

Integrating AI Literacy into Initial Teacher Education for English Language Teaching

Melissa Özlem Grab¹, Giresun University, Department of Foreign Language Education, melissagrab@yahoo.com

Recommended citation: Grab, M. Ö. (2026). Integrating AI Literacy into Initial Teacher Education for English Language Teaching. *Journal of Language Research (JLR)*, 10(2), 395-409.

DOI: <https://doi.org/10.51726/jlr.1884734>

Abstract: The paper takes the argument that AI has significant potential in teacher education, especially English Language Teaching (ELT) but teachers' preparedness, classroom practices, and institutional support may all be factors that hinder or facilitate the adoption of AI. The study employed a mixed-methods design, drawing on the TPACK and TELL frameworks to examine how AI literacy can be integrated into initial teacher education programs. Participants consisted of one hundred English language teacher educators from five universities; all are familiar with or interested in AI-supported teaching. Data were collected through structured questionnaires based on the interviewees' readiness, pedagogical influence, and adoption barriers. Data were also collected through open-ended questions for the purpose of obtaining additional qualitative data. The study indicated that teachers who were able to incorporate AI in their teaching were very satisfied due to the feedback that the students got from the AI, as well as the increase in enthusiasm among the students. Most importantly, AI was still just another teaching tool along with others, not the one effecting a complete transformation in the teaching, learning process. Lack of enough institutional support, lack of infrastructures, poor teacher training, and ethical issues in terms of problems such as privacy, data, and algorithmic bias, were some of the issues identified as barriers to AI adoption.

Keywords: Artificial Intelligence, English Language Teacher Education, TPACK Theory, Technology-enhanced Language Learning (TELL)

INTRODUCTION

Generative AI is an innovative technology that could revolutionize modern education including English Language Teaching (ELT) (Chen et al, 2020; Crompton et al, 2024). Sophisticated exemplars like GPT can craft personalized language exercises, foster immersive environments this way, and even provide immediate corrective feedback. Other computer writing aids like Grammarly are changing the way teachers outline lesson plans, compute student scores, and communicate with them. As influential AIs develop further, it is all the more crucial for higher education institutions, as the sites responsible for training the next generation of teachers, to include the application of AI technologies in their teaching of English language lecturer training program (Yeh, 2025).

And while AI acquisition is a newsworthy phenomenon for almost twenty years, AI application in the confines of teacher training programs- being English language instructors, deserves no less scholarly of treatment. Teacher AI application competency is the primary variable determining the tone of how deeply usefully and consistently the team is used in the classroom. Even simple use cases require teachers to possess not just the expertise to use AI-based learning programs, but the pedagogical training to use the medium with an eye towards language learning outcomes (Patty, 2024). However, a persistent refrain through educational literature is the lack of teacher education are perceived to be necessary for the effective use of what AI applications (e.g. Pedro et al, 2019; Kim &

¹ ORCID: [0000-0003-0356-6571](https://orcid.org/0000-0003-0356-6571)

Submitted: 08.02.2026

Accepted: 26.06.2026



Kwon, 2023). This dearth has a variety of reason, ranging from lack of formal input, limited access to the tools themselves, and limits in educational training.

Since the emergence of generative AI, researchers have endeavored to investigate the role of AI in language education (Pokrivčáková, 2019; Kohnke et al., 2023; Kim & Kwon, 2023; Islam, 2024), its influence on AI-supported learning tools, teacher readiness and learner perceptions. They have shown the Diadem potential of AI in terms of supporting personalized learning, automated feedback and language skill development, what is also clear is that a majority of studies have tended to focus on either students' outcomes, single AI tools or teachers' attitudes towards technology.

How they do not investigate AI adoption by English language teacher educators who play an important role in equipping future language teachers. Furthermore, other studies have also failed to look at AI adoption through a single lens or context, but rather have focused on one aspect of AI adoption for example readiness, competencies or challenges. Little literature exists on how TLS perspectives educators view the pedagogical influence of AI, all while identifying barriers to AI implementation. The present study thus fills this research gap by examining English language educators' readiness for AI integration, perceptions of AI's pedagogical influence, and perceived barriers to adoption. Using the TPACK and TELL frameworks the study provides a well-rounded perspective of AI integration in English language teacher education, hence contributing to the literature on preparing prospective teachers for AI-infused Language Learning environments.

LITERATURE REVIEW

Concerns about the use of AI in education, especially in terms of teacher preparation and pedagogy education, have also appeared in the last couple of years. In what domains of education has AI been successful? In the areas of smart education systems and learning personalization. The literature review includes some cutting-edge research and thoughts on the use of AI in English language teacher preparation, including pedagogy, teacher readiness, and barriers to AI use (e.g. Pokrivčáková, 2019; Kim and Kwon, 2023; Kohnke et al., 2023; Islam, 2024).

GenAI has the capability to generate new content in textual, image or audio form using data that is available. In ELT – generative AI technology in the way of GPT-based models, automated writing assistance, and adaptive learning platforms could greatly augment language acquisition. As Peng, Ma and Spector (2019) note, AI technology can advance language learning with customized feedback and adaptive learning trajectories. Also, AI-powered tools like automated essay graders, pronunciation analyzers, and chatbots permit English learners to get instant and catered feedback that may not be possible with usual assessment practices (Owan et al., 2023).

