Generative AI-Induced Emotions in EFL Classrooms: Effects and Students' Regulation Strategies

Thinley Wangdi
Research Center for Language Teaching and Learning, Language Department
School of Languages and General Education, Walailak University
222 Thaiburi, Thasala, Nakhon Si Thammarat, 80161, Thailand
E-mail address: thinley11@gmail.com
ORCID: https://orcid.org/0000-0002-0811-0525

Nur Lailatur Rofiah
Research Center for Language Teaching and Learning, Language Department
School of Languages and General Education, Walailak University
222 Thaiburi, Thasala, Nakhon Si Thammarat, 80161, Thailand
E-mail address: nr.lailatur@gmail.com
ORCID: https://orcid.org/0000-0003-1816-6730
(corresponding author)

ABSTRACT

Aim. This interpretive qualitative study explored Thai EFL students' emotional experiences in a seven-week generative (Gen) AI-integrated classroom, the perceived impacts of these emotions, and the emotion regulation strategies (ERSs) employed by students in response to their emotional experiences.

Methods. The data collected using written interviews on Google Docs from 22 purposively selected second-year university students after the intervention were thematically analysed.

Results. The study found that students experienced both negative emotions (e.g., frustration, discouragement, dissatisfaction, anxiety, boredom, and confusion) and positive emotions (e.g., excitement, confidence, and curiosity) in a Gen AI-integrated classroom. Positive emotions that students experienced in a Gen AI-integrated classroom enhanced their learning enjoyment, content understanding, confidence, motivation, and engagement, whereas negative emotions reduced their motivation and classroom focus and led to poorer language development. To regulate their emotions, students employed both antecedent-focused and response-focused strategies ERSs.

Conclusions. The study concludes that Gen AI tools induce emotions in learners and that these emotions influence their learning experiences in several ways. It also concludes that learners regulate their emotional experiences in Gen AI-integrated classrooms. Practical implications for ELT policymakers, educators, and students, along with recommendations for future research, are also provided.
Keywords: generative AI, ChatGPT and Gemini, generative AI-induced emotions, effects, emotion regulation strategy, Thailand

Introduction

The inception of Generative (Gen) AI tools such as ChatGPT, Gemini, and DeepSeek in the field of English Language Teaching (ELT) has introduced a myriad of possibilities for both educators and learners on a global scale (Wangdi & Rigdel, 2025a). Prior studies on Gen AI tools in the ELT field (Baidoo-Anu & Ansah, 2023; Bin-Hady et al., 2024; Chea & Xiao, 2024; Waluyo & Kusumastuti, 2024) suggest that their integration into teaching benefits learners in several ways, including improving their linguistic knowledge, classroom engagement, classroom participation, learning experience, and overall academic performance. In addition, In their systematic review, Yuhan Liu et al. (2024) that examined emotional artificial intelligence in English language education noted that when used in the classrooms, Gen AI tools boost learners' enjoyment of learning and reduce their anxiety, suggesting the potential of these tools to create an emotionally supportive learning environment. Such an environment is particularly important in the field of second/foreign language teaching, where learners are often reticent (Wangdi & Shimray, 2025) and emotionally vulnerable (Kohnke & Moorhouse, 2025). Note that the growing body of evidence supporting the benefits of Gen AI tools seemingly has led many ELT educators to regard these tools as transformative resources (Baidoo-Anu & Ansah, 2023; Wangdi et al., 2025) and are increasingly using them in their classrooms (Guo & Wang, 2024).

However, some ELT educators remain cautious about and are still reluctant to integrate these tools into their classroom teaching, mainly due to the challenges and limitations associated with AI tools. Fiona Fui-Hoon Nah et al. (2023) for instance, highlighted that content generated through Gen AI tools is inappropriate, biased, and harmful. They also warned that students may become overly reliant on or misuse Gen AI tools, and that they may pose risks to their privacy and security. Another key concern with the integration of Gen AI tools is their potential negative impact on learners' emotional development (Bin-Hady et al., 2024), which is a crucial aspect of an individual's well-being. The negative association between Gen AI tools and learners' emotional growth is, however, not surprising, as these tools lack emotional intelligence.

Such notable limitations of AI tools serve as a reminder to educators that failing to address learners' emotions in a Gen AI-integrated teaching environment or classroom,

at the early stage of their popularity, may lead learners to emotional stagnation and even to technostress (Klimova & Pikhart, 2025), which, over time, can become prevalent issues as educators increasingly integrate them into their teaching practices. To address this urgency, although one recent focus of ELT researchers has been the investigation of emotions experienced by learners in Gen AI-integrated classrooms and the ERSs used by them, only a few studies (Xin & Derakhshan, 2025; Yang & Zhao, 2024) have been found in the literature, suggesting the need for more research in this area. Furthermore, the two studies did not explicitly address how learners perceive the effects of emotions induced by Gen AI tools, which this study aims to investigate.

