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To cite this article:

Liu, X. (2025). Integration or hesitation: Unraveling factors affecting teachers' inclination towards personal and students' adoption of generative AI in language instruction. *International Journal of Technology in Education (IJTE)*, *8*(2), 502-520. https://doi.org/10.46328/ijte.1103

International Journal of Technology in Education
2025, Vol. 8, No. 2, 502-520 https://doi.org/10.46328/ijte.1103

Integration or Hesitation: Unraveling Factors Affecting Teachers' Inclination towards Personal and Students' Adoption of Generative AI in Language Instruction

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Article Info

Article History

Received:
29 December 2024
Accepted:
10 April 2025

Keywords

Generative artificial intelligence
Technology acceptance
Influencing factors
Language education

Abstract

Despite increasing calls for integrating generative AI (GAI) into education, individual teachers still show disparate attitudes and actions. It is thereby pivotal to understand the reasons behind such divergent responses. However, factors affecting teachers' uptake of GAI in their instruction, particularly their endorsement of students' engagement with such technology in instructed learning, remain under-explored. This study queried this topic by interviewing 17 language teachers teaching at 10 universities across China. Data analyses identified a range of specific factors underlying those teachers' decision to integrate GAI. The study also revealed that the motivating and inhibiting patterns behind teachers' personal engagement with GAI differed from those behind their endorsement of students' GAI use in teaching, suggesting that different dimensions of GAI integration into instruction may be influenced by different sets of factors, and thus may need to be treated separately in practical movement towards GAI integration. Other implications for educational change in the context of GAI are also discussed.

Introduction

The integration of generative AI (GAI) in education has gained significant attention from scholars and teaching practitioners who believe in its transformative potential. GAI tools such as ChatGPT are believed to be able to empower teachers and students with easily accessible sources of ideas, materials and feedback, thereby boosting teaching and learning efficiency as well as enhancing the diversification, personalization and equality in education (Kasneci et al., 2023; Miao & Holmes, 2023). As such, there is an increasing promotion among educators for the integration of GAI into education (Chiu, 2023; Moorhouse & Kohnke, 2024), with frameworks and guidelines drawn to facilitate this process (Acar, 2024; Miao & Cukurova, 2024; Miao & Shiohira, 2024; Ng et al., 2023). Despite these efforts, recent reports disclosed teachers' generally unpreparedness for such integration (Kohnke et al., 2023b) and differential intentional and behavioral responses, with some continuously exploring and others quitting (Liu & Xiao, 2025). Thereby, it is necessary to understand the factors that affect teachers' willingness to integrate GAI into their instruction.

Given the enormous capacity of GAI tools and the promises they hold for enhancing teaching and learning, scholars, organizations and educational institutions worldwide have been promoting the integration of GAI into

the educational landscape, leading to frameworks and models for designing AI-based teaching activities and developing AI competence (Acar, 2024; Miao & Cukurova, 2024; Miao & Shiohira, 2024). Despite these initiatives, the practical integration of GAI into education remains limited. Studies have shown that while teachers acknowledge the potential of GAI, they often lack the confidence and support needed to implement them (Al-Mughairi & Bhaskar, 2024; Kohnke et al., 2023b; Velander et al., 2024). For example, after interviewing 12 university language teachers in Hong Kong, Kohnke et al. (2023b) discovered that although those teachers regarded highly of GAI tools' potential in education, most of them did not know how to apply them. The Author's (2024) recent interview study among English as a foreign language (EFL) teachers in China also revealed that there were varied levels of utilization of GAI tools for instructional purposes, with some teachers proactively exploring those tools, while some quitting after instances of frustration; moreover, most cases of GAI integration were found to occur during course preparation, while meaningful integration in classroom activities was scarce. This divide between potential and practice underscores the need for understanding the reasons.

A plethora of factors seem to be influencing teachers' attitudes toward GAI integration in education. They may include GAI's known defects, such as hallucination with biased or fabricated content (Kohnke et al., 2023a; Miao & Holmes, 2023) and the propensity to provide superficial information (Ulla et al., 2023; Liu & Xiao, 2025); concerns about the risks to key educational stakeholders, such as increased chances of overreliance, plagiarism and other academic misconduct, leading to compromised teaching and learning agency, creativity and ability (Liu, 2025; Kohnke et al., 2023a; Nguyen & Goto, 2024; Ulla et al., 2023; Yeo, 2023); insufficient knowledge, confidence and even motivation to integrate GAI (Kohnke et al., 2023b; Velander et al., 2024); and lack of requisite time, resources, infrastructure and policy support (Gupta & Bhaskar, 2020; Kohnke et al., 2023b).

Despite such speculations, empirical research systematically inspecting the factors affecting teachers' intention for GAI integration is still rather limited. Al-Mughairi & Bhaskar (2024) interviewed 34 university teachers teaching different subjects in Oman and found that while factors such as personalizing teaching and learning, time-saving and professional development motivated teachers to use ChatGPT, concerns about reliability, data privacy and security, reduced human interaction, lack of institutional support, and overreliance also impeded their GPT use.

In another survey among 18 Swedish teachers and teacher educators, Velander et al. (2024) disclosed that misconceptions about the capacity of AI, the risks and implications of using AI and the relationship between AI and digital literacy all negatively influenced teachers' AI integration. Notably, both studies did not probe specifically into the factors affecting teachers' support for students' use of GAI in instructed learning, which is also part of instruction but might be influenced by factors (e.g., concerns over cheating) different to those affecting teachers' own engagement with GAI.