The concept of AI integrated education is advocated by eclectic learning theories advocating its prospect for betterment and enhancement of learning and teaching. The constructivist learning theories, advocated by Vygotsky's (1978) Zone of Proximity Development (ZPD) have been endorsed for AI spending providing an opportunity of scaffolding support for students to learn in their Zone at their own rate. Similarly, AI imbibed collaborative learning settings also hold the scope for peer learning and co-construction of knowledge (Schunk, 2012). The learning theories in the frame of Bloom's Taxonomy (Bloom et al., 1964; Anderson & Krathwohl, 2001) bring up the capacity of AI for higher-order thoughts to facilitate greater-order thinking skills through adaptive testing and AI-based writing tools that are able to affectively, machine-wise, critically that promotes thinking skills (Zawacki-Richter et al., 2019). The whole conception of learning theory, connectivism, which means learning through a network, is at verge with AI-based recommendations in online resources as well as adaptive intelligent tutoring systems will learn and adjust to meet the needs of the learner (Hodges et al., 2020).

Further, as to the principles that guided the tenets of Universal Design for Learning, the technologies that support speech-to-text, text-to-speech, and changed methods of learning through multi-modal learning interfaces are all possible through AI technologies (Dell et al., 2020). Personalized Learning Theory is enabled by a variety of AI analytics determine that traces student performance continuously and adapts the learning to fit student's requirements, and gives immediate feedback to help engagement and self-efficacy (Holmes, 2020). According to these learnt parameters



of learning, and theories of learning AI can bring pedagogy a long way to reach of students to achieve better learning.

Technology-Enhanced Language Learning (TELL)

The term Technology-enhanced Language Learning (TELL) involves the use of digital technologies to enhance language teaching and learning. Extrapolated from earlier work in Computer-Assisted Language Learning (CALL), TELL refers to a wide variety of technology products, from mobile apps, and online learning environments to intelligent tutors and AI-powered assistive resources. (Alakrash & Razak, 2021; Iberahim et al., 2023; Buddha et al., 2024).

Research has shown that TELL can enhance learner engagement and language skills, but also communication abilities and digital literacy by providing access to interactive and personalized learning experiences (Cao et al., 2023; Bećirović et al., 2021; Huang & Li, 2024). In recent studies, we see AI technologies emerging in TELL environments through adaptive feedback, automated writing assistants, and conversational agents supporting language development (Hasumi & Chiu, 2024; Amir & Rustam, 2025). However, the successful integration of these tools is dependent on teacher readiness, technological competence, and institutional support (Zainuddin, 2023; Nasution & Batubara, 2024). Thus, TELL provides an ideal basis to study how teacher educators understand AI integration, how it impacts their practice, and what barriers may obstruct its adoption in English language teacher education.

THEORETICAL FRAMEWORK

This study was grounded on two major theories which have a substantial influence on the research of effective technology integration in ELT. The theories were Technological Pedagogical Content Knowledge (TPCK) and Technology, Enhanced Language Learning (TELL).

The TPACK framework was initially introduced by Koehler and Mishra (2009), who characterize technology, integrated teaching as an interaction of three knowledge domains: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). TPACK argues that technology integration in education is more than simply technology use; it involves a profound understanding of how these three domains operate together in a way that enhances learning and teaching. Concerning generative AI technology, TPACK serves as a guiding framework for examining how ELT professionals acquire the interwoven knowledge and skill sets necessary for the effective use of AI in their teaching. The TELL framework builds on TPACK by highlighting the transformative power of technology in ELT. TELL mainly concentrates on the ways technology, such as AI technology, can support language acquisition.

Pedagogical Practices and AI in ELT

The pedagogical practice of English language teaching (ELT) is also affected in a considerable way by the use of AI tools. The use of AI technologies like language learning software and tests using AI has the potential to revolutionize English language teaching. The use of AI technologies provides teachers with an opportunity to free themselves from tasks like grading, which enables them to focus more on the ‘human factor’ of teaching. However, there is no scope for AI technologies to replace the teacher’s judgment, especially when there is work involving improvement of critical thinking, creativity, and cultural knowledge. It is expected that these technologies will be used as supplements for teachers and not as replacements (Rahimi & Fathi, 2022).

There are some significant barriers in the incorporation of AI tools in English language teacher training, considering all the advantages of using these technologies. These barriers can be classified into technological, institutional, and ethical barriers. Technological barriers include infrastructure, absence of AI tools, and difficulty of learning new technologies (Selwyn, 2016). Institutional barriers include the absence of policies supporting the use of AI technologies in teacher education programs and educators’ possible negative attitudes toward using these technologies (Sellar & Gulson, 2019). Ethical barriers, such as issues of data privacy, replacement of human educators by AI technologies,



also pose barriers, which should be addressed for the successful integration of these technologies in teacher training (Binns & Veale, 2021).

Teachers’ readiness to accept and utilize AI technologies in their profession is one of the most critical factors for success in the utilization of these technologies in the classroom. According to Puentedura’s (2013) research on SAMR modeling, for the utilization of technologies in the classroom to be effective, teachers ought to transcend the utilization of traditional methods and computer applications and redefine the methods for improvement in students’ performance. However, based on the majority of educators’ views, they are not ready to utilize new technologies such as AI in the classroom (Kaplan & Haenlein, 2018; Barrett & Pack, 2023). Teachers in higher institutions who were involved in a study by Bower (2019) grumbled on the lack of knowledge on the utilization of AI and the need for training on these technologies.

In the light of this discussion, present study aims to investigate the following research questions;

- How ready are the language teacher educators to integrate AI in their instruction?
- What are the barriers to adopt AI in higher education?
- What are the effects of AI on pedagogical practices of language teacher educators?

METHODOLOGY

This study employed a mixed-methods approach to investigate the teacher educators’ integration of generative AI in English language teacher education. The study examined participating teachers’ readiness, the influence of AI on pedagogical practices, and the barriers to AI adoption in higher education.