The current study was thus conducted to fill the knowledge gap identified earlier regarding the lack of research studies on emotions experienced by learners in a Gen AI-integrated classroom, the perceived impacts of those emotions, and the Emotion Regulation Strategies (ERSs) learners employed in response to their emotions. Zhonggui Xin and Ali Derakhshan (2025) underscored that learners' emotional experiences in GenAI-integrated classrooms remain largely unexplored; therefore, the findings of this study are expected not only to extend the work of Xin and Derakhshan (2025) and Lei Yang and Shu Zhao (2024) but also to help ELT educators in Thailand and beyond enhance their understanding of the phenomenon under investigation. Also, students' ERSs identified in this study are hoped to serve as a practical guide for ELT educators (who can assist their learners in regulating emotions) and learners themselves in managing their emotions. The knowledge of ERSs is important because, when individuals are aware of ERSs, they can implement them to down-regulate negative emotions and up-regulate positive emotions, thereby fostering a greater presence of positive emotions (Bielak & Mystkowska-Wiertelak, 2020). Note that learners' positive emotions are frequently associated with better language learning experiences, improved language skills, and enhanced well-being, while negative emotions have the opposite effect (Rigdel & Wangdi, 2024). This study aims to address the following research questions:

- What are the emotions involved in generative AI-integrated EFL classrooms?
- What are Thai EFL students' perceived impacts of emotions induced by generative AI tools in the classroom?
- How do Thai EFL students regulate their emotions experienced in a generative AI-integrated classroom?

Literature Review

Generative AI-Integrated Classroom and Emotions

Paula A. Schutz et al. (2006) identified social interaction as one of the triggers of emotion in educational settings, amongst others. Likewise, in the era of Gene

AI, individuals experience a variety of emotions when engaging or interacting with these AI tools (Kohnke & Moorhouse, 2025). In the ELT field, recent studies (Kohnke & Moorhouse, 2025; Xin & Derakhshan, 2025; Yang & Zhao, 2024) have already testified that English language learners experience a range of emotions in Gen AI-integrated classrooms. As Gen AI tools are being incorporated extensively into English teaching practices (Guo & Wang, 2024), ELT educators need to be careful of their potential impacts on learners' emotional experiences in the classroom. Empirical studies have shown that learners' emotional experience is directly associated with their academic performance (Bai & Phromphithakkul, 2024; Guo & Wang, 2024; Kruk & Kałużna, 2025). Theoretically, Pekrun's (2006) control-value theory of achievement emotions posits that both positive and negative emotions can influence learners' academic performance, cognitive development, and overall well-being

To date, only a few studies (Kohnke & Moorhouse, 2025; Xin & Derakhshan, 2025; Yang & Zhao, 2024) have explored learners' emotional experiences when Gen AI tools are integrated into the classroom. Lucas Kohnke and Benjamin Luke Moorhouse (2025), for instance, qualitatively explored teachers' and learners' perspectives on the potential impact of Gen AI tools on learners' emotional engagement, motivation, and well-being in Hong Kong. They discovered that Gen AI tools have the potential to increase learners' motivation and reduce their anxiety and stress. Learners' positive emotions were associated with Gen AI's ability to provide immediate feedback, an adaptive in-built rewards system, personal tracking potential, and responsiveness, while negative emotions were linked to Gen AI tools' inability to provide suitable responses, lack of flexibility, and repeated responses. Nonetheless, the findings of the study strongly suggest that Gen AI tools enhance learners' positive emotions and mitigate their negative emotions.

Another qualitative study conducted by Xin and Derakhshan (2025) reported that the majority of Chinese EFL learners mentioned experiencing positive emotions such as motivation, excitement, engagement, and confidence, with a few negative emotions, such as frustration, anxiety, and stress, in the Gen AI-supported classroom. Their findings indicate that positive emotions are mostly linked to learners' sense of accomplishment and the process involved in learning a language with AI tools. Negative emotions, on the other hand, were found to be associated with the way Gen AI tools provided feedback (direct feedback), inadequate resources, lack of training, and the complexity of AI tools.

Yang and Zhao's (2024) qualitative study also reported that Chinese EFL learners reported experiencing a range of positive emotions, such as interest, enjoyment, inspiration, happiness, pride, gratitude, excitement, and pleasure in a Gen AI-integrated classroom and a few negative emotions, such as boredom, embarrassment, and fear. Learners' positive emotions in their study were linked to the novelty of the AI tools and their curiosity to explore further, while negative emotions

were often connected to the lack of AI literacy and learners' unfamiliarity with the AI tools used in the classroom, The researchers concluded that students, especially those with lower AI literacy, are more likely to experience negative emotions than positive one.

The literature reviewed so far suggests that learners' interaction or engagement with Gen AI tools induces a greater range of positive than negative emotions, indicating that Gen AI tools may serve as emotionally supportive tools in the field of language teaching, as noted by Kohnke and Moorhouse (2025) in their study. It is, however, uncertain whether Thai EFL learners experience emotions like learners in Hong Kong and China in Gen AI-integrated classrooms. Also, none of the studies reviewed for this study have explicitly explored the potential impact of Gen AI-induced emotions on learners, highlighting a significant gap in knowledge in the growing body of research on Gen AI tools and their implications for English language teaching.