Theories About Acceptance of Information Technology in Education

Various theories have been proposed in the past to explain the mechanisms behind people's technology adoption. Among them, the Theory of Planned Behavior (TPB) by Ajzen (1991) posits that behavioral intention is affected

by three sets of precursors. The first set includes behavioral beliefs, which are beliefs about the likely positive and negative outcomes of a given behavior, and the resultant attitude toward the behavior (e.g., favorable or unfavorable) (Ajzen, 1991). Such beliefs and attitude about are usually multifaceted and have been associated with both instrumental (e.g., benefit and usefulness) and intrinsic motivation (e.g., enjoyment and interest) in empirical measurement (e.g., Madden et al., 1992; Schmidt et al., 2022). The second set includes normative beliefs, which are the perceived expectations of important others (e.g., family, friends, teachers, superiors, institutions and society) regarding the behavior, and subjective norms, which are the aggregate perceptions of important others approving or disapproving the behavior (Ajzen, 1991; McTaggart-Cowan et al., 2021). The last set includes control beliefs (i.e., beliefs about the presence of facilitating or inhibiting conditions) and perceived control (e.g., perceived difficulty in performing the behavior) (Ajzen, 1991).

Different from TPB's encompassing scope for general behavior, the Technology Acceptance Model (TAM) by Davis (1989) focuses specifically on technology use and comprises two determinants: perceived usefulness and ease of use, with the former similar to the instrumental dimension of behavioral beliefs and the latter akin to control beliefs in TPB. Built upon prominent theories including TPB and TAM, the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) has also been proved influential in educational research and beyond. The extended version of UTAUT postulates that intention to use technology is influenced by seven factors (Venkatesh et al., 2012): performance expectancy, derived from perceived usefulness (Davis, 1989), refers to the perceived benefits to job performance from adopting new technology (Venkatesh et al., 2003) and addresses the instrumental beliefs about planned behavior; hedonic motivation, in contrast, is the enjoyment from using new technology (Venkatesh et al., 2012) and thus concerns the intrinsic motivation of planned behavior (Ajzen, 1991; Madden et al., 1992); effort expectancy, which is rooted in ease of use from TAM, and facilitating conditions together address the control beliefs from the TPB; while social influence is associated with normative beliefs in TPB, price value is defined as the perceived tradeoff between the financial costs and benefits of using new technology; last, habit is conceptualized as the automation of behavior and usually takes a relatively long time to form (Venkatesh et al., 2012).

In recent years, these theories have been adopted to examine the factors underlying teachers' adoption of AI. For instance, Ayanwale et al. (2022) surveyed the factors influencing 368 K-12 teachers' intention and readiness to teach AI based on TPB and TAM. It was found that teachers' confidence to teach AI significantly predicted their intention, while their perceived relevance of AI predicted both intention and readiness. Adopting the same theories, Sanusi et al. (2024) surveyed 796 Nigerian pre-service teachers' antecedents of intention and actual learning of AI technology. Data analyses revealed that perceived self-efficacy and basic AI knowledge were the strongest predictors of behavioral intention, followed by subjective norm; however, behavioral intention's contribution to actual learning was found to be non-significant, suggesting other factors' interference (Sanusi et al., 2024).

Studies also ranked different pre-determined factors' influence on teachers' AI adoption. For example, Gupta and Bhaskar (2020) asked 32 Indian university teachers to compare the importance of factors inhibiting and motivating their AI integration. After computing factor weights, the study discovered that institutional barriers such as lack

of resources, time and technical training were major inhibitors, while institutional recognition such as incentives, rewards and credits toward promotion were main motivators. Du and Gao (2022) also invited 17 Chinese university EFL teachers to compare the impact of four sets of factors (i.e., usefulness, enjoyment, technicality and effort) on their AI adoption. The results revealed that usefulness factors such as effectiveness and efficiency were most influential, while technicality and effort factors such as perceived complexity and time needed were top inhibitors.

Holistically viewed, the above findings suggest that behavioral beliefs (including usefulness and relevance of incorporating AI tools into teaching and the utilitarian benefits of doing so) and control beliefs (e.g., self-efficacy, knowledge and perceived technical complexity about using AI, the presence of facilitating or inhibiting conditions such as technical training or support, potential time and effort investment) exerted widespread impact on teachers' intention to integrate AI. Meanwhile, normative beliefs seemed to have had less influence in most contexts. It shall be noted that these studies mainly focused on traditional AI tools such chatbots, grammar checkers and intelligent teaching platforms, which had far less social impact than GAI such as ChatGPT due to their generally limited functionality and restricted public access. Given GAI's far-reaching social influence, both within and outside the education sector, normative beliefs may play an equally important role in driving people's adoption. However, empirical research on the mechanism influencing teachers' GAI adoption is still rather limited, except for Camilleri (2024).

Based on UTAUT, Camilleri (2024) conducted a questionnaire survey among both teachers and students at a Southern European university about their intention to use ChatGPT. As expected, it was found that social influence, alongside the other three predictors (i.e., effort expectancy, performance expectancy and perceived interactivity), significantly contributed to use intention. Meanwhile, the study found that perceived information quality and source trustworthiness significantly predicted performance expectancy (Camilleri, 2024).

While being informative, Camilleri's (2024) study, along with the other studies reviewed above, took a confirmatory approach through quantitative methods, which confined their findings to a priori factors identified from extant theories and thus may not help discover other factors underlying the use of emerging technologies such as GAI. For instance, only three factors from UTAUT were included in Camilleri's (2024) study, and the influence of other factors such as facilitating/inhibiting conditions remains unknown. Therefore, more research adopting an exploratory and qualitative approach (e.g., Al-Mughairi & Bhaskar, 2024) is needed to deepen our understanding of teachers' intention to adopt GAI, a revolutionary yet controversial technology with foreseeable benefits and challenges to education.

