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Exploring the Practice of Teacher-AI Collaboration among Language Teachers: A Current State of Practice

NAPAT JITPAISARNWATTANA

Silpakorn University, Thailand
napat.jit@gmail.com

Abstract

This study explored how language teachers in Thailand currently collaborate with AI tools in various aspects of their teaching practices. It also examined digital competencies and pedagogical knowledge required to collaborate effectively with AI tools. Data were collected from language teachers currently teaching in schools and universities in Thailand (N = 672). Data were collected through questionnaires and semi-structured interviews. The findings revealed differentiated patterns of teacher–AI collaboration across instructional domains. While most teachers reported regular collaboration with AI tools for learning material development and class preparation, such collaboration was considerably less frequent in the contexts of in-class teaching and assessment. Importantly, prompting literacy and critical evaluation were seen as important digital competencies for teachers to collaborate effectively with AI. The findings suggest that language teaching is a dynamic process in which human teachers and AI tools assume different and complementary roles across various stages of instruction. Future studies that analyse how teachers actually interact with AI and assess the products of such collaboration are recommended.

Keywords: Artificial Intelligence; Teacher-AI Collaboration; Digital Competencies; Pedagogical Knowledge; Teacher Education.

Introduction

The advent of Generative Artificial Intelligence (GenAI) represents a transformative juncture in the field of education, redefining the contours of conventional pedagogy and instructional design. On the pedagogical front, AI technologies have been shown to enhance and streamline the learning process by enabling teachers to make data-informed decisions in instructional design (Kohnke & Zou, 2024). They also empower teachers to personalise instruction, innovate pedagogical design, and refine assessment accuracy, while also promoting collaborative synergies between human educators and intelligent tools (Kim et al., 2022). Essentially, embedding AI technologies within the classroom in roles such as instructional assistant, tutoring agent, and advisory partner has enabled a more dynamic and collaborative interplay between human teachers and machine intelligence (Kim, 2023). In Thailand, where higher education institutions are increasingly encouraged to adopt digital technologies and prepare students for an AI-mediated society, generative AI has attracted growing attention among language teachers seeking to enhance teaching efficiency and learning outcomes (Jitpaisarnwattana, 2024, Jitpaisarnwattana & Saville, 2025).

Interest in teacher–AI collaboration (TAC) has increased substantially, emerging as a key concern in Computer-Assisted Language Learning (CALL). In language education, AI affords both pedagogical and administrative support, including materials development, discussion topic and prompt generation, automated feedback, and essay scoring (Barrot, 2023). However, despite the growing interest in teacher–AI collaboration (TAC), most existing research continues to conceptualise AI primarily as either a pedagogical tool or a potential substitute for human teachers (Baker, 2016). Current studies mainly examine AI's functional efficacy, changing instructional roles, and AI-integrated classroom configurations (Wang et al., 2021). However, limited attention has been given to the practical dimensions of teacher–AI collaboration, particularly when, where, and how such collaboration occurs in authentic classrooms to enhance learning. Questions remain regarding the timing, scope, and pedagogical forms of collaboration, including which content and assessments should be mediated through AI (Kim, 2023).

Generative AI is transforming language teaching and learning, suggesting that pedagogical collaboration between teachers and AI is more productive than prohibition. Effective integration requires alignment across materials development, curriculum design, and assessment, as well as strengthened digital and pedagogical competencies. Accordingly, professional development in AI-related digital skills is essential for language teachers (Kohnke et al., 2023). Such a need may be particularly relevant in contexts such as Thailand, where language teachers are increasingly experimenting with generative AI tools, yet relatively little is known about how AI is currently being incorporated into everyday teaching practices and what competencies teachers require to collaborate with such technologies effectively. As an initial step toward effective teacher–AI collaboration (TAC), this study examines how language teachers currently use generative AI across key teaching practices. The study also investigates whether their collaboration practices differ based on their demographic background. It further investigates the digital competencies and pedagogical knowledge required to inform the design of effective TAC frameworks and implementation guidelines. This study is guided by three research questions:

1. What are the current practices of language teachers in Thailand in collaborating with AI tools in terms of material developments, course design, class preparation, lesson delivery and assessment?
2. Do teachers' reported levels of teacher–AI collaboration differ according to teaching level, years of teaching experience, and AI experience?
3. What digital competencies and pedagogical knowledge do teachers perceive as necessary for effective collaboration with AI?

Literature Review

AI and Language Teachers

The release of ChatGPT in November 2022, followed by an unprecedented proliferation of generative artificial intelligence (GenAI) tools, has sparked a global wave of fascination, enthusiasm, apprehension, and critical debate regarding their transformative potential and societal implications (Moorhouse, 2024). AI technologies offer language teachers novel avenues to enhance their instructional methods, topical knowledge, lesson planning, material development as well as assessment and feedback (Ng et al., 2023, Moorhouse & Wong, 2025). Conversational AI systems trained on large-scale linguistic corpora can serve as both knowledge reservoirs and developmental aids for language educators (Moorhouse, 2024). Given that teachers are frequently required to possess broad interdisciplinary knowledge to facilitate students' content-based and academic learning, as well as to design thematic or task-oriented lessons, well-prompted chatbots can provide rich, accurate information across a wide spectrum of domains, including science, medicine, history, notable individuals, and sociocultural phenomena (Wang et al., 2024). Beyond enhancing topical knowledge, generative AI tools can also function as pedagogical companions, enabling language teachers to deepen their understanding of diverse methodologies and instructional paradigms. Given the abundance of teaching approaches available for curriculum design and classroom implementation, AI chatbots can support teachers not only in comprehending these frameworks but also in discerning those most appropriate for their specific contexts. Furthermore, such systems can generate illustrative lesson plans and activity examples that demonstrate how particular methods might be operationalised in authentic classroom settings (Moorhouse & Wong, 2025). Essentially, the capacity of AI to produce contextually grounded and methodologically coherent materials thus empowers teachers to explore, evaluate, and adopt approaches that best align with their pedagogical aims (Kohnke et al., 2023).

Lesson planning constitutes a fundamental component of effective pedagogy. The emergence of generative AI has prompted growing scholarly interest in its potential to support language teachers in lesson design and instructional preparation (Bonner et al., 2023; Kohnke & Zou, 2024). For example, Bonner et al. (2023) suggested that AI-driven chatbots can draw on extensive interdisciplinary knowledge to support lesson planning and materials development across subjects. Functioning as simulated colleagues or critical friends, these tools can assist teachers by generating activity ideas, structuring lesson sequences, and providing feedback on draft plans, as well as supporting the creation of instructional materials. Owing to their generative affordances, these technologies enable language teachers to design an extensive range of multimodal resources tailored to specific pedagogical purposes and learner needs (Moorhouse & Wong, 2025). While many language teachers depend on published textbooks and may lack confidence in materials creation, adapting and developing contextually responsive resources can enhance pedagogical relevance (Bland, 2015). This issue may be particularly relevant in contexts such as Thailand, where language teaching is often guided by prescribed curricula and commercial teaching materials, potentially limiting opportunities for extensive materials adaptation and development (Jitpaisarnwattana et al, 2022; Jitpaisarnwattana, 2025).Viewed as pedagogical assistants, generative AI tools can support teachers in designing materials aligned with learners' proficiency, interests, and individual needs (Moorhouse, 2024).