Emotion Regulation Strategies (ERSs)

In this study, emotion regulation is defined as strategies used by individuals (students in this case) to regulate their emotions experienced while using Gen AI tools in the classroom. This definition echoes James J. Gross's (1998) process model theory of emotion regulation, which states that individuals use different ERSs to manage their emotions to maintain their well-being. Evidence shows that foreign (English) language learners often experience a variety of emotions (both positive and negative) in the classroom (Bielak & Mystkowska-Wiertelak, 2020; Rigdel & Wangdi, 2024) and subsequently use different strategies to regulate them (Bielak & Mystkowska-Wiertelak, 2020). Regulating emotions helps learners in numerous ways. For instance, up-regulating positive emotions generates other positive emotions, fosters learning, increases enthusiasm, enhances commitment and strengthens the rapport between teachers and students (Zhang & Wang, 2024). Likewise, down-regulating negative emotions is associated with increased positive emotions (Deng et al., 2013). For this reason, students often up-regulate and down-regulate emotions (Bielak & Mystkowska-Wiertelak, 2020) using different strategies.

Gross (1998) mentioned that everyone experiences emotions and regulates them, whether consciously or unconsciously, using reappraisal (antecedent-focused) and suppression (response-focused) ERSs. Individuals engage in antecedent-focused ERSs before an emotion is fully experienced. These include situation selection (choosing/avoiding the situation that may trigger unpleasant emotions), situation modification (changing situation/environment to shape the impact of emotions), attention deployment (deployment of attention away from emotional stimuli), and cognitive change (ability to reassess, manage, and change emotions), while response-focused, used

by individuals after experiencing emotion include cognitive appraisal, acceptances and suppression of emotions using strategies such as distraction, relaxation, exercise, deep-breathing, meditation, reflection, and mindfulness practice (see Gross, 1998, 2015; Wangdi & Rigdel, 2025b; Zhang & Wang, 2024).

Prior studies on students' ERSs reveal that emotion regulation is connected with several benefits for learners, such as the development of psychological flexibility, resilience, and well-being (Morrish et al., 2018), cognitive and emotional growth (Gross, 2015), improved learning performance and academic success (Chu et al., 2020), among others. For this reason, although not many, a few previous studies (e.g., Bielak & Mystkowska-Wiertelak, 2020; Yang & Zhao, 2024; Zhang et al., 2024) investigated learner-centered ERSs in foreign language teaching contexts using a qualitative research design. For instance, a study conducted by Jakub Bielak and Anna Mystkowska-Wiertelak (2020) in Poland found that learners use a variety of ERSs (e.g., attention deployment, cognitive change, response modification, situation selection, etc.), depending on the situations, learning contexts, and individual learners' characteristics.

Investigating ERSs employed by Chinese EFL learners in collaborative online learning, Zhipeng Zhang et al. (2024) concluded that students employ three types of ERSs such as self-regulation (evaluating, planning, using emojis, and understanding the task), co-regulation (assisted planning and assisted understanding the task), and socially shared regulation (joint planning, evaluating, understanding the task and use of emojis) to improve their learning enjoyment and experience. In another study, Xin and Derakhshan (2025) found that learners used ERSs such as seeking help from others, shifting attention, cognitive change, consistently practicing, staying positive, and thoroughly suppressing in response to emotions experienced in Gen AI-integrated classrooms.

Recently, Yang and Zhao (2024) explored perceived AI-induced emotions among Chinese EFL learners and concluded that learners experience both positive and negative emotions in AI-integrated classrooms and employ both antecedent-focused and response-focused ERSs to manage their emotions. The study reported learners using antecedent-focused ERSs such as attention deployment, cognitive change, situation modification and situation selection, while response-focused ERSs involved drinking water, emotion suppression, body language, and deep-breathing.

The reviewed literature on foreign learners' ERSs in this study shows that learners employ a wide range of ERSs, most of which align with Gross's (1998) process model theory of emotion regulation to manage their emotions experienced in different situations. The literature also suggests that prior studies on foreign language learners' ERSs are mostly quantitative, exploring the dynamic relationships between learners' ERSs and factors such as burnout, motivation, enjoyment, and well-being in both traditional teaching contexts (Thomas & Zolkoski, 2020; Yu et al., 2022; Zheng & Zhou, 2022) and AI learning environments (Rezai et al., 2024), indicating

the need of further research on ERSs using different research methodologies, especially in the classroom settings. More importantly, there is a lack of understanding of how learners regulate their emotions in Gen AI-integrated classrooms. To the best of the authors' knowledge and based on the literature reviewed for this study, only two studies to date have addressed this topic (see Xin & Derakhshan, 2025; Yang & Zhao, 2024).

Methodology

Research Design and Participants

This study employed an interpretive qualitative research design. According to Sharan B. Merriam (2002), interpretive qualitative studies seek to explore and understand phenomena under investigation through the perspectives of the individuals involved. In this study, the researchers sought to discover the emotions experienced by learners who were involved in Gen AI-integrated classrooms, the perceived impacts of those emotions, and the emotion regulation strategies students employed. 28 Thai university students majoring in the Professional Culinary Arts programme were selected using the purposive convenience sampling method. These second-year university students were enrolled in an English for Academic Communication course and learned from one of the researchers. For this study, the data of only 22 participants (presented as student 1, 2…22) students (male = 9, female = 13) were considered because two students were absent during the time of data collection and four students chose not to participate. This is likely because participants were informed in the beginning that they could simply disregard the Google Docs with open-ended questions and choose not to respond if they were not willing to be part of the ongoing study.