Second, little research has been done on the factors affecting teachers' endorsement of students' use of GAI or AI tools in general. Since integration of AI tools into education likely includes students' use of those tools in and outside the classroom; on the other hand, there are increasing concerns among teachers about students' misuses of GAI tools such as ChatGPT, particularly in graded assignments (Liu, 2025; Tse, 2023; Nguyen, 2024). Therefore, it is of both theoretical and practical significance to also gauge how such conflicting driving forces, along with other factors, would affect teachers' attitude toward students' engagement with GAI, which is

presumed to be different from the attitude toward their own engagement with such tools due to shifted stance and intention. In view of these considerations, two exploratory research questions were asked:

1) What are the factors affecting teachers' personal use of GAI in EFL instruction?
2) What are the factors affecting teachers' endorsement of students using GAI in EFL instruction?

Method

Qualitative approach via semi-structed interviews was adopted to answer those two questions. Participants were recruited through purposive sampling and snowballing, aiming to achieve both representativeness and variation in the their backgrounds (e.g., gender, teaching experience, location, university type, student group, etc.) (Merriam & Tisdell, 2015). Eventually 17 university EFL teachers from 10 universities across China participated in individual interviews in October, 2023. As Table 1 shows, they comprised 13 females and 4 males, and were teaching English language courses to different groups of students at different types of universities. Among them, ChatGPT was the most popular GAI tool. Until the data collection, 5 participants extensively used GAI in their instruction, 6 moderately engaged with it, and another 6 only had limited GAI engagement (i.e., only once or twice).

The participants were informed of the purpose, terms and conditions of the data collection before each interview. All interviews followed a general guideline (see Supplementary Material), which was developed through discussions between the author and another two educational researchers. The guideline covered questions about the participants' teaching backgrounds and their integration of GAI tools in different aspects of instruction (e.g., curriculum design, developing teaching materials, classroom activities, students' homework, formative and summative assessments). Particularly, they were prompted about the factors influencing such integration in each aspect. 12 interviews were conducted online, while the rest were conducted face-to-face. All interviews were audio-recorded and the average length was 67 minutes (see Table 1).

Table 1. Information about Interviewees

Name	Gender	Qualification	Teaching experience (Years)	Courses teaching (Student type)	University/type	Main GAI tool used	Extent of GAI engagement
T01	Female	PhD	6	English for academic purposes (UNEM)	A/comprehensive	ChatGPT; Bing Chat	Extensive
T02	Female	PhD	10	Essentials of corporate communications, writing for corporate communication (UEM)	A/comprehensive	ChatGPT	Extensive
T03	Male	MA	11	College English (UNEM)	H/comprehensive	ChatGPT	Limited
T04	Female	PhD	8	English bridge program (UNEM)	A/comprehensive	ChatGPT	Moderate
T05	Female	PhD	2	Listening, reading (UEM); academic writing (PEM)	E/science & technology focused	ChatGPT	Extensive
T06	Female	PhD	7	English bridge program (UNEM)	A/comprehensive	ChatGPT	Limited
T07	Female	PhD	4	Communicative English, public speaking, academic presentation (UEM)	C/language focused	ChatGPT	Extensive
T08	Female	PhD	8	Grammar, writing, thesis supervision (UEM & PEM)	F/teacher education focused	ChatGPT	Extensive

Name	Gender	Qualification	Teaching experience (Years)	Courses teaching (Student type)	University/type	Main GAI tool used	Extent of GAI engagement
T09	Female	MA	17	College English (UNEM)	I/medicine focused	Ernie Bot	Moderate
T10	Female	PhD	20	Reading in English, thesis supervision (UEM)	C/language focused	ChatGPT	Limited
T11	Male	PhD	18	Reading, writing (UEM)	C/language focused	Ernie Bot	Limited
T12	Female	PhD	2	Advanced English (UNEM); academic paper reading and translation (PNEM)	D/comprehensive	ChatGPT	Moderate
T13	Female	MA	8	Reading and writing in English (UEM); College English (UNEM)	J/teacher education focused	Ernie Bot	Limited
T14	Male	PhD	5	English for academic purposes (UNEM)	A/comprehensive	Bing Chat	Moderate
T15	Female	MA	8	College English (UNEM)	G/ science & technology focused	Ernie Bot	Moderate
T16	Male	PhD	9	English bridge program (UNEM)	A/comprehensive	ChatGPT	Limited
T17	Female	PhD	4	College English (UNEM); thesis supervision (UEM)	B/technology focused	ChatGPT	Moderate

Note: UNEM = undergraduate non-English majors; UEM = undergraduate English majors; PNEM = postgraduate non-English majors; PEM = postgraduate English majors.

The recordings were automatically transcribed by Tencent Meeting and the transcripts were checked by research assistants before data analysis. To analyze the data, template analysis (King & Horrocks, 2010), a variant of thematic analysis, was employed. Specifically, the transcripts were first closely read and annotated. Open coding was subsequently conducted with six transcripts to generate initial codes (e.g., "belief about the need to follow technological trend" and "belief about the need to keep in pace with students in using GAI"). Then axis coding was exercised by comparing, refining and grouping those bottom-level codes into high-order ones (e.g., "subjective norms"), which were also informed by theories such as TPB (Ajzen, 1991) and UTAUT (Venkatesh et al., 2003; Venkatesh et al., 2012). This process yielded a preliminary template. Meanwhile, a second coder independently coded one transcript using this same process, and then discussed with the author about the template. After a consensus on its general structure, this template was then applied by the author to other transcripts. The finalized coding system can be found in the tables of the Findings section.