Participants

Participants were 100 English language teacher educators from five universities. Participants were selected using purposive stratified sampling. To ensure equal representation across each institution and that any one university’s results do not dominate the findings, approximately similar number (n = 20 per university) of participants were recruited from each institution. Participants are recruited based on their familiarity, exposure, or interest in using AI for teaching practices within each institution (see table 1).

Table 1. Demographic Characteristics of Participants (N = 100)

Variable	Category	n	%
University Affiliation	University A	20	20%
	University B	20	20%
	University C	20	20%
	University D	20	20%
	University E	20	20%
Teaching Experience	1–5 years	25	25%
	6–10 years	35	35%
	11–15 years	20	20%
	16+ years	20	20%
Exposure to AI Tools	Minimal (heard of/rarely used)	30	30%
	Moderate (occasionally used)	45	45%
	High (regular integration)	25	25%
Pedagogical Orientation	Traditional	28	28%



Variable	Category	n	%
	Blended/Transitional	40	40%
	Innovative/Tech-forward	32	32%
Interview Participants	Selected for semi-structured interview	15	15%

To preserve anonymity while providing contextual information, participants quoted in the findings are identified using pseudonymous participant codes (e.g., P3, P11) accompanied by selected demographic characteristics, including teaching experience and level of AI exposure.

Data Collection Tools and Procedures

Data for the study came from two sources; questionnaire and semi-structured interviews. The survey questionnaire used in this study was designed to gather data on the attitudes of teachers towards AI in language education, their readiness to use AI tools, and their current barriers of technology use in the classroom. The questionnaire consists of closed, ended and open, ended questions, so the quantitative analysis and qualitative feedback are both possible. The questionnaire also consists of Likert, scale questions to determine the level of readiness and attitude towards AI, as well as open, ended questions to get more detailed reflection on the experiences of teachers with AI integration and challenges of teachers. The questionnaire was sent by email to all 100 participants.

Instrument Development

The questionnaire in this study was developed to measure three main dimensions, which are highly related to the use of artificial intelligence (AI) in higher education: readiness, perceived pedagogical influence, and barriers to adoption. The whole process of the instrument's elaboration was in line with educational research survey design standard guidelines (DeVellis, 2017; Creswell & Creswell, 2018) and involved several phases to ensure content validity, comprehensibility, and reliability.

1. Defining the construct and generating the items. At first, the research team extensively reviewed the literature on technology adoption models such as TAM and UTAUT, teacher readiness models, and AI in education. This review helped identify the theoretical dimensions under each construct: Readiness: understanding AI tools, having technical skills, being ready to try new things. Pedagogical influence: how respondents think that AI will change teaching methods, assessment, and stimulating students. Barriers: technical, institutional, and ethical difficulties that limit AI use. After definitions of the constructs, the first set of 32 items was prepared 12 for readiness, 10 for pedagogical influence, and 10 for barriers, on a 5 point Likert scale (1=Strongly Disagree to 5=Strongly Agree).

2. Expert review for content validity.

To determine content validity, the initial questionnaire was presented to a panel of five experts. The panel consisted of three teacher educators in English language teaching knowledgeable about technology-enhanced language learning and AI supported pedagogy, one expert in educational measurement and evaluation and one researcher in artificial intelligence in education. Each item was rated for relevance, clarity, and representativeness on a four-point scale.

The overall Content Validity Index (CVI) was .91 well above the minimum recommended standard of .80 (Polit & Beck, 2006) indicating good agreement among experts on the appropriateness of the instrument. based on expert feedback, items were clarified, removed or combined to improve the instrument overall.

3. Pilot testing and refinement.

A pilot study was carried out among 20 English language teacher educators who were from the institutions that were not involved in the main research. The respondents were invited to complete the questionnaire and provide their feedback about the wording, length, and comprehensibility of the questionnaire. The item-total correlations were inspected with the pilot data, and items with correlations below 0.30 were either revised or discarded. Thus, a final tool of 20 items was developed:



8 items of readiness, 7 items of pedagogical influence, and 5 items of barriers. The final questionnaire is presented in Appendix A to facilitate replication and future validation studies.

4. Reliability assessment.

The internal consistency reliability of the instrument was evaluated through Cronbachs alpha () test with the main study sample (N=100). The outcome showed that the reliability of the measures was good: the subscales of Readiness (=0.88), Pedagogical influence (=0.85), and Barriers (=0.81) all had high coefficients, thus contributing to an excellent internal consistency for the Overall scale (=0.91).

5. Final structure.

The final questionnaire continued to have the three, subscale structure, with the items being grouped by construct. Except for two items in the barriers subscale, which were reverse, coded to lessen acquiescence bias, all the items were positively worded.

Moreover, a limited number of 15 educators were engaged in semi, structured interviews. The interviews were held so as to get the participants' deep understanding of the use of AI in their teaching practices, how they see the advantages and disadvantages of AI, and what difficulties they encounter when using AI tools in their teaching. The interviews were in an open, ended style, which gave freedom for the discussion to go in different directions, but at the same time teacher preparedness, AIs impact on classroom interaction, and potential barriers to adoption were key topics that were covered. The interview session lasted around 45 to 60 minutes and was held virtually so as to fit the participants time availability.

Data Analysis

To analyze the data, a mixture of quantitative and qualitative methods was used. In order to extract teachers' attitudes toward AI and their perceptions of readiness for AI adoption in the survey data, trend and pattern analysis of survey responses in terms of teachers' technological, pedagogical, and content knowledge were conducted, descriptive statistics were used.

Interview transcript analysis was conducted through Thematic Analysis (Braun and Clarke, 2006), a qualitative method for identifying, analysing and reporting patterns (themes) within qualitative data, where the themes captured something important about the data in relation to the research question.