Language assessment and feedback constitute a core yet demanding responsibility in language education. Leveraging their analytical and generative capacities, generative AI tools can assist teachers in designing assessment tasks and test items aligned with instructional objectives and learner proficiency levels (Shin & Lee, 2023). Recent studies indicate that teachers use generative AI to produce reading texts and associated comprehension questions, enhancing assessment efficiency and task authenticity (Kohnke et al., 2023). Given the substantial time devoted to grading and feedback, AI tools also show

promise in reducing teachers' assessment workload (Godwin-Jones, 2024). Unlike task-specific tools such as Grammarly, generative AI offers greater flexibility and customisation across pedagogical tasks. However, effective use requires teachers to develop prompt design and tool-manipulation skills to ensure outputs align with instructional goals (Godwin-Jones, 2024; Moorhouse & Wong, 2025).

Teacher-AI Collaboration (TAC)

Research on teacher–AI interaction has typically been framed by two paradigms: replacement, which positions AI as a substitute for teachers, and augmentation, which views AI as enhancing pedagogical capacity (Kim, 2023). Early human–AI research focused on rule-based systems designed to provide structured tutorials and individualised learner support (Alkhatlan & Kalita, 2018). While pedagogically attractive, such approaches inherently reflect a substitutive model of AI, positioning the technology as an automated instructor capable of replicating and optimising teachers' guidance (Kim, 2023). Recent work, however, has underscored the importance of designing AI systems that not only provide direct learner support but also leverage teachers' distinctive pedagogical strengths to enhance and extend their instructional capacities. This shift has given rise to what is now termed the augmentation perspective, which envisions AI as a means to amplify, rather than replace, teachers' professional agency and effectiveness in facilitating student learning (Baker, 2016). The collaboration in this regard is designed to combine human teacher and AI instruction, mutually perceive, learn from, regulate, and monitor each other's actions to perform at their best. Within this framework humans and AI are considered equal team members, co-creating complex teaching activities, and achieving the effect that neither humans nor AI can accomplish in isolation (Wetzel et al., 2018).

The conceptualisation of teacher–AI collaboration adopted in this study shares common ground with related concepts such as hybrid intelligence and dual literacy. Hybrid intelligence generally emphasises the complementary strengths of humans and AI working together to achieve outcomes that neither can accomplish independently (Walther, 2025), while dual literacy highlights the need for individuals to develop both domain-specific and AI-related competencies in order to work effectively with intelligent technologies (Oyelere, 2026). Teacher–AI collaboration (TAC) builds upon these perspectives but places greater emphasis on the practical enactment of collaboration within teaching contexts. Rather than focusing primarily on human–AI problem solving or the competencies required to use AI, TAC is concerned with how teachers and AI tools interact across different dimensions of instructional practice, including materials development, course design, classroom teaching, assessment, and feedback. Consequently, TAC in this study is conceptualised as an analytical framework to provide a useful lens for examining not only whether teachers use AI, but also how pedagogical responsibilities are distributed between teachers and AI across different stages of the teaching process.

Research suggests that teacher–AI collaboration (TAC) can support more personalised and adaptive instruction, enhancing learner engagement, motivation, and self-regulatory capacities (Kim, 2023). Teachers may collaborate with AI across instructional stages, including materials development, pedagogical analysis, and course planning, using data-informed and AI-assisted design tools to optimise teaching practices (Wise & Jung, 2019). Despite these advantages, considerable concerns remain regarding the effective implementation of TAC. Central among these are concerns about AI's limited capacity to interpret diverse classroom contexts, scenarios, and human behaviours, and the urgent need to strengthen teachers' AI-related competencies. Such competencies extend beyond basic computational thinking to encompass a conceptual and practical understanding of AI principles, enabling teachers to design, adapt, and integrate AI-driven pedagogical approaches that both enhance learning and safeguard teacher agency and professional accountability (Kim et al., 2022).

Although the pedagogical promise of TAC is increasingly recognised, much of the existing literature has focused on the capabilities of AI tools, teachers' perceptions of AI, or the potential benefits and

challenges associated with AI adoption. Comparatively less attention has been devoted to understanding how teachers actually collaborate with AI across different dimensions of their professional practice. As a result, there remains a lack of empirical clarity regarding when, where, and how language teachers engage with AI in practice and how such collaboration can be effectively operationalised within language education. This gap is particularly salient in contexts such as Thailand, where generative AI tools have become increasingly accessible to educators, yet little is known about how language teachers integrate these technologies into materials development, course design, classroom teaching, and assessment. This study, therefore, seeks to investigate the ways in which language teachers collaborate with AI across multiple dimensions of their professional practice including lesson planning, instructional delivery, syllabus design, materials development, feedback provision, and assessment in order to better understand the current state of TAC among language teachers.

Digital Competencies Needed to use Generative AI

Emerging AI technologies offer educators personalised support, improved communication, and data-driven insights through educational data mining (Ng et al., 2023). Despite these affordances, adoption remains limited, largely due to implementation barriers and the digital competencies required to fully realise their pedagogical potential. In many educational settings, including Thailand, teachers may differ considerably in their familiarity with AI tools, confidence in their use, and opportunities for professional development, potentially influencing the extent to which AI becomes integrated into classroom practice (Montakantiwong & Jitpaisarnwattana, 2026). Key issues include fears of replacement, limited infrastructure and insufficient pedagogical or technical know-how to make effective use of AI-based tools (Holmes & Tuomi, 2022). These concerns can contribute to a sense of professional unpreparedness, limiting teachers' confidence in deploying AI-enabled tools to enrich instruction and foster improved learning outcomes (Kohnke et al., 2023).

To increase effective leverage of these AI-driven tools, it is essential that teachers possess the digital competencies required to integrate AI in a pedagogically sound manner. As Kohnke et al. (2023) contend, the digital competencies required for the effective use of generative AI extend well beyond the skillsets traditionally associated with technology integration in education. A range of approaches can be adopted to support the development of these competencies, including sustained professional development (Ng et al., 2023), initiatives that cultivate positive attitudes toward AI (Qian et al., 2021), the establishment of clear ethical and data-governance guidelines (OECD, 2022), and the provision of adequate funding to secure relevant resources and infrastructure (Zhang & Aslan, 2021).

At its core, the incorporation of AI technologies into language education has the capacity to transform the teaching–learning process. However, teachers' readiness to engage and collaborate with AI tools is determined not only by their perceptions of these technologies and the resources at their disposal, but also by their underlying digital competencies and pedagogical knowledge (Kohnke et al., 2023). Therefore, a clearer understanding of the digital competencies and pedagogical knowledge language teachers need is essential. Such insight will enable teacher education programmes and professional development schemes to provide targeted support that equips language teachers with the competencies necessary to harness the affordances of AI technologies.

Research Methodology

Participants

The participants were 672 English language teachers from higher-education institutions in Thailand. Participants were recruited through an institutionally distributed online survey, which was circulated

via professional networks, university contacts, and English language teaching communities across the country. As participation was voluntary, the sample may be characterised as a form of voluntary response sampling. All participants were Thai nationals. The sample included 368 female teachers, 272 male teachers and 32 LGBTQ+ teachers, with teaching experience ranging from five to thirty years. Most respondents had used AI-enabled tools for less than one year, although approximately 25% reported over three years of experience. ChatGPT was the most frequently used platform, followed by Gemini and Canva. Although the majority of participants were employed in higher education institutions and taught primarily at undergraduate level, the sample also included teachers working in secondary schools and those involved in postgraduate instruction. (see Tables 1 and 2).