Instrument

Modified open-ended questions, adapted from Yang and Zhao (2024), were used to collect the data (see Appendix). The instrument consisted of three open-ended questions (e.g., How do you feel when using Gen AI in the classroom?) and they were presented in both English and Thai in Google Docs. Before the data collection, the three questions were reviewed by experts for their accuracy. A pilot survey was also conducted to ensure that the responses gathered through these questions align with the current research objectives. The expert's feedback was incorporated into the final version of the instrument and the pilot interview revealed no indications of misunderstanding the questions.

Data Collection

A written interview was used to collect the data. As noted earlier, responses to the written interviews were collected using Google Docs (GD). GD was used because Victoria Opara et al. (2023) pointed out that collecting data through GD is not only time-saving and flexible but also enables researchers to gain deeper insights into interviewees' thoughts, as GD facilitates a real-time writing process. The use of written interviews through GD also addresses traditional challenges of face-to-face interviews, such as participants being influenced by interviewers and participants feeling uncomfortable expressing themselves in front of interviewers (Opara et al., 2023). Note that Thai students are often reticent in nature (Wangdi & Shimray, 2025) and are less likely to express their thoughts had we conducted the interviews face-to-face. Another benefit of the written interview is that it gives participants the freedom to choose their preferred language (Thai or English) to express their thoughts. It should be noted that participants in this study were explicitly informed that the data were being collected solely for research purposes and that they could withdraw from the study at any time. Informed consent was also obtained through GD, wherein participants were requested to click on "I voluntarily participate in this study."

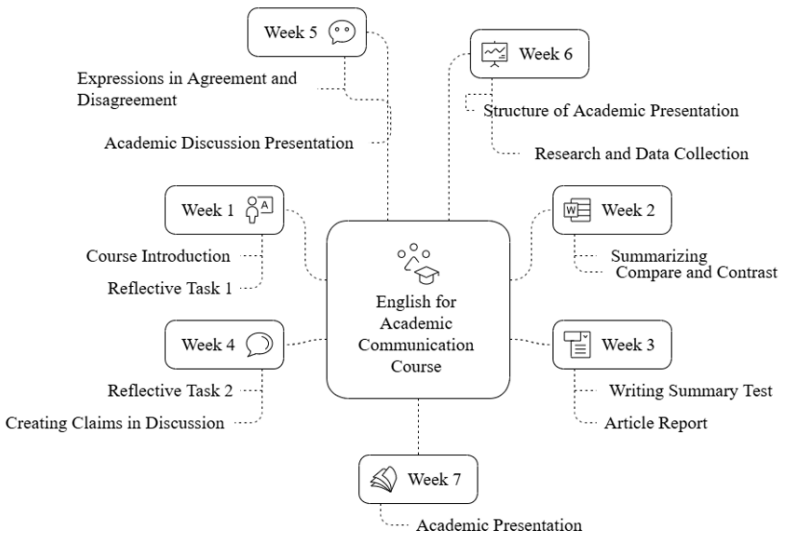
Since students were given the option to use their preferred language, most participants responded in Thai, with only two responding in English. Thai responses were translated later into English with the help of an expert for the analysis. On average, each participant took around 10 minutes to complete the GD. The responses (both Thai and translated versions) were then transferred to a Word file, compiled and shared with participants for member checking (Birt et al., 2016) to enhance the accuracy of the data. To ensure that the study complied with both international and national ethical research protocols, ethical approval was obtained from the Walailak University Ethics Committee (Approval No. WUEC-25-197-01).

The Intervention

Data collection began with the implementation of a seven-week English for Academic Communication Course designed to develop learners' English language knowledge and skills for effective academic and professional communication. The teacher met the students twice a week, with sessions lasting two and three hours respectively. The details of course content and classroom activities for each week are provided in Figure 1. In this study, Gen AI tools were used in the presence, as suggested by Wagdi Rashad Ali Bin-Hady et al. (2024), to generate feedback on students' writing, as a translation tool, a co-writer, a brainstorming assistant, a search engine, a grammar checker, and to ask for clarification. The details of how Gen AI tools were used are explained in the following paragraph.

Figure 1

Illustration of the Course Design



Source. Own research.

In Week 1, students used Gen AI tools of their choice to generate feedback on their grammatical structure, clarity, and the quality of the content, to improve their reflections written on a short video they had watched. They then revised their reflections based on the feedback provided by AI tools. In Week 2, students summarised short articles and stories using the 'WH questions' technique (e.g., What is this article/story about? Who are the main characters? etc.). They could also use AI tools to analyse key questions such as 'who,' 'what,' 'when,' 'where,' 'why,' and 'how' to identify the main characters, events, and other important details. They were, however, instructed not to just copy-paste from the AI and to write the summary in their own words once they understood the article/story. In Week 3, Gen AI tools were used to help them understand the articles they had selected to report/present. They further used AI tools to design an outline for their presentation. In Weeks 4 and 5, students used AI tools to brainstorm ideas for classroom discussions. The teacher gave topics (e.g., mobile phones should be banned at the university) and students were asked to AREL structure (Assertion, Reasoning, Evidence, and Linkback) while discussing. In Weeks 6 and 7, students used Gen AI tools to refine their self-written presentation scripts.