Thematic analysis identified relevant themes about the AI language instruction integration in terms of teachers' views on how useful ai language instruction toolbox would be, what the problems are, what kind of help they need to already integrate AI tool into effective integration of Ai into their teaching practice. The researchers themselves carried out the thematic analysis as a research method that is well suited to the analysis of qualitative data, which will enable them to systematically group the comments into meaningful themes reflecting personal experiences and general patterns.

It can be a time-consuming process which comprises several steps: familiarization (getting acquainted with the data), reading the transcript multiple times; initial coding (producing initial codes through the answers to the open questions about the use of AI method and hurdles, the methodology changes in Ai learning all the learning processes), identifying themes (by collating codes into descriptions and labels with related things like ai in their teaching methods, troubles in ai, "teachers must be prepared "and so on); validating themes (checking with the data regarding loyalty of evidence as to whether it actually says what we say it says), and finally final thematic analytical complete of the text into visual and textual aggregating the common into a single transparent and deliberative story.

Ethical Considerations

Ethical issues always should be a major concern when carrying out research with human subjects. Here, participants of the research were given a consent form that explained the research's purpose, the participant's role, and how the data would be used. Also, participants were guaranteed that their answers would be confidential, and to make sure of confidentiality, all data were kept anonymous. Besides that, this investigation met the requirements of the ethics standards the



university's ethics review committee has set, and all steps were in accordance with the institutional rules regarding research integrity and transparency.

RESULTS

The results of the present study visually depicted the three sides of the English language teacher educators' readiness and ability: first, their willingness to integrate generative AI in their pedagogies; second, their implemented pedagogical practices; third, their facing the AI implementation challenges. The survey and semi-structured interview data were analyzed using mixed method. Below is a detailed expos of the findings obtained from the analysis of the research questions in three broad sections: teacher preparedness, pedagogical practices, and challenges to the integration of AI.

Table 2. Reliability and Descriptive Statistics for Questionnaire Subscales (N = 100)

Sub-scale	No. of items	Cronbach's α	Mean	SD	Min	Max
Readiness	8	0.88	3.92	0.54	2.50	5.00
Pedagogical Influence	7	0.85	4.05	0.49	2.71	5.00
Barriers	5	0.81	2.76	0.63	1.20	4.80
Overall scale	20	0.91	3.58	0.46	2.40	4.80

Readiness for AI Integration

Teacher educators self, reported high readiness levels for technology integration in their practices ($M = 3.92$, $SD = 0.54$) according to the descriptive statistics, and the scale showed strong internal consistency ($\alpha = 0.88$). This implies that the majority of the survey participants felt quite comfortable with the use of general educational technologies. Nonetheless, as the qualitative data indicated, they might have gained such a readiness mainly from dealing with digital tools for a long time rather than specifically from using AI. Of the respondents, 85% were familiar with technology for education, but only 48% said they were willing to use AI. This supports the TPACK model (Koehler & Mishra 2009), which illustrates content (CK), pedagogy (PK) and technology knowledge (TK) are needed to integrate technology properly. The interview respondents were proficient in both CK and PK; however, they did not have enough TK to feel confident using AI-based applications, as evidenced by the fact that readiness does not = confidence in AI per the statistical data. In addition, 60% of respondents said they would like professional development related to integrating AI; this supports the TPACK-based premise that preparedness and ongoing training are critical preconditions for effective on-going integration of AI.

A one-way analysis of variance (ANOVA) indicated no statistically significant differences in the AI integration readiness of teacher educators based on their AI exposure (minimal, moderate and maximum). Although teacher educators with higher levels of AI exposure did report higher readiness scores compared to those with lower levels of AI exposure, the difference between groups did not rise to a level of statistical significance. The finding suggests that familiarity with an emerging technology (in this case, AI) does not necessarily correlate with a significantly higher level of readiness to integrate such technologies into instructional practice. Other factors such as institutional support for AI integration, pedagogical beliefs, or access to professional development opportunities may influence the readiness of educators to integrate AI into their instructional practices.

Another one-way analysis of variance (ANOVA) explored whether there was any statistically significant difference in readiness to integrate AI based on years of educator work experience (1 - 5 years; 6 - 10 years; 11- 15 years; 16+ years). The results showed no statistically significant difference in the reported levels of readiness among the different groups of respondents ($p > .05$). The lack of significant difference may indicate that the number of years spent as an educator may not directly relate to an educator's readiness to be able to integrate AI into their instructional practices. Additionally, it is more likely that how frequently an educator has been exposed to emerging



technologies and their access to ongoing professional development will greatly influence how they perceive their own level of AI readiness.

Perceived Pedagogical Influence of AI

The pedagogical influence subscale recorded the greatest average score ($M = 4.05$, $SD = 0.49$; $\alpha = 0.85$), which reflected that teacher educators were mostly in agreement with the statement that AI could be a powerful language learning tool if it was used correctly. Almost half (52%) of them had used AI-powered grammar correction tools (e.g., Grammarly), and a small number (35%) of them had tried AI-based speech recognition software. The use of these tools was mainly attributed to the ability to offer instant and personalized feedback to students, thus allowing the teacher more time for a class that involves more student interaction.

Qualitative reports showed that AI facilitation mainly supported a teaching activity and was not the focus of such an activity. For instance, teachers leveraged AI for grading faster or for recommending teaching materials, but they still largely took charge of the lesson planning and the instructional delivery. Such behaviors are in line with the TELL perspective that encourages the use of technology for enhancing teacher, led instruction rather than replacing it. Participants who made good use of AI tools shared that their students were more engaged and they could provide language support more precisely to those students who needed it the most, especially when the feedback given was in line with the learners needs.