It can be seen from the two tables that the first-order codes were in line with the three types of beliefs from TPB, while the second-order codes were generally aligned with concepts from UTAUT, except for four codes. Among them, "personal interest in technology", which is associated with hedonic motivation in UTAUT, was placed under "behavioral beliefs", as it addresses an intrinsic aspect of the behavioral belief and attitude. However, a distinction was made between such interest and hedonic motivation, as the former is a stable trait while the latter describes "the fun or pleasure derived from using a technology" (Venkatesh et al., 2012, p. 161), which is more changeable. "Availability of alternative choice" was also categorized into "behavioral beliefs", as participants registering this theme generally believed that the benefits brought by GAI did not necessarily outweigh those from already available resources. Under "normative beliefs", "sociocultural norms" was created to delineate some participants' concerns about social or moral conventions and cultural values when integrating GAI. Such norms are different from "social influence", which refers to the expectations of more tangible important others (Venkatesh et al., 2003), and "subjective norms", which address individual beliefs as influenced by important

others (Madden et al., 1992). Using the finalized coding system, the second coder independently coded 4 transcripts, and the results were compared with those of the author. The comparison revealed an overall high inter-coder reliability, with a kappa of 0.86 (Fleiss et al., 2003). Discrepant codings were further discussed between the two coders, until agreement was achieved.

Results

Factors Affecting Teachers' Personal Use of GAI

The data analysis identified that behavioral, normative, and control beliefs both facilitated and inhibited the investigated teachers' involvement with GAI in their EFL instruction (see Table 2).

Behavioral Beliefs

Three sub-themes of behavioral beliefs were identified: performance expectancy, personal interest, and availability of alternative choice. An equal number of participants (n = 14) considered that factors pertinent to performance expectancy were facilitating and inhibiting their GAI use respectively. Specifically, 12 teachers considered GAI as a useful tool that could bring various benefits to their teaching, including a) locating "teaching materials" (T01) or "instruments" (T14) and information searching in a more "accurate" (T15), "targeted and efficient" (T05) manner; b) generating teaching or assessment materials such as "sample letters of apology" (T03), "question banks" (T05) and "test items" (T13); c) providing pedagogical inspirations for "novel teaching activities" (T01, T05, T12, T14); d) generating feedback on student assignments (T08, T09); and e) helping "reduce workload" (T08, T13) and save "time" (T15) and "energy" (T09).

Table 2. Factors Facilitating and Inhibiting Personal Use of GAI

Codes	Facilitating		Inhibiting	
	N_p	N_s	N_p	N_s
I. Behavioral beliefs	*14*	*44*	*14*	*48*
1. Performance expectancy	14	41	14	37
a) perceived usefulness or benefits, use experience	12	25	11	20
b) career development	6	10	/	/
c) pedagogical needs	5	6	9	17
2. Personal interest in technology	3	3	4	7
3. Availability of alternative choice	/	/	4	4
II. Normative beliefs	*14*	*55*	*2*	*2*
1. Social influence	11	38	/	/
a) colleagues, friends or family members	10	19	/	/
b) external lectures, workshops or conferences	8	11	/	/
c) institution, department or superiors	4	4	/	/
d) social or academic atmosphere	3	3	/	/

Codes	Facilitating		Inhibiting	
	N_p	N_s	N_p	N_s
e) public or social media coverages (e.g., blogs)	1	1	/	/
2. Subjective norms	9	17	/	/
a) belief about the need to follow technological trend	8	12	/	/
b) belief about the need to keep in pace with students in using GAI	5	5	/	/
3. Sociocultural norms	/	/	2	2
a) ethical considerations	/	/	1	1
b) cultural values	/	/	1	1
III. Control beliefs	*2*	*3*	*15*	*39*
1. Facilitating/inhibiting conditions	1	2	12	16
a) accessibility	/	/	10	14
b) course or assessment controllability	1	2	2	2
2. Effort expectancy	1	1	11	23
a) knowledge on how to use	/	/	7	14
b) time and effort for learning	/	/	7	9
c) perceived efficacy in information appraisal	1	1	/	/

Note: N_p = person count; N_s = statement count.

On the other hand, 11 teachers reported negative use experience with GAI tools in performing certain tasks, which negatively affected their subsequent use intention. A major issue those teachers encountered was that those tools provided inaccurate, wrong or even fake information, which jeopardized their trustworthiness. For instance, T04 described how she lost her trust in ChatGPT:

> In terms of grammar, it doesn't always give you the right answer. It may take an obviously grammatically wrong sentence as correct. When I pointed it out, then it would agree and say it's not. After a couple of times like this, I don't trust it anymore. When I need to check an expression or collocation, I would just use Google or even a corpus, which is more reliable.

Some teachers also found GAI not as intelligent as expected, as it could only handle simple tasks, while failing to handle more complex ones to their satisfaction, such as generating proper test materials (T03, T08), creating a workable teaching syllabus (T13), and providing appropriate feedback on student essay (T16). T08 shared the clumsiness of ChatGPT in classifying concepts: "It is very good at classifying concrete concepts such as music instruments, but not for abstract ones, such as friendship and love". After asking ChatGPT to write hooks for sample stories, she was also disappointed by the result, which was considered "not interesting at all". Notwithstanding such negative experience, some teachers still saw the benefits of GAI for certain tasks, as T12 articulated:

> It [ChatGPT] would make up stuff, especially for Chinese historical facts, but it is really useful in providing inspirations for classroom activities. So I think I'll continue to use it in this aspect. But for finding teaching materials, I'll trust books or other sources more.