Table 1 *Background Information of the Participants*

Nationality	F	%	Gender	F	%	Teaching experience	F	%
Thai	672	100%	Male	272	40.5	0–5 years	58	8.6
			Female	368	54.8	5–10 years	74	11.1
			LGBTQ+	32	4.7	10–20 years	437	65
						20–30 years	103	15.3

Table 2 *Background Information of the Participants*

Experience using AI	F	%	Main AI tool used	F	%	Level of teaching	F	%
Less than 1 year	176	26.2	ChatGPT	366	54.5	Secondary	64	9.5
1 year	256	38.1	Gemini	172	25.6	Bachelor	560	83.3
2 years	128	19	Canva	50	7.4	Masters	32	4.8
3 years or more	112	16.7	Others	84	12.5	PhD	16	2.4

Research Instruments

Using an explanatory sequential mixed-methods design, this study collected quantitative and qualitative data through a questionnaire and semi-structured interviews. The questionnaire consisted of 43 five-point Likert-scale items across two domains: teacher–AI collaboration (TAC) and digital competency, supplemented by six open-ended questions. The TAC scale asked teachers to identify their collaboration through frequency scale (1 = never, 2 = rarely 3 = sometimes, 4 = often and 5 = always). The questionnaire was developed following a review of the literature on teacher–AI collaboration, AI integration in language education, and teacher digital competencies (e.g., Kim, 2023; Kohnke et al., 2023; Wise & Jung, 2019). The TAC scale, developed by the researcher, covered materials development, course design, preparation, classroom delivery, and assessment, while the digital competency scale was informed by prior research on digital competence and generative AI. These dimensions were chosen because they represent key areas in which language teachers may engage with AI tools throughout the instructional process. The six open-ended questions were aligned with the questionnaire domains and were included to provide explanatory insights into teachers' reported practices, perceptions, and experiences of collaborating with AI. Content validity was confirmed through expert review, yielding an IOC value of 0.935. The expert panel consisted of three experts in Computer-assisted Language Learning (CALL). Necessary revisions were also made based on their feedback regarding item clarity, relevance, and coverage of the constructs.

The questionnaire was piloted with 40 English lecturers from various universities in Thailand. Internal consistency reliability was assessed using Cronbach's alpha. The results indicated satisfactory to excellent reliability across all six subscales. Cronbach's alpha coefficients were .817 for material developments, .839 for course design, .886 for class preparation, .819 for lesson delivery, .909 for assessment, and .792 for digital competencies and pedagogical knowledge. These values exceeded the commonly accepted threshold of .70, indicating adequate internal consistency for all subscales. Semi-structured interview questions were constructed based on similar categories with the addition of questions originating from the questionnaire responses.

Data Collection and Analysis

The TAC and digital competency questionnaires were administered online via Google Forms and distributed to English language institutions nationwide, yielding 672 responses. Likert-scale data were analysed using SPSS (Version 31.0) to generate descriptive statistics. Open-ended responses were analysed using a hybrid deductive–inductive approach, with initial coding guided by six predefined categories and additional themes identified inductively. To enhance coding reliability, the primary researcher conducted the initial analysis, while an independent English lecturer double-coded 50% of the dataset to ensure analytic consistency. In addition, one-way analysis of variance (ANOVA) were conducted to examine whether teachers' reported levels of teacher–AI collaboration differed according to teaching level, years of teaching experience, and AI experience. One-way ANOVA was considered appropriate because the study sought to compare the mean collaboration scores of three or more independent groups across each demographic variable (Field, 2018; Pallant, 2020).

Twenty teachers were purposively selected for online semi-structured interviews based on their questionnaire responses in order to capture a broad range of teacher–AI collaboration (TAC) practices and digital competency levels. Participants were selected from different points across the response distributions of the TAC and digital competency scales to ensure variation in reported experiences and perspectives. In addition, efforts were made to include participants with differing levels of AI experience and from a range of teaching contexts, including variation in educational level and institutional setting where possible. While guided by predefined questions, interviews allowed participants to introduce additional relevant issues and provide more detailed explanations of their experiences. The qualitative component was used primarily to elaborate on and expand the quantitative findings by exploring the reasons underlying teachers' reported practices, perceptions, and levels of teacher–AI collaboration. With AI. All interviews were conducted in English and transcribed by the researcher. Interview data were deductively coded using the same predefined categories as the open-ended questionnaire responses, with dual coding applied to ensure analytic rigour. The qualitative findings were subsequently used to contextualise, explain, and enrich the interpretation of survey patterns rather than to independently verify or contradict them. Ethical approval was granted by the Silpakorn University Ethics Committee prior to data collection. Participants received detailed study information and provided informed consent, with voluntary participation and withdrawal rights clearly stated. Anonymity was ensured through the use of pseudonyms following data collection.

Results

Teacher-AI Collaboration Regarding Material Developments

As indicated in table 3, the findings indicate differentiated patterns of teacher–AI collaboration across material design. A large majority of teachers (88.1%) reported occasional or regular use of AI tools to support materials development. For receptive skills, AI was used more frequently for generating reading materials (72.6%) than listening materials, with over half of respondents (55.9%) reporting rare or

Table 3 *How Teachers Collaborate with AI regarding Material Developments*

		Never	Rarely	Sometimes	Often	Always	STD
Q1	F	0	80	248	232	112	.905
	Percentage	0.0	11.9	36.9	34.5	16.7	
Q2	F	64	102	312	160	16	.942
	Percentage	9.5	17.9	46.4	23.8	2.4	
Q3	F	216	160	176	80	40	1.212
	Percentage	32.1	23.8	26.2	11.9	5.9	
Q4	F	136	104	264	112	56	1.189
	Percentage	20.2	15.5	39.3	16.7	8.3	
Q5	F	112	80	296	160	24	1.071
	Percentage	16.7	11.9	44.1	23.8	3.6	
Q6	F	88	56	280	176	72	1.032
	Percentage	13.1	8.3	41.7	26.2	10.7	
Q7	F	16	48	224	248	136	.958
	Percentage	2.4	7.1	33.3	36.9	20.2	

Q1: I used AI-powered tools to help create language teaching/learning materials in my course.

Q2: I used AI-powered tools to create reading materials for my students.

Q3: I used AI-powered tools to create listening materials for my students.

Q4: I used AI-powered tools to create writing prompts for my course.

Q5: I used AI-powered tools to generate speaking topics for my course.

Q6: I used AI-powered tools to summarise information gathered from the Internet and I wrote the materials myself.

Q7: I used AI-powered tools to generate learning materials/worksheets then I edited the AI-generated materials.

no AI use for listening. Use patterns for productive skills were more varied: while 64.3% of teachers employed AI to generate writing prompts, a substantial proportion (35.7.4%) reported limited use. In contrast, AI-supported generation of speaking topics was more common, with 71.4% indicating regular or occasional use. Regarding modes of collaboration, most teachers (78.6%) used AI primarily for summarising information while retaining responsibility for material writing. Notably, an even larger proportion (90.5%) adopted a more integrative approach, using AI to generate initial drafts that were subsequently revised and edited by teachers, reflecting an augmentation-oriented collaboration model.