Barriers to AI Integration

The barriers subscale exhibited the lowest mean ($M = 2.76$, $SD = 0.63$; $\alpha = 0.81$), with the scores indicating a moderate to strong level of agreement that AI adoption is being hindered by the presence of challenges. A lack of training was identified as the most common barrier by 78% of the respondents, which correlates well with the readiness results and the TPACK framework's emphasis on technological knowledge (TK) as a necessary prerequisite for integration.

Internal resistance was identified as one of the significant limitations. Many of the people surveyed think that their university does not support the use of AI by not providing suitable infrastructure, or because of concerns about the costs. Also, many of the people surveyed (68%) expressed ethical issues related to AI, particularly with regards to data security, bias, and a possible decrease in personal interaction between educators and students during classes. These results are consistent within the field of ethics related to the overall use of Educational Technology (Selwyn, 2019), which leads to the implication that readiness to adopt AI is dependent not only on the individual educator, but also on the institution's ability, capacity, and/or ethical rationale to support such adoption.

The correlation between readiness and pedagogical influence was a positive and significant ($r = .62$, $p < .001$), indicating that an educator with a higher feeling of readiness to implement AI will also be more likely to perceive positive pedagogical influence. In addition, the relationship between the barriers to the use of AI and both readiness and pedagogical influence was negative.

Overall, the data indicate that the educator community is fairly well educated in the use of technology, while exhibiting some degree of caution in using AI for pedagogical improvement purposes. The high ratings in terms of readiness to use AI for teaching and learning do suggest a willingness on the part of educators to implement new teaching tools, but a lower rating of barriers to AI use indicates that there still remain many perceived barriers to the implementation of AI. The TPACK model of technology integration does explain this phenomenon well: Both pedagogy and content knowledge among educators is reasonably high, but the lack of technology knowledge specifically related to AI leaves a significant gap in knowledge. The TELL strategy supports this finding, as early adopters of AI were able to utilize AI to provide customized feedback and aid in improving the quality of student learning. In order to create an effective, stable learning environment for the use of AI in the preparation of future English language teachers, there must be a strong foundation of professional development, institutional support, and ethical guidelines to support the readiness of teacher educators. The qualitative results of both the open-ended survey responses and the



follow-up interview responses add significantly to our understanding of how and why teacher educators choose to use AI, what they currently do with it, and what obstacles or barriers they believe exist that make the successful incorporation of AI into the classroom challenging.

The thematic analysis generated four main categories (each containing a number of common themes).

1. Motivations and Concerns

Teachers perceived artificial intelligence (AI) to be a useful resource in rapidly accomplishing numerous administrative tasks, such as grading students' work, creating instructional materials for students, and providing prompt feedback.

Personalization of Learning – The ability to modify teaching and assessment based on an individual student's needs.

Concerns regarding education include ethical issues related to the potential for security breaches with data; whether or not AI responses will contain any form of bias; whether students will become too reliant on AI; whether there will be any type of loss in communication between teacher and student as a result of the use of AI.

To provide some perspective, here are quotes. "It cuts my grading time in half, letting me focus on classroom interaction." (P7, 12 years teaching experience, high AI exposure).

"I'm worried that my students will simply copy the AI-generated answers without actually learning." (P11, 5 years teaching experience, moderate AI exposure).

2. Situations Where AI Was Used or Considered

Using writing support tools such as Grammarly may correct errors in grammar when used for improving writing skills

Generating materials such as reading passages, comprehension questions and/or role play scripts

Using voice recognition tools to create recordings of students' verbal responses (Speechling and Google Speech to Text).

Overall, each teacher reported varying degrees of success with technology integration into their instruction. Some stated that using this technology allowed for a greater level of student engagement and active participatory role in their learning, while others experienced issues with inaccuracies in the technology (e.g., Missing cultural nuances, AI generated content lacking unique qualities). Here are a few of the participants' statements;

"I used ChatGPT to create debate topics and it turned out that students were more engaged than usual." (P3, 6–10 years teaching experience, moderate AI exposure).

"The AI overlooked some subtle grammatical errors which are typical of our learners." (P11, 11–15 years teaching experience, high AI exposure).

3. Challenges in Integration

Inadequate Staff Development Programs: Lack of knowledge regarding how to harness the power of artificial intelligence, and how to incorporate artificial intelligence into their teaching strategies.

Technology Limitations: Slow internet connectivity and access to out of date equipment.

Formalised Curriculum: No established location within the curriculum that allows for artificial intelligence-based activities to take place.

Disrespectful Student Actions: Use of AI-generated responses without the application of analytic thought. The four major themes will be illustrated in the four vignettes that follow.

"We have the tools, but no training on how to fit them into our syllabus." (P7, 16+ years teaching experience, moderate AI exposure).

"Some students paste AI responses without understanding the content." (P14, 1–5 years teaching experience, minimal AI exposure).

4. Barriers to Overcome for Effective Use

Professional Development: It is necessary that there be organized professional development workshops on both literacy instruction and AI integration into the curriculum.

Institutional Support: Educational institutions must also provide policy, infrastructure, and funding support for the initiatives related to AI supported by their institutions.



Ethical Guidelines: Additionally, there needs to be clear definitions of what constitutes effective guidelines or principles of best practice regarding the use of AI in language learning.

Cultural Shift: Lastly, we need to cultivate a culture of acceptance so that educators view the inclusion of AI as a legitimate form of pedagogy.

Some excerpts from the discussions are;

“If an institution doesn't buy, in, it's nearly impossible to make AI use a long, term thing.” (P5, 16+ years teaching experience, high AI exposure).