Data Analysis

Data obtained from written interviews was thematically analysed using Virginia Braun and Victoria Clarke's (2006) six-step guidelines. To familiarise themselves

with the data, researchers independently read the participants' responses several times. Following this, researchers manually performed initial coding together because Cliodhna O'Connor and Helene Joffe (2020) mentioned that at least two coders are required to establish the reliability of the coding process. In this phase, researchers coded each reported emotion, perceived impact, and emotion regulation strategy as a separate unit of code (cf. Shimray & Wangdi, 2025), recognising that these elements are unique to each individual. For instance, if participants reported two or more emotions (e.g., „I feel frustrated and confused when using generative AI"), both „frustrated" and „confused" were regarded as a single unit of code. The same approach was applied to the perceived impacts of emotions and emotion regulation strategies. Generated codes were then finalised through peer debriefing and consensus agreement. Researchers then examined patterns of the identified codes and categorised them into broader themes under each research objective. They reviewed, refined, and finalised the names of themes together before reporting them. The researchers ensured that they were reflexive throughout the data analysis and bracketed their prior experiences and knowledge to minimise potential researcher bias.

The researchers used different strategies to increase the trustworthiness of this study. The credibility of the study was ensured through the researchers' prolonged engagement with the data, member checking, and frequent peer debriefing. Transferability was secured by giving detailed descriptions of the methods. The dependability and confirmability were established through an audit trail (Creswell & Miller, 2000), with a qualitative expert reviewing the procedures, data, and findings. Furthermore, the researchers' reflexivity and deliberate bracketing of prior experiences and knowledge enhanced both the dependability and confirmability of the findings. The findings presented in this study are thus considered credible and trustworthy.

Findings

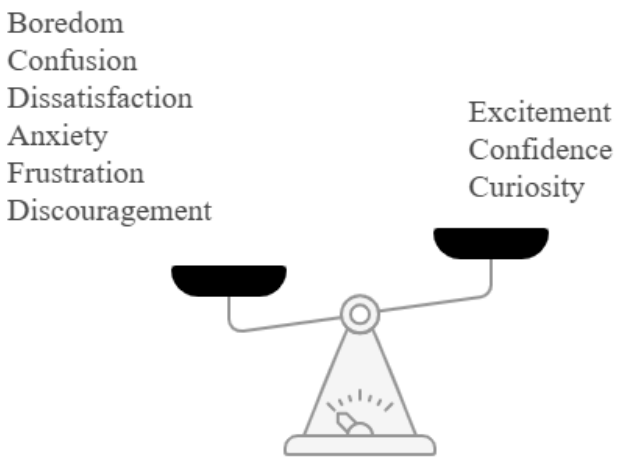
The first research question, which explored Gen AI-induced emotions, comprised two themes: positive and negative emotions; the second research question, which examined the perceived impacts of emotions, included two themes: impact of positive and negative emotions; and the third research question, which focused on learners' ERSs, covered two themes: antecedent-focused and response-focused ERSs.

Generative AI-Induced Emotions

The initial findings revealed that Gen AI tools induce both positive and negative emotions. Participants, however, reported more negative emotions than positive emotions. Negative emotions included *frustration, discouragement, dissatisfaction,*

anxiety, boredom, and *confusion*, while positive emotions included *confidence, curiosity*, and *excitement*. Learners' negative emotions were associated with Gen AI tools providing them with unhelpful, off-topic, unclear, inconsistent, and complex responses. Conversely, those who reported experiencing positive emotions did so mainly due to the assistance offered by AI tools in providing them with in-depth responses to their questions and enabling them to think further and explore more. Some responses from written interviews are presented below.

Figure 2
Generative AI-Induced Emotions



Source. Own research.

> Using ChatGPT in the classroom increases my *confidence* in learning. I always feel *curious* to learn and explore more about new concepts because ChatGPT gives me different answers to my questions. However, I feel *discouraged* when it gives me unhelpful responses. (student 4).
>
> I feel *excited* when I use generative AI tools in the classroom because sometimes, when we cannot find the answer, we can always think of this app. It gives us in-depth knowledge and answers to our questions and allows us to think further and look for more information. (student 19).

Another student shared, "I sometimes feel *frustrated* when I use Gemini, especially when its responses to our questions are unclear, off-topic, and overly complex. Such incidents disrupt the flow of learning" (student 14). Similarly, feelings of anxiety and confusion were reported, as others explained:

> When I use generative AI in the classroom, it makes me *anxious and confused*, particularly when I receive inconsistent answers. ChatGPT gives us different answers to the same question every time we ask. Sometimes, the answers that I get from ChatGPT are *not satisfying.* (student 17).

Perceived Impacts of Generative AI-Induced Emotions

Students reported several notable impacts of both positive and negative emotions induced by Gen AI tools (see Table 1). Participants said that positive emotions enhance their learning enjoyment, lesson understanding, confidence, motivation, and willingness to participate in the classroom. On the other hand, negative emotions were reported to reduce learners' motivation and attention in the classroom and to have a detrimental impact on their language development. Relevant student responses are provided below to support these findings.

Table 1

Effects of Generative AI-Induced Emotions

Generative AI-Induced Emotions	Impact of emotions
Positive Emotions	- Increases learning enjoyment
	- Deepens understanding of the content
	- Enhances confidence
	- Increases motivation to learn English
	- Increases willingness to participate
Negative Emotions	- Reduces motivation to learn
	- Reduces attention/focus
	- Affects language development

Source. Own research.