The qualitative data indicated that AI was treated as a thinking partner and an execution supporter, as one teacher stated:

> *I collaborate with AI in two main ways. First, I position AI as a thinking partner when my ideas are still underdeveloped; in this role, AI helps expand my thinking, surface blind spots, and suggest alternative perspectives. Second, I use AI as an execution support tool when I already have a clear idea in mind, instructing it to help articulate, structure, or realise my pedagogical intentions more effectively. (Teacher 97).*

In materials development, teachers either used AI as a content generator or as an editor. Some relied on AI to generate learning materials, while others created materials independently and later asked AI to refine them, as reported by one teacher.

> *I use AI to draft materials, adjust text difficulty, create questions, and refine language. I act as the final editor to ensure quality. (Teacher 335).*

Table 4 *How Teachers Collaborate with AI regarding Course Design*

		Never	Rarely	Sometimes	Often	Always	STD
Q8	F	312	64	192	80	24	1.233
	Percentage	46.4	9.5	28.6	11.9	3.6	
Q9	F	192	72	272	96	40	1.208
	Percentage	28.6	10.7	40.5	14.3	5.9	
Q10	F	104	96	280	160	32	1.085
	Percentage	15.5	14.3	41.7	23.8	4.8	

Q8: I used AI-powered tools to help design the course syllabus for my language courses.
Q9: I used AI-powered tools to help gather/select the topics covered in my language course.
Q10: I used AI-powered tools to help design the course assessment.

Teacher-AI Collaboration Regarding Course Design

As seen in table 4, the findings indicate limited use of AI for syllabus development, with 55.9% of teachers reporting rare or no use and only 15.5% indicating regular adoption. In contrast, over 60% reported occasional or regular use of AI to explore course-related topics, although nearly 40% used such tools infrequently or not at all. AI integration was more prominent in assessment design, with 28.6% of teachers reporting regular use and an additional 41.7% indicating occasional use, suggesting greater acceptance of AI support in assessment-related practices.

For teachers who collaborated with AI in course design, several patterns emerged from the qualitative data. A prominent pattern involved using AI as a brainstorming aid or thinking partner, while teachers retained full pedagogical decision-making authority during the design process, as one teacher noted:

> *I use AI in course design as a thinking partner. It helps me brainstorm ideas when I'm stuck, draft lesson structures faster, and generate alternative tasks. Sometimes it gives great suggestions, sometimes I ignore half of what it says. I don't let AI decide the course. I decide, AI just speeds up the creative process and gives me options I might not have thought of alone. (Teacher 255).*

Another collaboration pattern involved teachers preparing core course information independently before asking AI to elaborate or refine the draft. In this approach, AI functioned as a reflective tool supporting teachers' decision-making processes, as illustrated by one teacher:

> *In course design, I usually begin with a clearly defined framework, including the course title, description, intended learning outcomes, programme learning outcomes (PLOs). I then use AI to help fill in missing or underdeveloped components of the course design. Rather than adopting AI-generated suggestions wholesale, I treat them as possibilities for consideration. For example, when I already have a tentative list of course topics, I may ask AI to suggest alternative sequencing options based on pedagogical coherence, workload balance, or contextual constraints such as available resources and institutional expectations. These suggestions function as a reflective tool, supporting my decision-making rather than replacing it. (Teacher 97).*

Table 5 *How Teachers Collaborate with AI regarding Class Preparation*

		Never	Rarely	Sometimes	Often	Always	STD
Q11	F	32	64	264	224	88	.990
	Percentage	4.8	9.5	39.3	33.3	13.1	
Q12	F	104	96	168	176	128	1.323
	Percentage	15.5	14.3	25	26.2	19.1	
Q13	F	224	192	104	96	56	1.297
	Percentage	33.3	28.6	15.5	14.3	8.3	
Q14	F	296	144	152	32	48	1.221
	Percentage	44.1	21.4	22.6	4.8	7.1	
Q15	F	112	32	208	248	72	1.213
	Percentage	16.7	4.8	30.9	36.9	10.7	
Q16	F	232	104	160	88	88	1.412
	Percentage	34.5	15.5	23.8	13.1	13.1	

Q11: I used AI-powered tools to help me prepare for my language classes.
Q12: I used AI-powered tools to help prepare my presentations (PowerPoint/Canva and the likes).
Q13: I used AI-powered tools to help prepare my class delivery (teaching notes/scripts).
Q14: I used AI-powered tools to prepare the sequence of my class.
Q15: I used AI-powered tools to prepare class activities.
Q16: I used AI-powered tools to generate my presentations then I edited the AI-generated presentations.

Teacher-AI Collaboration Regarding Class Preparation

As shown in table 5, most teachers (85.7%) reported using AI tools, though collaboration levels varied across preparatory tasks. AI was commonly used to support the development of presentation slides and instructional materials, with 70.3% reporting occasional or regular use. However, collaboration involving AI-generated slides subsequently edited by teachers was evenly split, with half of the participants reporting rare or no use. In contrast, AI support for teaching notes and lesson sequencing was limited, as 61.9% and 65.5% of teachers, respectively, reported rare or no use, and only small proportions indicated regular use (22.6% and 11.9%). The most extensive AI integration was observed in classroom activity preparation, where 30.9% of teachers reported occasional use and nearly half (47.6%) indicated regular use, suggesting stronger uptake for task-level planning than for broader instructional structuring.

Several patterns of teacher–AI collaboration emerged from the qualitative data. Many teachers used AI to generate and refine learning materials while retaining full control over final pedagogical decisions, as one teacher noted:

> *When I plan a lesson, I often ask AI to help me generate activity ideas, examples, comprehension questions, or discussion prompts. Sometimes I ask it to simplify or level a text, or to rewrite instructions in a clearer way. AI gives me options — but I choose what fits my students and I always adjust the materials myself. (Teacher 33).*

Another collaborative pattern involved using AI to enhance the clarity of prepared lessons and to improve the effectiveness of lesson delivery, as one teacher stated that:

> *I primarily use AI to enhance the effectiveness and clarity of lesson preparation. For lecture components, AI supports my research process by helping ensure that the content I present is accurate, up-to-date, and relevant. For practice or application*

> *components, AI assists in generating activity ideas that align with lesson objectives and in refining how those activities are delivered. In particular, AI is helpful when lesson activities involve multiple steps or complex procedures, where student instructions can easily become unclear or overwhelming. In such cases, I use AI to revise instructions for clarity, streamline task sequences, or suggest concrete examples that can help students better understand abstract concepts. (Teacher 97).*

Teacher-AI Collaboration Regarding In-class Teaching/Lesson Delivery

As shown in table 6, the findings reveal mixed levels of teacher–AI collaboration in lesson delivery. This is reflected in the near-even split between teachers reporting occasional or regular AI use (53.6%) and those reporting rare or no use (46.4%). Despite this ambivalence, nearly two thirds of teachers (63.1%) used AI as a form of personal support for spontaneous lesson adaptation. In contrast, AI was seldom employed for direct instructional delivery, such as voice dubbing or character representation, with 66.7% reporting rare or no use. A similarly limited pattern emerged for immediate feedback provision, as 66.7% indicated minimal use and only 8.3% reported regular use. Regarding student-facing applications, most teachers allowed AI use for in-class information searching. However, practices were more divided for task completion, with 58.3% occasionally or regularly permitting AI-assisted work and 41.7% rarely or never allowing such use, indicating ongoing uncertainty around pedagogical boundaries.