“We require ethical guidelines that serve as a protective shield for both students and teachers.” (P9, 11–15 years teaching experience, moderate AI exposure).

The expressed viewpoints of teachers regarding how AI can support their students learning languages appear to agree with one another, but the application of AI among teachers continues to be limited by issues related to technology knowledge (TK in TPACK), a general lack of structured training, and the lack of institutional and/or ethical barriers to using AI. Further, AI usage now can only be described as being complementary (as opposed to transformative) to the ways that teachers are utilizing technology now, which is also consistent with the patterns of early-stage TELL integration.

Table 3. Summary of Thematic Analysis

Overarching Category	Recurrent Themes	Key Findings & Illustrative Quotes	Connection to TPACK/TELL
1. Motivations and Concerns	Enhanced Feedback and Efficiency: Valuing AI for grading speed and material generation.	“It cuts my grading time in half, letting me focus on classroom interaction.”	Highlights potential for TK (Technological Knowledge) to enhance PK (Pedagogical Knowledge).
	Personalization of Learning: Potential to tailor activities to different proficiency levels.	<i>Implied benefit: The ability to adapt content for diverse learners.</i>	Aligns with the adaptive and personalized aspects of the TELL framework.
	Ethical and Pedagogical Concerns: Worries about data privacy, bias, overreliance, and loss of human interaction.	“I worry my students will just copy AI outputs without really learning.”	Addresses the complex interplay between technology use and core pedagogical values (PK).
2. Situations Where AI Was Used or Considered	Writing Support Tools: Use of Grammarly or similar programs for error correction.	<i>Implied use: Common tools for immediate student feedback.</i>	Practical application of TK for content-specific feedback (CK).
	Material Creation: Generating reading passages, comprehension questions, or scripts.	“I used ChatGPT to create debate topics; students were more engaged than usual.”	Demonstrates AI as an aid for content creation (CK).
	Mixed Outcomes: Reported issues with inaccuracies, lack of cultural nuance, or generic content.	“The AI missed subtle grammatical errors that are common among our learners.”	Underscores the limitations of current AI in achieving true cultural and linguistic competence .
3. Challenges in Integration	Lack of Training: Insufficient knowledge of AI capabilities and integration strategies.	“We have the tools, but no training on how to fit them into our syllabus.”	Direct challenge to acquiring necessary TK and TPACK for effective use.
	Technical Limitations: Poor internet connectivity and	<i>Implied technical hurdle affecting</i>	Barrier related to the foundational infrastructure



Overarching Category	Recurrent Themes	Key Findings & Illustrative Quotes	Connection to TPACK/TELL
	outdated devices.	<i>accessibility.</i>	necessary for TK deployment.
	Curricular Constraints: No official place for AI activities within the syllabus.	<i>Implied organizational rigidity.</i>	Resistance stemming from the official structure of PK and CK delivery.
	Student Misuse: Overdependence on AI-generated answers without critical thinking.	“Some students paste AI responses without understanding the content.”	Highlights the need for a pedagogical shift (PK) to emphasize critical literacy.
4. Barriers to Overcome for Effective Use	Professional Development: Need for structured AI literacy and pedagogical integration workshops.	<i>Implied solution to the training gap.</i>	Essential for bridging the gap in TK and developing TPACK.
	Institutional Support: Need for policies, infrastructure, and funding for AI resources.	“Without institutional buy-in, it's hard to make AI use sustainable.”	Systemic support required to enable sustainable TK implementation.
	Ethical Guidelines: Clear frameworks for responsible AI use.	“We need ethical guidelines that protect both students and teachers.”	Necessary safeguard for the responsible application of PK in a high-tech environment.
	Cultural Shift: Changing staff attitudes toward AI as a legitimate pedagogical aid.	<i>Implied need for acceptance.</i>	Fundamental requirement for holistic TPACK adoption across an institution.

DISCUSSION AND CONCLUSION

This research highlights generative AI as the key factor in the preparation of English language teachers by deeply investigating teacher training, teaching with AI, and resistance to change. Based on the TPACK (Technological, Pedagogical, and Content Knowledge) model (Koehler & Mishra, 2009) and the Technology-Enhanced Language Learning (TELL) approach (Golonka et al., 2014), the analysis indicates that the participants, though they possess strong Pedagogical Knowledge (PK) and Content Knowledge (CK), have not yet developed adequate Technological Knowledge (TK) specifically related to AI tools. Such a finding is consistent with the earlier research (Chai et al., 2013; Kirschner & De Bruyckere, 2017) revealing that being generally tech, savvy does not normally equate to being skilled in AI for educational purposes.

Teacher training was identified as the major concern area. The analysis reveals that stand-alone training might not be the answer as continual training programmes are more likely to be effective in embedding AI tools training in pedagogical and content contexts. The TELL framework also revealed that the use of AI by educators for class instruction resulted in enhanced student motivation and an improved learning experience through individualised feedback. Instructors cited AI grammar checkers, pronunciation coaches and adaptive writing assistants as excellent tools for individualised instruction, however, most of the participants considered AI as just a supplemental tool rather than as a new method of teaching. While there is increasing awareness of AI's capabilities, a paradigm shift in using AI to teach has not yet occurred.

To a certain degree, the institutional environment also contributed to the limitations of AI implementation. Institutional barriers included lack of adequate infrastructure and access to AI resources, as well as lack of institutional support. The results are congruent with research that emphasises that the successful integration of technology is dependent on teacher readiness; as well as



a supportive environment (Ertmer & Ottenbreit, Leftwich, 2010). When teachers aren't supported by their institutions, provided with hardware, licensed software and IT support, there will be very limited opportunity to experiment and employ AI utilized in their instructional delivery.