Student highlighted both the benefits and drawbacks of emotions in their learning experiences. One explained, "Positive emotions help me become more *confident and motivate me to participate* in classroom activities. Negative emotions reduce my *focus and I do not understand* teachers' instructions, which hinders my language development" (student 6). Another noted, "Negative emotions, such as frustration, *demotivate me to learn* and use the English language" (student 7). Similarly as one student reflected:

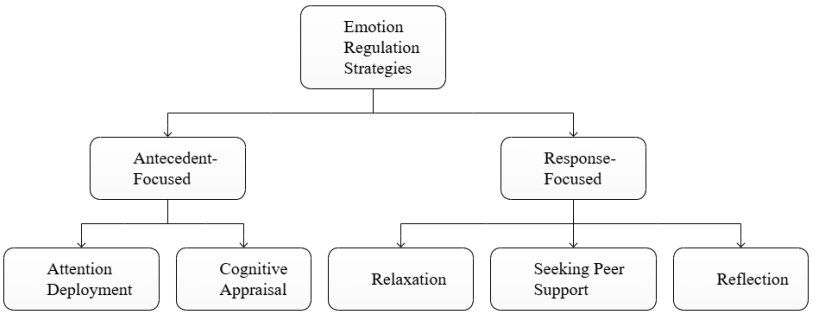
When I experience positive emotions while using generative AI in the classroom, I feel more *confident* and I can also *understand* complex content better, making the learning process more enjoyable and effective. However, negative emotions *reduce my motivation* to learn English. (student 17).

Emotion Regulation Strategies (ERSs)

In response to emotional experiences in Gen AI-integrated classrooms, participants employed a variety of antecedent-focused and response-focused ERSs to regulate them. Antecedent-focused ERSs included attention deployment and cognitive appraisal, while

response-focused ERSs included relaxation, seeking peer support, and self-reflection. The details of ERSs are presented in Figure 3, supported by students' responses.

Figure 3
Students' Emotion Regulation Strategies



Source. Own research.

For example, one participant explained, "When I experience negative emotions in the classroom, I regulate them by taking a *break to relax* and try to find ways to use generative AI tools to better meet my needs" (student 1). Another shared "I try to find the *cause of my emotions and spend time thinking and analysing the situation* to maintain a positive attitude in the classroom when I get anxious" (student 6). Similarly, as one student reflected, "I manage negative emotions by *focusing on goals and staying patient.* This helps me to remain motivated wherever I am down. Sometimes, *I talk with my friends and it helps me calm down my emotions"* (student 15). Positive emotions were also regulated, as one participant noted, "I manage my positive emotions by *motivating myself and trying to learn more by asking additional questions to Generative AI"*(student 21).

Discussion

The study investigated the emotions that Thai EFL students experienced in Gen AI-integrated classrooms, the perceived impacts of those emotions, and their emotion regulation strategies. In doing so, the thematic analysis of data collected from 22 students after a 7-week intervention revealed that learners are likely to experience more negative than positive emotions in a Gen-AI-integrated classroom, which directly or indirectly influences their emotional experiences, learning outcomes, and classroom dynamics. The findings also indicate that learners employ a variety of ERSs in response to the emotions they experience in the classroom. The following sections discuss the findings of the current study in light of previous theoretical and empirical research.

Generative AI-Induced Emotions

The first findings on Gen AI-induced emotions are parallel with earlier studies that directly or indirectly indicated that the use of Gen AI tools is likely to evoke emotions among learners (Bin-Hady et al., 2024; Kohnke & Moorhouse, 2025; Liu et al., 2024). For instance, Kohnke and Moorhouse (2025) noted that Gen AI tools boost learners' motivation and alleviate anxiety and stress, indicating Gen AI's potential for fostering positive emotions when implemented in the classroom. The capacity of Gen AI tools to develop positive emotions in learners was further highlighted by Liu et al. (2024), who claimed that AI tools promote positive emotions by enhancing enjoyment and reducing anxiety. Our findings aligned more closely with the recent study by Yang and Zhao (2024), where they mentioned that learners experience both positive and negative emotions in AI-supported classrooms. Their study found that learners experience positive emotions such as interest, enjoyment, inspiration, happiness, pride, gratitude, excitement, and pleasure, as well as negative emotions such as pressure, boredom, embarrassment, and fear.

While the findings of this study support Kohnke and Moorhouse (2025), Xin and Derakhshan (2025), and Yang and Zhao's (2024) insights that Gen AI tools induce both positive and negative emotions, they differed from these studies in that the current participants reported more negative than positive emotions. The prevalent negative emotions may have resulted from participants' limited understanding of Gen AI tools in this study, as they are sparingly used in the classrooms due to the lack of appropriate guidelines. In this context, Yang and Zhao (2024) noted that learners with lower Gen AI literacy are more likely to experience negative emotions. Participants' low literacy in using Gen AI tools was evident in their responses, with some reporting negative emotions, especially when AI tools produced unclear, off-topic, overly complex, irrelevant, or inconsistent answers. This suggests that learners somewhat lack the knowledge of how to provide an effective prompt when using AI tools in the context. Low Gen AI literacy among the participants is also likely to be associated with their course majors, as they were studying Culinary Arts, a field in which AI tools are rarely required. Altogether, the differing emotional responses to Gen AI integration between Thai learners (reporting more negative emotions) and those from Hong Kong and China (reporting more positive emotions) highlight the dynamic nature of emotions. This assumption resonates with Schutz et al.'s (2006) understanding of emotion in educational settings, which states that emotions are often shaped by individuals' (learners) cultural backgrounds, personal experiences, and social interactions, both consciously and unconsciously.