Table 6 *How Teachers Collaborate with AI regarding in-Class Teaching/Lesson Delivery*

		Never	Rarely	Sometimes	Often	Always	STD
Q17	F	96	216	248	104	8	.955
	Percentage	14.3	32.1	36.9	15.5	1.2	
Q18	F	168	80	216	152	56	1.276
	Percentage	25	11.9	32.1	22.6	8.3	
Q19	F	344	104	84	40	0	1.005
	Percentage	51.2	15.5	27.4	5.9	0.0	
Q20	F	32	48	304	176	112	1.004
	Percentage	4.8	7.1	45.2	26.2	16.7	
Q21	F	80	200	232	104	56	1.103
	Percentage	11.9	29.8	34.5	15.5	8.3	
Q22	F	288	160	168	56	0	1.006
	Percentage	42.9	23.8	25	8.3	0.0	

Q17: I used AI-powered tools as a part of my lesson delivery.
Q18: I used AI-powered tools as my assistance when having to adapt my lessons on the spot.
Q19: I used AI-powered tools to deliver some parts of my lessons (voice dubbing/portraying characteristics).
Q20: I allowed my students to use AI-powered tools to search for information in the class.
Q21: I allowed my students to use AI-powered tools to complete in-class learning activities.
Q22: I used AI-powered tools to provide immediate feedback on students' work.

In real-time teaching, two recurring themes emerged: AI as a teaching assistant and as a student learning tool. As a teaching assistant, AI was primarily used to generate examples, questions, and vocabulary explanations, as one teacher explained:

> *In class, I mostly use AI as a support tool rather than the core of my teaching. Sometimes I ask AI to generate examples on the spot, help with vocabulary explanations, or*

> *create quick discussion questions when I want students to think deeper. It's like having a teaching assistant ready to give ideas instantly, but I still lead the lesson, guide the learning, and decide what is useful or not. (Teacher 188).*

In addition, AI allowed teachers to provide more tailored/differentiated instruction and flexibility for content adaptation as mentioned by one teacher:

> *I use it to support my in-class teaching by creating clear examples, and interactive activities that help guide student participation. It also helps me adapt tasks on the spot, provide alternative versions when students need more support, and keep lessons engaging without extra preparation… (Teacher 272).*

As for learning tools, many teachers allowed their students to use AI as a researching tool and as a way to demonstrate the importance of critical awareness and AI literacy, as one teacher stated.

> *I allow students to use AI tools during class to gather information or generate ideas, especially during speaking activities. Typically, students first write a short speaking script on their own, and then use AI to generate an alternative version. In most cases, they realize that it's much harder to memorize a script that wasn't written in their own words. This helps them understand that depending on AI 100% without adapting or filtering the output is not effective. (Teacher 77).*

Teacher-AI Collaboration Regarding Assessment

With regard to quiz development, most teachers (85.7%) reported occasional or regular use of AI to generate questions from reading passages, whereas AI use for question generation based on listening scripts was less common, with 54.8% indicating such use. Nearly two thirds of participants (65.4%) employed AI to support the development of rubrics for writing and speaking assessments. Patterns of AI use in formative assessment varied by skill area. For writing, practices were divided, with 56% reporting rare or no AI use and 44% indicating occasional or regular use. In contrast, AI-supported formative assessment of speaking was limited, with 72.6% of teachers reporting rare or no use. A similar trend emerged in summative assessment, where most teachers reported minimal AI integration for both writing (66.7%) and speaking (69%). Feedback practices also reflected cautious adoption. More than half of the teachers (53.6%) rarely or never used AI to provide partial feedback on writing while addressing other aspects themselves, and only around 17% reported regular use. Reliance on AI for speaking feedback was even lower, with 70.2% indicating rare or no use and approximately 8% reporting regular use, suggesting continued teacher reservations about delegating evaluative and feedback functions to AI (See table 7).

Several forms of teacher–AI collaboration in assessment emerged from the qualitative data. Many teachers drafted questions themselves and used AI to generate answer choices, as illustrated by one teacher, who stated that:

> *I occasionally use AI to generate questions based on reading passages. While I typically create the main questions myself, I rely on AI to suggest multiple-choice options for added variety. However, I always review the output to avoid redundancy or inaccuracies. (Teacher 28).*

Table 7 *How Teachers Collaborate with AI Regarding Assessment*

		Never	Rarely	Sometimes	Often	Always	STD
Q23	F	16	80	304	200	72	.906
	Percentage	2.4	11.9	45.2	29.8	10.7	
Q24	F	168	136	216	128	24	1.159
	Percentage	25	20.2	32.1	19.1	3.6	
Q25	F	128	104	216	144	80	1.265
	Percentage	19.1	15.5	32.1	21.4	11.9	
Q26	F	248	128	200	56	40	1.209
	Percentage	36.9	19.1	29.8	8.3	5.9	
Q27	F	336	112	128	96	0	1.123
	Percentage	50	16.7	19.1	14.3	0.0	
Q28	F	416	72	160	16	8	.986
	Percentage	61.9	10.7	23.8	2.4	1.2	
Q29	F	400	64	144	56	8	1.104
	Percentage	59.5	9.5	21.4	8.3	1.2	
Q30	F	248	112	192	104	16	1.183
	Percentage	36.9	16.7	28.6	15.5	2.4	
Q31	F	392	80	144	56	0	1.044
	Percentage	58.3	11.9	21.4	8.3	0.0	

Q23: I used AI-powered tools to generate questions based on reading passages.
Q24: I used AI-powered tools to generate questions based on listening scripts.
Q25: I used AI-powered tools to help create rubrics for speaking/writing assessment.
Q26: I used AI-powered tools to help assess my students' writing in formative assessment assignments.
Q27: I used AI-powered tools to help assess my students' writing in summative assessment assignments.
Q28: I used AI-powered tools to help assess my students' speaking in formative assessment assignments.
Q29: I used AI-powered tools to help assess my students' speaking in summative assessment assignments.
Q30: I used AI-powered tools to provide feedback on certain aspects of my students' writing and I provided feedback on other aspects.
Q31: I used AI-powered tools to provide feedback on certain aspects of my students' speaking and I provided feedback on other aspects.

Moreover, although teachers used AI to generate questions and rubrics, these tools were applied mainly for formative assessment, with strong emphasis on alignment with course objectives, as noted by one teacher:

> *I use AI to generate some test items and some writing rubrics. Then I check if they are correct and appropriate based on the objectives of the assessment. Once I used it to help me rate students' writing tasks just for formative ones. I don't totally rely on it so I have to check it again. I never use it with summative tests. (Teacher 335).*

In terms of feedback provision, some teachers reported using AI tools to address mechanical aspects of students' work, while they themselves focused primarily on content-related feedback, as one teacher explained:

> *When I mark writing works, I like to have AI help me initially check the language so that I will have more time assessing the content and organization. (Teacher 92).*

Differences levels of teacher–AI collaboration based on teaching level, years of teaching experience, and AI experience

To determine whether the overall teachers' reported levels of teacher–AI collaboration differed according to teaching level, years of teaching experience, and AI experience, one-way ANOVA was conducted.