In addition, it was noted that respondents felt that ethical issues regarding AI (e.g., problems like data privacy violation, bias in algorithms, and absence of personal contact in the area of language instruction) are a significant matter of concern for them. This issue reflects the broader conversation taking place worldwide regarding the ethical issues connected with AI in education (Holmes, 2020) and create momentum for a local interest in establishing clear and easily interpretable ethical guidelines. Teachers must also be adequately trained and experienced in evaluating AI resources to ensure these materials meet the requirements of fairness, transparency, and the welfare of the learner.

Current research in this area shows that there has been considerable progress made in this respect, but additional assistance is still required from higher education institutions. Universities must be responsible for developing and providing the necessary infrastructure to enable them to deliver AI to their courses; providing access to quality AI materials; and creating an innovative environment that encourages teaching innovations. The absence of support from higher education institutions will lead to continued fragmented, limited, random acceptance of AI in education. Subsequently, the function of AI should evolve from being simply an additive resource to becoming the primary driver of education as it is personalized, decision-making by educators is based on data, and students become self-sufficient learners. As a result of integrating new technologies, new learning theories, and ethical considerations into AI education, education using AI will not only advance, but will also become the principal motivator for change in the nature of education.

Limitations

Some limitations of the current research should be taken into consideration when contemplating the findings of this study. First, purposive sampling was employed. In many cases, participants were chosen because they had some awareness, exposure, or interest in AI. This approach was most appropriate if it was desired to learn about the educators' experiences and perceptions related to the integration of AI, but it also may have introduced some sampling bias. Educators already interested in AI would appear to be more "on board" with its use and likely to report higher readiness than educators that had little exposure to it. The findings may not reflect the true population of English language teacher educators. Accordingly, relatively high readiness scores and perceptions of AI should be viewed accordingly.

Implications for Future Research and Practice

Findings of this study have implications for both research and practice in the domain of AI in education. Future researchers may decide to investigate the longitudinal impact of utilizing AI tools on students' learning achievements of English as a Foreign Language. This paper mainly focused on teachers' experience with AI integration; however, the effect of AI tools on different aspects of learners' language development, motivation, and engagement can be done in future studies. More particularly, research should highlight how various AI tools (e.g., speech recognition, grammar checker, automated writing assistance) impact different aspects of language acquisition such as speaking, writing, listening, and reading.

Last but not least, research may also determine the extent of using AI in a sustainable manner in language teaching activities over time. Even though AI only gives us short, term benefits, we still need studies to tell us how to use AI materials over time and their continuing adequacy as they get updated. The ongoing advancement of AI technology will have a great deal of influence over the future development of language instruction, and therefore require ongoing support for language instructors as they adapt to these new tools in the education landscape.

This paper has discussed how generative AIs can be integrated into English Language Teacher Education, in a manner that is reasonable and meaningful, as well as the need for teacher preparation to include professional development and support from an institution, as well as ethical development of teachers. In reviewing the frameworks of TPACK and TELL, this paper argues that there needs to be a



balance between the Technological, Pedagogical, and Content areas of knowledge in order for AI to be properly integrated into language education.

Ethical Statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and relevant institutional research guidelines. Ethical approval was obtained from the Giresun University Ethics Committee (Approval No: 07/14; Date: 03/12/2024). Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, their right to withdraw at any time without penalty, and the confidentiality of their responses. All data were anonymized and used solely for research purposes. No personal identifying information was collected or disclosed.

REFERENCES

- Alakrash, H. M., & Razak, N. A. (2021). Technology-based language learning: Investigation of digital technology and digital literacy. *Sustainability*, 13(21), 12304. <https://doi.org/10.3390/su132112304>
- Amir, H. S., & Rustam, U. (2025). The role of technology in English language learning in the digital era. *Lingeduca: Journal of Language and Education Studies*, 4(1). <https://doi.org/10.70177/lingeduca.v4i1.2048>
- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
- Barrett, A., & Pack, A. (2023). Not quite eye to A.I.: Student and teacher perspectives on the use of generative artificial intelligence in the writing process. *International Journal of Educational Technology in Higher Education*, 20(1), 1-24. <https://doi.org/10.1186/s41239-023-00427-0>
- Bećirović, S., Brdarević-Čeljo, A., & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*, 1, 246. <https://doi.org/10.1007/s43545-021-00254-y>
- Binns, R., & Veale, M. (2021). Is that your final decision? Multi-stage profiling, selective effects, and Article 22 of the GDPR. *International Data Privacy Law*, 11(4), 319-332. <https://doi.org/10.1093/idpl/ipab020>
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1964). *Taxonomy of educational objectives* (Vol. 2). New York: Longmans, Green.
- Bower, M. (2019). Technology-mediated learning theory. *British Journal Education Technology*, 50, <https://doi.org/1035-1048>. <https://doi.org/10.1111/bjet.12771>
- Buddha, H., Shuib, L., Idris, N., & Eke, C. (2024). Technology-assisted language learning systems: A systematic literature review. *IEEE Access*, 12, 33449–33472. <https://doi.org/10.1109/ACCESS.2024.3366663>
- Cao, J., Bhuvaneswari, G., Arumugam, T., & Aravind, B. R. (2023). The digital edge: Examining the relationship between digital competency and language learning outcomes. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1187909>
- Chai, C., Koh, J. & Tsai, C. (2013). A review of technological pedagogical content knowledge. *Educational Technology & Society*, 16, 31-51
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, 8, 75264-75278.
- Chen, X., Xie, H., Zou, D. & Hwang, G. (2020). Application and theory gaps during the rise of Artificial Intelligence in Education. *Computers and Education: Artificial Intelligence*, 1. <https://doi.org/10.1016/j.caeai.2020.100002>
- Crompton, H. & Edmett, A. & Ichaporia, N. & Burke, D. (2024). AI and English language teaching: Affordances and challenges. *British Journal of Educational Technology*, 55, 2503-2529. <https://doi.org/10.1111/bjet.13460>
- Dell, A. G., Newton, D. A., & Petroff, J. G. (2020). *Assistive technology in the classroom: Enhancing the school experiences of students with disabilities* (3rd ed.). Pearson.



- Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. *Computer Assisted Language Learning*, 27(1), 70-105.
- Hasumi, T., & Chiu, M.-S. (2024). Technology-enhanced language learning in English language education: Performance analysis, core publications, and emerging trends. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2346044>
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 27(1), 1–12.
- Holmes, W. (2020). Artificial intelligence in education. In M. A. Peters (Ed.), *Encyclopedia of education and information technologies* (pp. 88–103). Springer International Publishing. https://doi.org/10.1007/978-3-030-10576-1_107
- Huang, H., & Li, M. (2024). The impact of technology-enhanced language learning environments on second language learners' willingness to communicate: A systematic review of empirical studies from 2012 to 2023. *Language Learning & Technology*, 28(1). <https://doi.org/10.64152/10125/73593>
- Iberahim, A., Yunus, M. M., & Sulaiman, N. (2023). A Review on Technology Enhanced Language Learning (TELL). *International Journal of Academic Research in Business and Social Sciences*, 13(2). <https://doi.org/10.6007/IJARBS/v13-i2/16496>
- Islam, M. (2024). *English Language Instructors' readiness for using artificial intelligence for teaching in Bangladesh* [Unpublished Doctoral dissertation]. Brac University.
- Kaplan, A., & Haenlein, M. (2018). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>
- Kim, K., & Kwon, K. (2023). Exploring the AI competencies of elementary school teachers in South Korea. *Computers and Education: Artificial Intelligence*, 4, 100137.
- Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1).
- Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). Exploring generative artificial intelligence preparedness among university language instructors: A case study. *Computers and Education: Artificial Intelligence*, 5, 100156.
- Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. CAST.
- Nasution, A. K. P., & Batubara, M. H. (2024). Research trends in technology-enhanced language learning: A bibliometric analysis. *Journal of Linguistics, Literature, and Language Teaching (JLLLT)*, 3(2), 111-130. <https://doi.org/10.37249/jlllt.v3i2.779>
- Owan, V. J., Abang, K. B., Idika, D. O., Etta, E. O., & Bassey, B. A. (2023). Exploring the potential of artificial intelligence tools in educational measurement and assessment. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(8), 2307.
- Patty, J. (2024). The use of AI in language learning: What you need to know. *Jurnal Review Pendidikan dan Pengajaran (JRPP)*, 7(1), 642-654.
- Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. Roscongress Building Trust.
- Peng, H., Ma, S., & Spector, J. M. (2019). Personalized adaptive learning: An emerging pedagogical approach enabled by a smart learning environment. *Smart Learning Environments*, 6(1), 1-14. <https://doi.org/10.1186/s40561-019-0089-y>
- Polit, D. F., & Beck, C. T. (2006). The content validity index: are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, 29(5), 489-497.
- Puentedura, R. R. (2013). SAMR: Getting to transformation. Retrieved May, 31, 265-283.
- Rahimi, M., & Fathi, J. (2022). Exploring the impact of wiki-mediated collaborative writing on EFL students' writing performance, writing self-regulation, and writing self-efficacy: a mixed methods study. *Computer Assisted Language Learning*, 35(9), 2627-2674. doi: 10.1080/09588221.2021.1888753
- Sellar, S., & Gulson, K. N. (2021). Becoming information centric: the emergence of new cognitive infrastructures in education policy. *Journal of Education Policy*, 36(3), 309–326. <https://doi.org/10.1080/02680939.2019.1678766>



- Selwyn, N. (2016). Digital downsides: exploring university students' negative engagements with digital technology. *Teaching in Higher Education*, 21(1-16). 10.1080/13562517.2016.1213229.
- Schunk, D. H. (2012). *Learning theories: An educational perspective* (8th ed.). Pearson.
- Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- Yeh, H. C. (2025). The synergy of generative AI and inquiry-based learning: transforming the landscape of English teaching and learning. *Interactive Learning Environments*, 33(1), 88-102.
- Zainuddin, N. (2023). Technology Enhanced Language Learning Research Trends and Practices: A Systematic Review (2020–2022). *Electronic Journal of e-Learning*, 21(2). <https://doi.org/10.34190/ejel.21.2.2835>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>

Appendix A. AI Integration Questionnaire

Readiness (8 items)

1. I feel confident using AI tools in my teaching.
2. I possess sufficient technical skills to use AI applications.
3. I am willing to experiment with new AI technologies.
4. I can evaluate the quality of AI-generated content.
5. I understand the educational applications of AI.
6. I feel prepared to integrate AI into my teaching practices.
7. I can troubleshoot basic problems when using AI tools.
8. I am interested in learning more about AI technologies.

Pedagogical Influence (7 items)

1. AI can improve the quality of language instruction.
2. AI can provide personalized feedback to learners.
3. AI can increase student engagement.
4. AI can support differentiated instruction.
5. AI can improve assessment practices.
6. AI can enhance learner autonomy.
7. AI can support language skill development.

Barriers (5 items)

1. I lack sufficient training to use AI effectively.
2. My institution does not provide adequate support for AI integration.
3. Ethical concerns limit my willingness to use AI.
4. Technical infrastructure is insufficient for AI implementation.
5. AI tools are difficult to integrate into existing curricula.