Given the abovementioned perceived usefulness and potential benefits, five teachers saw the pedagogical needs of applying GAI, such as in renovating curriculum (T01), searching for teaching resources (T05, T14), and generating teaching materials (T10, T16). As illustration, the following excerpt shows T01's internal drive to change an established curriculum with the assistance of GAI:

> I've been teaching this course for five years and the curriculum is rather fixed now. But I don't want to teach the same, old, boring content repeatedly. I'd like to try something new, something interesting and innovative. But sometimes I don't know how, and that's where ChatGPT came in.

In contrast, 9 teachers expressed a lack of pedagogical need to incorporate GAI into their teaching, especially for those low-frequency users (e.g., T06, T10, T11, T16). Most of these teachers attributed this low need to the fact that their teaching curriculum and materials were relatively established, as T08 said: "I have taught the grammar course for several years, and all the materials are still relevant, because grammar doesn't change. I don't see a particularly strong need for change because of AI". Some others also associated the low need with their courses' nature: "This [reading] course is about basic skills, which don't really require high-tech stuff like artificial intelligence" (T10).

Meanwhile, six teachers expressed that their engagement with GAI was also partially motivated by their academic research or career development, as T13 pointed out: "I've been preparing for my PhD studies and looking for a meaningful research topic. AI is now definitely a hot one." On the contrary, three participants shared that they were driven by their own strong interest in technology. For example, T08 shared that she was "always keen on exploring new technologies", while T05, another frequent ChatGPT user, explained that she was "very interested in such modern technologies, especially AI tools". By contrast, 4 teachers related their limited GAI engagement to their lack of technological interest, as T06 explained: "I'm not particularly into technology and never wanted to dive deep into it. I'm that type of people who don't even use Siri". Last, 4 participants attributed their limited integration of GAI to the availability of alternative choices, such as test bank (T03, T17), textbooks or other online resources (T06), and various search engines (T14), as T17 opined: "I don't find it [ChatGPT] irreplaceable. There are so many online and offline sources where I can find the materials I need".

Normative Beliefs

Within normative beliefs, more than half of the participants mentioned that their personal engagement with GAI was driven by social influence at different levels. A major influence was from colleagues, friends or family members, who were either using such tools themselves, sharing their use experience, or proactively recommending those tools. For instance, T07 stated that her "colleagues are all using it [ChatGPT], and in our chitchat, they would talk about how they asked ChatGPT to do this and that, and then I would try similar things". T16 pointed out that the major drive for him trying out ChatGPT was from his wife: "She uses it a lot in her teaching and pushed me to use it". Even after being disappointed by ChatGPT in an attempt to generate writing samples, T16 shared that he was still willing to explore other possibilities with the tool because of such family and social influence, as he explained:

> I've heard many positive comments from my wife about how useful it is, and how other teachers from

> her university asked students to use it to generate language games in speaking classes. So I think I might have used it in the wrong way.

Another frequently mentioned external influence included online and offline lectures given by experts in the field, workshops offered at in-service training, and conference presentations or sharing. For example, T01 shared how her attitude towards the use of GAI in teaching changed:

> When ChatGPT first came out, I didn't see any use of it in teaching and worried that it would be exploited by students to cheat. But later I joined a seminar. Some teachers there shared how it could be used to help teaching and how we should renovate assessments. These made me realize that AI could have so much potential.

Similarly, T15 stated that she "wasn't attracted to ChatGPT at first, until I listened to a conference presentation on how to use it to evaluate students' essays and generate feedback. What they showed was very practical and successful, so I thought I could also introduce it to my students to improve their writing".

Four interviewees also related their GAI involvement to the attitude of their institution, department or superiors. Although most of the participants' institutions did not issue any policy on campus use of GAI by the time of data collection (for more details, see Liu, 2025), these four teachers expressed that they perceived an tolerant attitude towards at least their personal use of such tools in their instruction, as T02 articulated: "Our university didn't absolutely say yes or no to it, nor did our course leader set any restrictions on that. They kept it open, and that gives us a lot of space for exploration." A similarly non-prohibiting social or academic atmosphere was mentioned as an encouraging factor by three informants, as "it helps get rid of the concerns one may have, because everybody is using it" (T13). Meanwhile, T15 reported that her practice of trying out GAI in teaching was also inspired by demonstrations shown on certain social media such as WeChat blogs.

Perhaps due to the pervasive social influence at different levels, eight teachers opined the need for them to keep updated with technological progress to foster professional development and transformation in line with the digital era. Such a subjective norm is reflected in recurrent themes like: GAI is "a defining feature of this digital age" (T07), "an age where humans should cooperate with AI" (T15); it is a "tech wave" (T13) that "nobody can afford to overlook" (T01), and we should "keep pace with the time" (T01, T09, T15) and "avoid falling behind" (T09). Another interesting subjective norm held by five teachers is the need to keep in pace with what students are doing, realizing the fact that students can also have easy access to such technology and may misuse it to cheat, as testified by T014: "Even if you choose to ignore it [GAI], students wouldn't. they would eventually come to realize that ChatGPT could help them write their homework. Then there would be information gap, and you are putting yourself at a disadvantage". Such a sentiment of taking initiative to engage with GAI to become prepared for its challenge is also captured by T02's words in quoting a Chinese saying: "'Only by knowing oneself and knowing one's opponent can one not be defeated'. If students are using it, why not us?"