Table 8 presents the descriptive statistics and one-way ANOVA results for teachers' overall collaboration with AI across teaching level groups. Undergraduate teachers reported the highest collaboration levels (M = 3.17, SD = 0.55), whereas high school (M = 2.36, SD = 0.36), master's (M = 2.42, SD = 0.38), and PhD teachers (M = 2.31, SD = 0.31) reported comparatively lower scores. A one-way ANOVA revealed a statistically significant difference in collaboration levels across teaching levels, $F(3, 668) = 73.28$, $p < .001$, $\eta^2 = .24$, indicating a large effect. Post hoc comparisons (Games–Howell) showed that undergraduate teachers reported significantly higher collaboration levels than teachers at the other educational levels.

Table 8 *Means, Standard Deviations, and One-Way ANOVA Results for the Overall Collaboration Levels by Teaching Level*

	High school (n = 64)	Undergraduate (n = 560)	Master (n = 32)	PhD (n = 16)	F (3, 668)	*p*	η^2
Collaboration Level					73.28	0.01	0.24
M	2.36	3.17	2.42	2.31			
SD	0.36	0.55	0.38	0.31			

p < .05.

Table 9 summarises the descriptive statistics and one-way ANOVA results for teachers' overall collaboration with AI across teaching experience groups. Teachers with 5–10 years of teaching experience reported the highest collaboration levels (M = 3.79, SD = 0.55), followed by those with 0–5 years (M = 3.58, SD = 0.36), 10–15 years (M = 3.02, SD = 0.38), and 20–30 years of experience (M = 2.27, SD = 0.31). The ANOVA revealed significant differences in collaboration levels among the four teaching experience groups, $F(3, 668) = 214.01$, $p < .001$, $\eta^2 = .24$, indicating a large effect. Post hoc comparisons (Games–Howell) indicated significant differences between several teaching experience groups, with teachers in the 0–5- and 5–10-year groups generally reporting higher collaboration levels than those with longer teaching experience.

Table 9 *Means, Standard Deviations, and One-Way ANOVA Results for the Overall Collaboration Levels by Teaching Level*

	0–5 years (n = 58)	5–10 years (n = 74)	10–15 years (n = 437)	20–30 years (n = 103)	F (3, 668)	*p*	η^2
Collaboration Level					214.01	0.01	0.24
M	3.58	3.79	3.02	2.27			
SD	0.36	0.55	0.38	0.31			

p < .05.

Table 10 presents the descriptive statistics and one-way ANOVA results for teachers' overall collaboration with AI according to AI experience. Collaboration levels increased progressively with AI experience, with teachers having more than three years of AI experience reporting the highest mean score (M = 3.88, SD = 0.31), followed by those with two years (M = 3.32, SD = 0.38), one year (M = 2.89, SD = 0.55), and less than one year of experience (M = 2.40, SD = 0.36). A one-way ANOVA indicated a statistically significant difference in collaboration levels across AI experience groups, $F(3, 668) = 511.87$, $p < .001$, $\eta^2 = .69$, representing a large effect. Post hoc comparisons (Games–Howell) confirmed that teachers with greater AI experience reported significantly higher levels of collaboration than those with less AI experience.

Table 10 *Means, Standard Deviations, and One-Way ANOVA Results for the Overall Collaboration Levels by AI Experience*

	< 1 year (n = 176)	1 year (n = 208)	2 years (n = 176)	3 years > (n = 112)	F (3, 668)	*p*	η^2
Collaboration Level					511.87	0.01	0.69
M	2.40	2.89	3.32	3.88			
SD	0.36	0.55	0.38	0.31			

p < .05.

Digital Competencies and Pedagogical Knowledge for Effective Use of AI Tools

The findings shown in table 11 indicate that nearly half of the teachers (45.3%) reported familiarity with AI tools in everyday contexts, while 40.8% expressed uncertainty. Despite this ambivalence, most participants (84.5%) agreed that a clear understanding of AI tools is essential for classroom integration. Over half (55.9%) indicated that prior experience with digital technologies increased their confidence in adopting AI for teaching, although approximately one third (34.5%) remained hesitant.

Table 11 *Familiarity with AI Tools*

		SD	D	N	A	SA	Mean	STD
Q1	F	0	96	272	192	112	3.48	.932
	Percentage	0.0	14.3	40.8	28.6	16.7		
Q2	F	0	16	88	336	232	4.17	.727
	Percentage	0.0	2.4	13.1	50	34.5		
Q3	F	0	64	232	312	64	3.56	.792
	Percentage	0.0	9.5	34.5	46.4	9.5		

Notes: F = frequency, SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree, STD = standard deviation.

Q1: I am familiar with AI tools in daily life such as Siri, Alexa, Google Assistant and Fitness Trackers.

Q2: I need to be familiar with the AI tools and their functions before I can integrate them into my own teaching practices.

Q3: Because I am proficient in using other types of technology, I am confident in integrating AI tools into my own teaching.

The qualitative findings corroborate the quantitative results, showing that knowledge of AI tools and their functions, together with proficiency in other digital technologies, were viewed as essential for effective AI use, as reflected in one teacher's comment that:

> *Being a tech-savvy myself, I think that is really helpful because when you know how technology works in general, gen AI is just a more advanced technology so it is not too difficult to know how to use AI-powered tools effectively. (Teacher 35).*

With respect to prompting literacy, most teachers (86.9%) recognised the importance of effective prompt formulation for pedagogical AI use and similarly emphasised the need to guide students in appropriate prompting practices. However, confidence levels were mixed, with only about 60% reporting confidence in their own prompting skills, while nearly 40% expressed uncertainty or limited confidence. (See table 12)

In the qualitative data, several teachers highlighted prompting literacy as a key competency for effective AI use in both open-ended responses and interviews, as illustrated by one teacher, who noted that:

> *I think one of the digital competencies I need is prompt engineering or prompt design. I find it essential for teachers to learn how to write effective prompts so that they can reap the fullest benefits from AI tools. (Teacher 42).*

Table 12 *Prompting Literacy*

		SD	D	N	A	SA	Mean	STD
Q4	F	0	0	88	264	320	4.35	.699
	Percentage	0.0	0.0	13.1	39.3	47.6		
Q5	F	0	32	232	280	128	3.75	.815
	Percentage	0.0	4.7	34.5	41.7	19.1		
Q6	F	0	0	88	328	256	4.25	.670
	Percentage	0.0	0.0	13.1	48.8	38.1		

Q4: Effective prompting is essential for using AI tools in my teaching practices.

Q5: I am confident that I can use appropriate prompts to instruct AI tools to perform tasks related to my teaching practices.

Q6: It is important for teachers to be able to advise students on prompting strategies.

The findings presented in table 13 indicate strong consensus on the importance of digital and AI-related competencies. Most teachers (83.3%) agreed that AI-generated outputs require critical evaluation before classroom use, while an even larger proportion (90.5%) emphasised the importance of digital and AI literacies for effective pedagogical integration. Although some respondents expressed uncertainty (16.7%), the majority reported confidence in critically appraising AI outputs, particularly within their areas of professional expertise.