Percieved Impacts of Generative AI-Induced Emotions

The findings uncovered that Gen AI-induced emotions can have various impacts on learners, depending on whether the emotions are positive or negative. For instance,

while positive emotions are likely to increase learners' learning enjoyment, deepen their understanding of content, enhance confidence, increase motivation, and boost their willingness to participate, negative emotions induced by Gen AI tools may reduce their motivation to learn, decrease learners' attention in the classroom, and negatively affect their language development. These findings that positive emotions result in positive outcomes (including learners' emotions, learning experiences, and engagement), while negative emotions have the opposite effect, are not surprising, as this fact has already been established in the literature reviewed for this study (see Guo & Wang, 2024; Kohnke & Moorhouse, 2025; Rigdel & Wangdi, 2024).

Furthermore, although prior studies have reported that Gen AI tools enhance learners' motivation (Bai & Phromphithakkul, 2024; Kohnke & Moorhouse, 2025; Kruk & Kałużna, 2025), confidence and enjoyment (Liu et al., 2024), and content understanding (Annamalai & Bervell, 2025), similar to the current findings, they did not specifically address the rationale behind these improvements. They just superficially highlighted that learners experience positive emotions in Gen AI-integrated classrooms due to the novelty of AI tools and inbuilt abilities, such as their potential to provide immediate feedback. Aside from AI tools' novelty and inherent capabilities, we assume that learners may have up-regulated the positive emotions (Bielak and Mystkowska-Wiertelak, 2020; Deng et al., 2013; Zhang & Wang, 2024) induced by GenAI tools, which may subsequently have contributed to their enhanced motivation, confidence, enjoyment, and content understanding.

Another interesting finding of this study was learners' increased willingness to participate when they experienced positive emotions in Gen AI-integrated classrooms. This finding resonates with the conclusions made by Yumeng Guo and Yongliang Wang (2024) and Mariusz Kruk and Agnieszka Kałużna (2025) in their studies, which noted that learners engage more when Gen AI tools are used in teaching environments. This finding suggests that the use of Gen AI tools in the classroom might enhance students' participation by enhancing their willingness to communicate in the classroom. The significance of students' classroom participation and its positive relationship with their language communicative competence and academic achievement had already been established by Budi Waluyo and Thinley Wangdi (2024) in their study. Readers, however, should be informed that Gen AI tools also induce negative emotions and that they negatively impact learners' motivation to learn, attention in the classroom, and ultimately affect their language development, suggesting that the effectiveness of Gen AI tools could be a double-edged sword that requires a careful assessment before being implemented in language classrooms.

Emotion Regulation Strategies

In response to the emotions experienced in a Gen AI-integrated classroom, students employed a variety of ERSs. This finding supports earlier theory, particularly Gross's

(1998) process model of emotion regulation, as well as empirical studies by Bielak and Mystkowska-Wiertelak (2020), Xiaohuan Zhang and Yongliang Wang (2024), and Yang and Zhao (2024), all of which highlighted that individuals use different ERSs to regulate their emotions. However, the in-depth analysis of ERSs that students employed in this study differed slightly from the findings presented by some previous studies. For instance, while prior studies (Bielak & Mystkowska-Wiertelak, 2020; Yang & Zhao, 2024; Zhang & Wang, 2024) noted through their findings that learners use a variety of antecedent-focused ERSs such as attention deployment, cognitive change, situation modification, situation selection, and reflection in response to their emotions, the current participants used only two antecedent-focused ERSs: attention deployment (e.g., focusing on goals, learning, and exploring more) and cognitive change (e.g., staying patient and analysing the situation). We assume that current students' limited use of antecedent-focused ERSs may be due to a lack of awareness that Gen AI tools can also trigger emotions, given their recent introduction to education. Simply put, it appears that the present students were not prepared for the emotional experience required to apply antecedent-focused ERSs, which are typically used before emotions arise (Gross, 1998).

In addition, learners in this study might not have particularly used antecedent-focused ERSs, such as situation selection and situation modification, as they were in the classroom. ERSs like situation selection occur when individuals attempt to move away from a situation (e.g., leaving the classroom to go for a walk with friends), while situation modification happens when individuals try to alter the situation (e.g., keeping generative AI away) (see Gross, 1998, 2015, for details), which does not appear to be practical in a classroom setting. When it comes to response-focused ERSs, the strategies most commonly reported by participants included relaxation techniques, peer interaction, and personal reflection. These strategies slightly differed from the response-focused ERSs (e.g., drinking water, emotion suppression, body language, and deep breathing) used by Chinese learners in AI-integrated classrooms (Yang & Zhao, 2024). These findings suggest that there is no 'one-size-fits-all' ERS, thus supporting Gross's (1998) understanding of ERSs as dynamic phenomena, fluctuating across individuals, time, and context. A similar perspective on the dynamic nature of ERSs was later highlighted by Gross (2015) and Bielak and Mystkowska-Wiertelak (2020). On this note, it would be safe to conclude that ERSs in EFL Gen AI-integrated classrooms are also likely to depend on learners' educational contexts, cultural backgrounds, individual characteristics, and classroom environments.