Meanwhile, two teachers brought up sociocultural norms concerning information security and cultural values as barriers to integrating GAI into certain aspects of teaching, as illustrated by T12's concern: "I don't want to paste

their [students'] work into AI for feedback without their permission, cause that infringes their copyright and might leak their personal information". T03 found that "some language materials provided by ChatGPT don't reflect or even in conflict with our local culture or values, such as certain religious issues".

Control Beliefs

Factors associated with control beliefs were only mentioned by two teachers as facilitators of their own GAI engagement. Such beliefs included the control of their own courses or assessment on the one hand, as T02 expounded: "I'm the only teacher for the courses I'm teaching now. That's why I could experiment with ChatGPT rather freely. But if there are also other teachers teaching the same course, then I'll have to consider things like consistency in teaching schedule and assessment". On the other hand, sense of control may also manifest in teachers' confidence in properly evaluating and using GAI-generated information, as T17 explained her willingness to use ChatGPT-generated materials for teaching: "Most importantly I think I know well enough about those topics. I know what to choose and put in my class".

In many more cases, nevertheless, there were negative perceptions of control over GAI integration. First, participants reported inhibiting conditions such as restricted access to GAI, which significantly decreased the feasibility of integrating such tools into classroom activities, as T10 articulated: "Access is one big problem, because the tool is not publicly available in China". Inhibiting conditions may also relate to teachers' personal control over course and its assessment, as T07 accounted for her hesitation to incorporate GAI into her assessment development process: "For some courses I'm not the only teacher, so I have to follow the whole team's assessment protocol".

Second, more than half of the teachers attributed their limited engagement with GAI in part or whole of their EFL instruction to the effort needed. Specifically, 7 teachers explained that their limited knowledge about GAI did not enable them to leverage such technology effortlessly and integrate it into teaching effectively, as embodied in T09's statement:

> I think I still need to learn more about it, like how to use it to provide feedback for students, how to create a test or even video, and other complex tasks. Until now all I know is the question-and-answer method, taking it as no more than just a dictionary.

Similarly, T11 explained the obstacle between GAI and his teaching in the following words:

> Most of us, including me and my colleagues, still don't know how to use AI, like how to write prompts in different scenarios, not to mention to put it into use in teaching. I feel like we need AI tools that are more fool-proof and can perform tasks by just a few clicks. For now, we still need to explore how to use it by ourselves, all from scratch.

These statements also indicate that mastering GAI and integrating it into teaching require significant time and effort from teachers. However, such effort and time were not always found available or worthwhile:

> I'm personally very willing to explore this area, but every day we are busy with various teaching tasks.

In the end there's little time left for such training or workshop. (T15)

It's also about the evaluation system. Each year we are evaluated based on our research and publication, and teaching quality would take up a less important part. If we spend much time to learn AI, it may not be paid off in the evaluation in the end. (T11)

Factors Affecting Teachers' Endorsement of Students' use of GAI

Regarding teachers' attitude towards students using GAI in instructed learning, the interview data showed that factors pertaining to behavioral and control beliefs exerted both facilitating and inhibiting influence, while those associated with control beliefs exerted mainly a hampering effect (see Table 3).

Table 3. Factors Facilitating and Inhibiting Endorsement of Students' Use of GAI

Codes	Facilitating		Inhibiting	
	N_p	N_s	N_p	N_s
I. Behavioral beliefs	*4*	*11*	*13*	*45*
1. Performance expectancy	4	11	13	44
a) impact on learning	4	11	9	22
b) impact on assessment	/	/	9	17
c) pedagogical need	/	/	3	5
2. Availability of alternative choice	/	/	1	1
II. Normative beliefs	*3*	*6*	*3*	*11*
1. Social influence	1	1	2	9
a) colleagues or peers	1	1	1	4
b) institutional policy	/	/	2	5
c) social environment	/	/	1	2
2. Subjective norm: belief about the need for students to follow technological trend	3	5	/	/
III. Control beliefs	/	/	*4*	*7*
1. Inhibiting condition: accessibility	/	/	3	6
2. Inhibiting condition: class size	/	/	1	1

Note: N_p = person count; N_s = statement count.

Behavioral Beliefs

Only 4 teachers endorsed students' use of GAI due to its potential positive impact on their learning, including serving as students' on-call language tutor in reading and writing tasks (T13, T14) and generating immediate feedback on task performance (T11, T17). For instance, T14 held that GAI could help students with their English writing: "When students' have problems with their expressions when writing essays, it's not always easy to find a teacher or native speaker for help. But AI is always there. It can instantly give them useful answers". GAI was also believed by T17 to hold certain advantages over human peer feedback: "I find students these days may not

give each other honest feedback, because they worry it would hurt their classmates' feelings. AI perfectly solves this problem, because they won't worry about losing face in front of AI".

Despite GAI's benefits to learning, there were more teachers concerned about its negative impact. Particularly, 9 teachers worried that inappropriate use of GAI by students may undermine their learning process, as T05 opined: "The purpose of this course is to train their structural analysis and critical thinking. But if they use AI to complete those tasks, they're not going through the training process at all". T07, who was teaching a speaking course, expressed how GAI is insufficient for developing speaking skills:

> Speaking is a multi-model interaction, including facial expressions and body language, and the emotions conveyed through them. This means learning to speak requires interacting with human beings instead of machines or AI. AI may help at some points during this process, but such help is definitely not enough.

Besides, some teachers worried that students may not have the awareness and capacity to critically evaluate GAI-generated content, as T17 articulated:

> ChatGPT doesn't always give useful or reliable information. I know how to cross-check those information if I find them suspicious. But they [students] don't know how. They probably don't even have the awareness to do so. They would believe everything ChatGPT says and use it in their homework.