In open-ended responses and interviews, many teachers emphasised critical evaluation of AI responses and digital/AI literacies as essential competencies for effective AI use, as articulated by one teacher, who stated that:

> *To work effectively with generative AI tools, I think it's important to have a basic understanding of how AI works, including where its information comes from and what its limitations are. Digital literacy also helps teachers to be able to judge whether the*

Table 13 *Critical Evaluation and AI Literacy*

		SD	D	N	A	SA	Mean	STD
Q7	F	0	0	112	320	240	4.19	.698
	Percentage	0.0	0.0	16.7	47.6	35.7		
Q8	F	0	24	88	448	112	3.96	.663
	Percentage	0.0	3.6	13.1	66.7	16.7		
Q9	F	0	0	64	304	304	4.36	.648
	Percentage	0.0	0.0	9.5	45.2	45.2		

Q7: Critical evaluation of AI responses is essential for using AI in my teaching practices.
Q8: I am confident that I can critically evaluate AI responses to my prompts related to my teaching practices.
Q9: Digital and AI literacies are crucial for teachers who consider using AI tools in their teaching.

Table 14 *Pedagogical Knowledge*

		SD	D	N	A	SA	Mean	STD
Q10	F	0	0	80	368	224	4.21	.589
	Percentage	0.0	0.0	11.9	54.8	33.3		
Q11	F	0	0	48	384	240	4.29	.605
	Percentage	0.0	0.0	7.1	57.1	35.7		
Q12	F	0	0	48	272	352	4.45	.601
	Percentage	0.0	0.0	7.1	40.5	52.4		

Q10: It is important for me to have ample pedagogical knowledge related to a specific use of AI tools before I can integrate them into my lessons.
Q11: It is important for teachers to assess the appropriateness of AI tools against the pedagogical goal of each lesson before integrating them.
Q12: For effective use of AI tools, teachers need to have a clear pedagogical goal that they want to achieve and design AI use around those goals.

> *information it gives is reliable or not, and to know how to write prompts that get the kind of results you're looking for. (Teacher 7).*

The findings in table 14 reveal near-unanimous agreement on the importance of pedagogical knowledge in the educational use of AI. Most teachers (88.1%) agreed that effective AI integration requires pedagogical knowledge aligned with specific tools, while an even larger proportion (92.9%) strongly endorsed systematic evaluation of AI tools against lesson objectives prior to use. Similarly, the majority emphasised the need to define clear pedagogical goals when designing and implementing AI-supported activities.

In the qualitative data, many teachers stated that pedagogical knowledge was as important as, if not more important than, technical expertise for the effective use of AI tools. One teacher mentioned that:

> *Effective collaboration with generative AI requires strong subject-matter knowledge, as well as a well-developed sense of professional agency. Pedagogical content knowledge also plays an important role in determining how and when AI-generated ideas can be meaningfully translated into learning activities, materials, or assessments. (Teacher 97).*

Discussion

As can be seen from the findings, there are varying levels of teacher-AI collaboration across different aspects of teaching practices. Regarding material developments, although most teachers reported using AI for creating learning materials, they used it to develop reading materials more regularly than listening materials. One possible explanation is that many of the teachers in this study mainly used GenAI tools such as ChatGPT or Gemini, which despite being capable of producing listening scripts, are more effective at generating reading passages of good quality as well as questions based on such texts (Bezirhan & von Davier, 2023). Also, producing listening materials is a complicated task for a regular teacher, involving dealing with text-to speech processes and vice versa. As for generating writing prompts and speaking topics, most of the teachers used GenAI to generate prompts and topics for their productive tasks. However, this finding may be less surprising when considered within the broader context of English language teaching in Thailand. In many Thai educational settings, language instruction is guided by prescribed curricula, commercial textbooks, and assessment requirements, which may limit teachers' opportunities to substantially modify or replace existing materials. Supporting this interpretation, one teacher explained that their lessons strictly followed a standardised curriculum or commercial textbooks, hence leaving little room for adaptation. Although this view cannot be assumed to represent all participants, it may suggest that curriculum-related constraints influence teachers' use of AI for materials development. Moreover, the fact that many teachers used AI as a thinking partner, information gathering tool and material generators mean that they formed collaborative practices with AI in different stages of instructional design and delivery. Essentially, time-consuming work was outsourced to AI tools while teachers still took active roles to contextualise and evaluate the AI-generated materials. Teacher–AI collaboration in this study can therefore be understood not simply as the delegation of work to AI, but as a differentiated collaborative practice in which AI assumes different roles across instructional processes while teachers retain pedagogical agency and evaluative control. Such role differentiation may become an increasingly important feature of teacher–AI collaboration as generative AI becomes more deeply embedded in instructional design and delivery.

With respect to course design, AI tools were used primarily to explore potential topics to be included in the course. Notably, however, more than half of the teachers in this study reported rarely or never using AI tools for syllabus design. This pattern may be attributable to contextual constraints in many teaching settings, where syllabi are typically predefined and afford limited scope for modification. One interesting point emerged from the qualitative data when a teacher used existing information (i.e. learning outcomes, programme learning outcomes (PLOs), and overall schedule) to ask AI to explore possibilities and provide suggestions, serving as a reflective tool. This kind of collaboration serves as a monitoring tool for teachers to seek a second opinion while retaining autonomy on decision making to themselves (Akata et al., 2020). As for class preparation, the varying extent of teacher–AI collaboration across different aspects of preparation, perhaps, suggests a different nature, requiring different contributions from human teachers and AI assistants. On the one hand, the creation of presentation slides and learning activities typically involves processes such as information searching, synthesis, and content generation, areas in which AI tools have been shown to be particularly effective (Diwan et al., 2023). On the other hand, teaching notes and lesson sequencing tend to be highly individualised, reflecting teachers' personal pedagogical styles, professional identities, and specific teaching contexts. Consequently, teachers in this study reported less frequent collaboration with AI for these aspects of instructional planning.

As for in-class teaching, teachers generally collaborated with AI less frequently than with other aspects of their teaching practices. Not many of the teachers have used AI to deliver their lessons or provide immediate feedback for their students. While the former is understandable given the innate complexity

and higher-level technical knowledge required, the relatively limited use of AI for immediate feedback may initially appear unexpected given that instant feedback is frequently cited as one of the major affordances of AI and GenAI tools (Godwin-Jones, 2024; Moorhouse & Wong, 2025). Taking language teaching contexts into account, this is sensible as many of the students' work requiring feedback (written work or recordings) is usually graded outside class time. Nevertheless, many teachers allowed students to use AI tools to gather information and complete in-class activities. It is possible that, despite limited direct use of AI by teachers during lessons, students relied on AI to obtain immediate feedback while working on tasks. These findings may therefore offer an initial illustration of the dynamic interplay among teachers, students, and AI as co-collaborators within authentic classroom contexts. Among those who collaborated with AI in class, it is encouraging to see teachers starting using AI as teaching assistants to generate examples, find alternative explanations and even create tailored/differentiated instruction either for a group or an individual student. The potential of AI tools to personalised learning/instruction is one of the most important affordances of AI tools and it is encouraging to see such an affordance being capitalised upon (Wang & Gao, 2025).

