently boost the teaching outcomes by generating rich teaching resources and interesting teaching activities, efficiently designing teaching plans, providing convenience and speed, and its excellence at designing classroom introductions. However, they admitted there are some concerns toward AI-empowered teaching, such as a lack of emotion in conversation in communication, the potential threat to personal information, a focus on form rather than content while grading, fake information provided, and the reliance on AI. As for the specific needs of the group, they proposed that support from the institutions is urgently required to develop their competence in applying AI technology in facilitating students' English learning and their own pedagogical skills.

There are certain limitations. The lack of quantitative data limits the support of the findings. However, as this qualitative study aims for exploratory the needs of the specified group instead of statistical generalizability, the rich interview data provide valuable insights into the perceptions and needs of ELT pre-service teachers in the specified context. Besides, the relatively small sample size would not generalize the findings of the current research. Lastly, the interpretation of the qualitative data was influenced by the individual experiences of the researchers, thus may potentially cause some bias; however, by employment of two researchers in the thematic process has diminished the bias to some extent.

As this is a pilot study, further research is greatly necessary to expand the sample size by recruiting more pre-service ELT teachers from different sites to further understand their needs for AI-empowered teaching. Furthermore, mixed research methods-such as questionnaires, case studies, and interviews with administrators- are more objective and well-rounded. Therefore, providing solid evidence for the identification of their needs and facilitating the decision-making in the reform of the current pre-service ELT teacher program. Additionally, the research on the design and development of an AI-empowered ELT training course would benefit the population pragmatically. Lastly, the measurement of AI's impact on language learning outcomes and learner affect via controlled trials or by combining quantitative and qualitative measures to assess would be highly valuable.

Author Contributions

Conceptualization, M.D. and N.E.M.S.; methodology, M.D. and N.E.M.S.; software, M.D.; validation, N.E.M.S. and N.A.S.; formal analysis, N.E.M.S. and N.A.S.; investigation, M.D.; resources, M.D.; data curation, M.D.; writing—original draft preparation, M.D. and N.E.M.S.; writing—review and editing, M.D. and N.E.M.S. and N.A.S.; visualization, M.D.; supervision, N.E.M.S. and N.A.S.; project administration, N.E.M.S.; funding acquisition, N.E.M.S. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

Ethical review and approval were waived for this study due to time limits and all the respondents signed the consent forms.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data is available upon asking.

Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

The interview protocol

Here's the entire interview protocol translated into English and formatted in **Microsoft Word style (in a Word)**:

Interview Protocol: AI-empowered English Language Teaching

Dear Participant,

Thank you for agreeing to take part in this interview. The purpose of this study is to understand the perceptions, experiences, and needs of postgraduate students (pre-service teachers) in English Language Teaching (ELT) regarding AI-empowered instruction.

Please answer the following questions honestly based on your actual experience. All responses will be used solely for academic research purposes and will remain anonymous and confidential.

Section I: Basic Information

1. **Gender:** _____
2. **Year of Study** (Please tick):
   □ First-year □ Second-year □ Third-year
3. **Do you have any teaching experience** (e.g., internship, teaching assistantship)?
   □ Yes □ No
4. **Have you received any training related to AI or intelligent education?**
   □ Yes □ No

Section II: Perceptions of AI in English Language Teaching

5. **Do you think AI technologies can enhance the effectiveness of English language teaching? Why?**
   Please briefly explain your view:

6. **In your opinion, what roles should AI play in English language teaching?**

Section III: Personal Experience and Current Practice

7. **Have you used any AI tools** (e.g., ChatGPT, essay correction software, translation, automated speaking assessment, etc.) in your lesson preparation, teaching practice, or learning? Please give examples:

8. **What are the advantages of using these AI tools for teaching purposes?**

9. **What are the limitations or problems you have encountered when using AI tools for teaching?**

Section IV: Specific Needs

10. **What types of support do you think schools or educational institutions should provide** to help you develop AI-integrated teaching competencies?
(You may select multiple: courses / training / practical opportunities / hardware & software / policy guidance / others. Please specify.)

11. **What AI-related teaching skills do you think should be cultivated during your training?**

12. **In your future teaching, what specific problems or tasks do you hope AI can help you solve?**

Section V: Additional Suggestions

13. **Do you have any other suggestions on how schools can support pre-service teachers in mastering AI-empowered teaching?**

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