Apart from learning, nine teachers expressed their concerns about the negative impact of misusing GAI (e.g., plagiarism) on assessment, as T12 said: "sometimes it's hard to tell if it was written by AI or not, and we may give them a high score for the wrong reason". Besides damaging assessment validity, some teachers were worried about potential fairness issues, as T01 pointed out: "If some students get A through the help of AI, but some others get B or C without such help, then it's not a fair assessment". Such concerns over academic integrity and fairness created another reason holding back those teachers from introducing GAI to their students, as T04 stated: "I don't dare to show how to use it in class, because they may take it as a sign of encouragement and use it for their essay."

Different from these concerns over negative influence, 3 teachers shared that they did not find a pedagogical need to introduce GAI to their students, as T05 said: "This course is intended to familiarize them with the structure of academic writing. It is very introductory. It's not a course about technology-enhanced writing". However, it may also be that teachers had not found a proper way to introduce GAI to their students, as T10 mentioned: "I haven't figured out when and how to introduce it to them, like for which task or part of the course". Meanwhile, T17 mentioned other search engines as alternatives to GAI: "Those search engines like Baidu and Google are enough for them. They can also get useful information through them".

Normative Beliefs

Regarding subjective norm, 4 teachers mentioned that their belief about the need for students to follow technological trends drove them to introduce GAI to their students, as T14 articulated: "This is a big trend. In the future more and more people would use it to communicate or learn a new language. I think they need to adapt to this change". Meanwhile, T17 shared that her decision to conduct a workshop on ChatGPT for students was

inspired by a colleague giving a similar workshop. On the other hand, negative attitudes toward students' use of GAI held by important others, such as colleagues and institution, were also mentioned as factors preventing teachers from endorsing students to use such tools, as T06 explained: "The university' document basically says that students are not allowed to use it for assignments. We also had a meeting within our department and our colleagues were mostly against it".

Control Beliefs

Negative logistic conditions were also found to be impeding some teachers' willingness to support students' use of GAI. For example, 3 teachers worried that students may not have easy access to such tools, since tools such as ChatGPT are still unavailable in the country. Accessing them usually requires using assistive tools such as VPN, which may cause additional barriers, as T03 mentioned: "Either in class or for homework, they need to have a VPN account, but not everyone of them is willing to pay for that". Big class size may also obstruct intention to implement GAI in class, as T17 expressed: "My class has around 70 students. It'll be difficult to manage classroom activities involving AI".

Discussion

The present study revealed that, overall, factors pertinent to behavioral beliefs both motivated and inhibited Chinese EFL teachers' personal GAI use, especially perceived usefulness or benefits of GAI to their teaching practice. This seemingly contradictory role of behavioral beliefs is in line with the current conflicting views about the utility of GAI in education – its potential in enhancing teaching efficiency with their powerful content-generation ability and in undermining educational quality with their known propensity for producing homogeneous, superficial, biased and even incorrect information (Al-Mughairi & Bhaskar, 2024; Kasneci et al., 2023; Kohnke et al., 2023a; Miao & Holmes, 2023; Ulla et al., 2023). It is thus understandable that those teachers were both tempted and hesitant to maneuver such a double-edged sword. Aside from perceived usefulness of GAI for teaching practice, career development was also mentioned by some participants as a motivator for their GAI use. This is similar to what Al-Mughairi and Bhaskar (2024) as well as Gupta and Bhaskar (2020) found, which showed that long-term extrinsic motivations such as promotion and professional development were among the key factors driving teachers' intention to adopt AI technologies.

Notably, the present study discovered that perceived pedagogical needs also had a significant impact on their teachers' intention to integrate GAI into teaching, and there were more teachers who did not see such needs than those who did, causing contrasted intentions about AI integration. According to Tsai and Chai (2012), unwillingness to adopt new technologies may relate to teachers' lack of design thinking to improve current situations through technology; it may also result from an underlying skepticism of the pedagogical affordances of new technologies, with the belief that meaningful teaching and learning can still occur without them (Aflalo, 2014). Such a lack of design thinking and skepticism were particularly evident in the quotes of T08 and T10. Resistance to change or adopting new technology may also be caused by the availability of alternative or existing resources, as voiced by four informants in the present study. Compared with the time, effort and resources needed

for taking upon new technology such as GAI, relying on other handier technologies or resources could thus appear more cost-efficient.

Meanwhile, whereas factors associated with normative beliefs mainly exerted a facilitating influence, those related to control beliefs primarily impeded teachers' engagement with GAI. Venkatesh et al. (2003) contended that social influence is a prominent motivator in the early stages of people's adoption of new technologies, as in later stages the influence of important others' recommendation would decline with the habituation of those technologies. Given the still nascent but surgent development and diffusion of GAI across social sectors, social influence from different levels and proximities is thus playing a conspicuous role in driving personal adoption. Such social influence may have also exerted a joint influence on the participants' formation of their subjective norms, such as the belief about the need to stay updated with emerging technologies, as suggested by the TPB (Ajzen, 1991).

One interesting novel finding of this study is that some teachers engage with GAI because they believe they must keep up with their students' use of it to better address potential misuses. Such a subjective norm, viewing technology us as a race between teachers and students, aligns with the wider accessibility and versatile functionality of GAI in comparison with traditional AI or other educational technologies; therefore, the group lagging behind in this technological race is likely to be disadvantaged. Moreover, the present study disclosed that sociocultural norms, such as information security, privacy and cultural values, may constitute additional barriers to teachers' GAI integration. Similar concerns over security and privacy issues were voiced in other studies (Al-Mughairi & Bhaskar, 2024; Hockly, 2023). These findings together highlight the urgent need for addressing information security issues as well as cultural and value bias in GAI programs, a call also made by organizations such as UNESCO (Miao & Holmes, 2023).