In assessment, patterns similar to those in material development were observed, with teachers collaborating with AI more frequently to generate question items from reading passages than from listening scripts. This difference may reflect the AI tools used, which were perceived as more effective with written texts than listening scripts. Notably, the use of AI for formative and summative feedback on students' writing and speaking remained limited, potentially due to institutional policies, AI-related guidelines, or educational cultures that prioritise human-generated feedback. In addition, teachers working within assessment-oriented educational systems like Thailand may be particularly cautious about delegating evaluative responsibilities to AI tools, especially in high-stakes contexts where assessment validity, accountability, and fairness remain important professional concerns. However, while these explanations are plausible, the present data do not allow definitive conclusions regarding the relative influence of these factors. Moreover, the interview and survey data may suggest that, at the current stage of teacher–AI collaboration, many teachers may perceive exclusive reliance on human feedback as more efficient than engaging in AI-supported feedback processes, which often require additional effort to monitor, evaluate, and refine AI-generated feedback alongside their own. This assumption may also help explain why most teachers did not engage in regular co-collaboration with AI for providing feedback on either speaking or writing tasks.

These findings suggest that teacher–AI collaboration is not evenly distributed across teaching practices. Rather, teachers appeared more willing to collaborate with AI in preparatory, generative, and supportive functions, such as materials development, activity creation, and information gathering, than in pedagogically consequential activities involving assessment, feedback, syllabus design, and instructional decision-making. This pattern may indicate that teachers currently view AI primarily as a tool for pedagogical augmentation rather than delegation. In this sense, teacher–AI collaboration appears to extend beyond simple AI assistance or automation, involving a complementary division of labour in which AI contributes ideas, content, and suggestions while teachers retain responsibility for evaluation, adaptation, and pedagogical judgement (Montakantiwong & Jitpaisarnwattana, 2026; Stockwell & Wang, 2025). In other words, AI appears to be most readily accepted in areas where it can reduce workload and enhance efficiency, while teachers continue to retain primary responsibility for activities requiring contextual judgement, professional accountability, and pedagogical expertise. This finding also provides empirical support for conceptualisations of teacher–AI collaboration that emphasise complementary rather than substitutive relationships between teachers and AI systems.

In addition, the findings further revealed that teachers' reported levels of teacher–AI collaboration differed significantly according to teaching level, teaching experience, and AI experience. Undergraduate teachers reported substantially higher levels of collaboration than teachers working at secondary and

postgraduate levels, while teachers with fewer years of teaching experience and greater AI experience also demonstrated significantly higher collaboration levels. One possible explanation is that undergraduate teaching contexts may provide greater pedagogical flexibility and institutional encouragement for experimenting with emerging technologies, whereas secondary education is often more closely aligned with prescribed curricula, textbooks, and high-stakes examinations that constrain opportunities for AI integration. In terms of teaching experiences, early-career teachers may be more willing to adopt new technologies and adapt their teaching practices, while teachers with extensive teaching experience may rely more heavily on established pedagogical routines. Unsurprisingly, teachers with greater AI experience reported the highest levels of collaboration, suggesting that continued exposure to AI tools increases teachers' confidence and capacity to integrate them meaningfully into their instructional practice. These findings reinforce the importance of sustained professional development that extends beyond technical training to provide teachers with opportunities to develop practical experience of collaborating with AI across different pedagogical contexts.

Regarding digital competencies, most teachers perceived knowledge of AI functions as essential for effective classroom integration. However, despite this high level of agreement, nearly half were uncertain whether proficiency with other technologies would translate into effective AI use. This finding aligns with Kohnke et al. (2023), who argue that competencies required for the effective use of generative AI extend well beyond the conventional technological skills typically associated with educational technology integration. Although a substantial proportion of teachers (39.2%) expressed uncertainty about their own prompting literacy, most agreed that effective prompting is a core competency for the pedagogical use of AI tools. Teachers also emphasised that adequate prompting expertise is essential for providing meaningful guidance to students on formulating pedagogically appropriate prompts. This finding echoes previous research highlighting the central role of prompting literacy in effective AI use in language education (Karaduman, 2025; Tacelosky et al., 2025).

Teachers viewed critical evaluation and AI literacy as essential competencies, potentially prerequisite for classroom AI use. In particular, the ability to not only perform generic evaluation, but also context-specific and pedagogically-driven evaluation of AI responses is indispensable as more and more teachers are likely to use AI as content generator and take the roles of pedagogical editor of the responses. The near-unanimous agreement among participants suggests that pedagogical and contextual knowledge specific to teaching environments is as important as, if not more important than, technical knowledge of AI functions and affordances. This finding aligns with prior research highlighting the central role of pedagogy in the effective implementation of AI in education (Torres & Kahveci, 2025; Tran et al., 2025).

Further consideration concerns the dynamic and rapidly evolving nature of AI technologies. Although this study discusses AI and generative AI tools as broad categories, participants were likely interacting with different platforms possessing varying capabilities, interfaces, and pedagogical affordances. Furthermore, teachers in the present study differed considerably in their prior experience with AI, with some reporting several years of use and others having adopted these technologies only recently. Consequently, teacher–AI collaboration should not be viewed as a static phenomenon but rather as an evolving practice shaped by both technological developments and teachers' accumulated experience. The forms of collaboration observed in this study may therefore reflect not only teachers' pedagogical preferences but also the particular stage of AI development and adoption at which they encountered these tools. At the same time, it is important to acknowledge that the findings are based primarily on teachers' self-reported practices and therefore represent perceived rather than directly observed forms of teacher–AI collaboration.

Conclusion

The findings carry important professional and pedagogical implications that warrant further consideration. First, as far as content generation is concerned, language teachers will increasingly act as an

editor and evaluator of content, both in terms of material developments and test generation. Therefore, training of such skillsets should be included in professional development programmes, teacher training programmes and teacher education degrees. Secondly, given that pedagogy and technology is becoming more integrated and normalised, it is likely that pedagogical and technological knowledge will be more inter-connected. Hence, a more integrative or dual-knowledge approach might be necessary in the near future. Importantly, the limited uptake of teacher-AI collaboration in certain aspects suggests the dynamic nature of classroom teaching and we should be cautious of scenarios where AI tools, human teachers or a collaborative practice should be used. It is important to note that not using AI tools in certain aspects of teaching does not necessarily mean less efficiency. In fact, it might be otherwise in many cases. Theoretically, as Wetzel et al., 2018 suggest that humans and AI should be considered equal team members in co-creating teaching activities, the results from this study indicate that language teachers and AI can be equal members of a teaching team, but their roles might not be equal in every aspect of teaching practices. Rather, there are certain facets of teaching that AI will lead, while human support and vice versa.

Several limitations of this study should be acknowledged. First, the teacher sample was demographically homogeneous, comprising exclusively Thai participants. Although the findings offer exploratory insights into this specific context, teachers in other countries and educational settings may demonstrate different patterns of collaboration with AI. Second, despite efforts to triangulate findings through both quantitative and qualitative data, the study relied primarily on self-reported measures, which should therefore be interpreted with caution. Future research would benefit from more in-depth examinations of teacher–AI collaboration, including classroom observations and qualitative documentation that captures how teachers interact with and collaborate with AI tools in situ.

Use of Generative AI

This manuscript made use of ChatGPT and Gemini to assist in paraphrasing and improving the clarity of text. No AI tools were used for the generation of research hypotheses or the writing of conclusions. The final manuscript was authored and reviewed by the listed authors without additional AI input.

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