The discovery of factors pertaining to control beliefs primarily functioning as barriers to GAI adoption by the investigated teachers is consistent with mainstream theories such as TPB, TAM and UTAUT, which posit that technology dissemination, especially in the early stages, is significantly influenced by its ease of use and the presence of facilitating or inhibiting conditions (Ajzen, 1991; Camilleri, 2024; Davis, 1989; Venkatesh et al., 2003). It also corroborates earlier findings on the importance of technical knowledge, training and support as well as requisite resources and time for AI adoption (Al-Mughairi & Bhaskar, 2024; Du & Gao, 2022; Gupta & Bhaskar, 2020). Within control beliefs, the current study further revealed that teachers' control over curriculum (including assessment) and perceived competence in appraising GAI content may affect their GAI integration, with the latter reflecting the challenge brought by the quality issues of GAI information (Al-Mughairi & Bhaskar, 2024; Kasneci et al., 2023; Kohnke et al., 2023a; Miao & Holmes, 2023), as discussed earlier.

Compared with the factors driving teachers' own use of GAI, the factors underlying their support for students' use in EFL instruction showed a somewhat different pattern. Overall, the interview data indicate that factors pertaining to behavioral and control beliefs mainly hindered their endorsement of students' use of GAI, while those associated with normative beliefs both facilitated and obstructed such endorsement. Two prominent barriers under behavioral beliefs are potential negative impact on learning and assessment, particularly assessment. This

echoes the widespread concerns within the education sector that students' misuses of GAI tools such as plagiarism and uncritical use may endanger academic integrity, deprive them of opportunities for meaningful learning, and eventually weaken their learning ability (Ulla et al., 2023; Liu, 2025; Yeo, 2023). These worries are not groundless, as recent empirical study disclosed that at least one quarter of university students either had engaged or intended to engage in GAI-assisted plagiarism (Nguyen & Goto, 2024). Despite the overwhelmingly negative attitudes on students' GAI use arising from perceived challenges, there were still several teachers opted for such practice in light of its potential educational benefits to learning, such as providing support and feedback in a timely, personalized and non-intrusive manner, as argued in previous reports (AlGhamdi, 2024; Karataş et al., 2024; Kasneci et al., 2023; Kim & Su, 2024).

Conclusions

The above findings have important implications for both theory building and educational practice in the context of GAI. By decomposing the concept of pedagogical integration of GAI into teachers and students' GAI use respectively, the present study discovered that the two dimensions were differentially affected. This implies that future studies modelling the factors underpinning teachers' intention to integrate GAI into instruction may need to treat their intention for personal engagement and students' engagement separately. Second, a related implication is that scales used to measure certain constructs from extant theories may need to be expanded in scope to accommodate new important factors or considerations influencing teachers' pedagogical integration of GAI. For instance, the construct of performance expectancy from UTAUT and the similar construct of usefulness of use from TAM have been generally operationalized into items describing potential benefits of using the target technology to the survey participants (e.g., teachers) alone (see e.g., Camilleri, 2024; Sohn & Kwon, 2020; Teo et al., 2018; Venkatesh et al., 2003). Based on the present study's findings, such a narrow scope may not adequately address teachers' concerns about the positive or negative impact of the target technology on their students. Therefore, relevant items may need to be added for more adequate construct representation.

Practically, findings of the current study suggest that for more smooth pedagogical integration of GAI, it is necessary to develop specialized and user-friendly GAI programs that can generate accurate, in-depth and sophisticated content compatible with local context, culture and value. Teachers themselves should also be well-equipped with necessary knowledge and skills, both in how to use those GAI tools and how to integrate them organically into instruction, including students' instructed learning in and outside the classroom. A sense of design thinking and belief in the pedagogical affordances of GAI technology should also be nurtured in them, so that they can better identify specific pedagogical needs for updating curricula with GAI integrated. To achieve these, relevant professional training (through means such as pre-service programs, workshops, forums and conferences), logistic support (e.g., time, resources, infrastructure) and incentives (e.g., rewards and certification) may need to be provided at institutional or government levels. Apart from these, institutions and governments should lay down guidelines and regulations to guide ethical and responsible use of GAI, especially among students.

Limitations and Future Directions

A major limitation of the present study lies in the fact that only 17 university EFL teachers from China were

investigated. The small scale and rather concentric backgrounds of this sample thus may not be able to yield findings that can be generalized to larger populations from other contexts. Second, this study only gathered interview data, and thus could not be triangulated with other data sources. Therefore, future studies may employ multiple methods (e.g., interview and questionnaire survey) to collect different types of data based on larger samples with more diversified backgrounds. Last, at the time of data collection, the participants were still at the early stage of GAI dissemination. Given the fast development of GAI technologies and the growing awareness and knowledge among teachers in applying and integrating them, the factors driving or hampering their adoption and sustained use of those technologies may also evolve along the way. Therefore, it is worthwhile to conduct longitudinal research by collecting data at different time points to map out the trajectories of the mechanisms underpinning pedagogical integration of GAI. Despite these limitations, this study made significant contributions to educational adoption of technology and deepened our understanding of the underlying factors by investigating teachers' views on their own adoption of GAI and on students' engagement with GAI in instructed learning separately.

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