Finally, the finding that the current participants used only common forms of response-focused ERSs indicates a potential lack of awareness and knowledge among Thai learners regarding ERSs. This is likely due to the lack of training and emphasis on ERSs at the institutional level. This is not surprising, as Karma Sonam Rigdel and Wangdi (2024) noted that even teachers lack training in specific ERSs and that ERSs remain a neglected area of research in L2 education.

Conclusion, Limitations, and Implications

There is a dearth of knowledge regarding emotions that learners experience in Gen AI-integrated classrooms, the perceived impacts of these emotions, and emotion regulation strategies (ERSs) that learners employ. This study found that learners experience a variety of emotions in Gen AI-integrated classrooms. However, to conclude whether learners experience more positive or negative emotions in Gen AI-integrated classrooms at this point is not likely to be possible, given that emotional responses are often influenced by a range of factors, such as individual personalities, learners' AI literacy, context, AI tools, and the amount of AI tools used. Nonetheless, this study found that Thai EFL learners experienced more negative than positive emotions in Gen AI-integrated classrooms — findings that contradicted a few earlier studies that explored learners' emotions in Gen AI-supported learning environments. The study also found that the emotions triggered by Gen AI tools are likely to influence learners' learning experiences in the classroom (positively or negatively), and affect their learning, emotional conditions, classroom environments, and language development. Finally, it is less likely to have one-size-fits-all ERSs, as learners tend to use ERSs that they perceive as effective for themselves.

With this, we acknowledge that this study was not without limitations, which might be of interest to future researchers to address. The first limitation is the size (small) of the sample, as this study was conducted in a single classroom section accessible to the author. Future research should consider a larger sample to validate the current findings. Moreover, as noted earlier, the current participants were from the Professional Culinary Arts major, where AI tools have minimal relevance to their major coursework in the classroom. This could have led participants to experience more negative emotions than positive emotions, which was not the case in other studies. This leaves a gap for future researchers to consider maximum variation in the research sample for more robust conclusions. The second limitation pertains to the use of self-reported instruments, such as the written interview, which are often criticised by researchers due to potential participant biases. Therefore, readers are cautioned about the generalisability of the current findings.

More importantly, the research would have been more in-depth had the researchers considered other sources of data collection, such as face-to-face interviews and observations. However, the use of the written interview was intentional, as the researchers wanted participants to freely express their thoughts in their native (Thai) language, something that would not have been possible with face-to-face interviews due to the language barrier, as both researchers were non-Thai speakers. Finally, although learners were exposed to the Gen AI tools of their choice for 7 weeks, we believe that the findings would have been more transferable to other contexts if a longer intervention or a longitudinal study had been conducted, as this could provide deeper

insights into learners' emotional experiences, their impacts, and the ERSs strategies employed by the learners.

Despite these limitations, the findings of this study have potential implications for the field of second/foreign language teaching. Specifically, the results are expected to benefit ESL/EFL policymakers, teachers, students, and researchers. Policymakers and teachers will benefit from this study, as findings inform them that the Gen AI tools induce both positive and negative emotions among learners (Bin-Hady et al., 2024; Kohnke & Moorhouse, 2025; Liu et al., 2024), highlighting the need for careful implementation. Note that learners' emotions are often linked to positive or negative outcomes, depending on whether the emotions experienced by them are positive or negative (Rigdel & Wangdi, 2024). Furthermore, since the reported positive and negative emotions in this study differed slightly from those in a similar study conducted in China (Xin & Derakhshan, 2025; Yang & Zhao, 2024), this contributes to policymakers' and educators' understanding that Gen AI-induced emotions might depend on learners' personal experiences, Gen AI literacy level, and educational context.

This study also informs policymakers and educators that Gen AI tools not only trigger emotions among learners, but those emotions subsequently impact learners in several ways. Positive emotions enhance learners' enjoyment, deepen their understanding of content, boost their confidence and motivation, and increase their willingness to participate in the classroom. In contrast, negative emotions experienced in Gen AI-integrated classrooms reduce learners' motivation to learn, impair their attention, and ultimately hinder their language development. This suggests that ESL/EFL educators, in particular, should carefully leverage the benefits of Gen AI tools in their classrooms by creating an emotionally safe space for learners to maximise the potential of Gen AI use in the classroom if the institution permits.

Furthermore, classroom teachers and learners will benefit from the current study, as it provides potential ERSs to help manage emotions experienced in the classroom, whether through the use of Gen AI tools or in other contexts. Classroom teachers can consider the ERSs presented in this study and raise awareness among their learners about these strategies, as even teachers often lack training in ERSs (Rigdel & Wangdi, 2024), let alone the learners. Learners would greatly benefit from the findings of this study, as they can apply some of the ERSs reported by their Thai counterparts to effectively regulate their emotions, which in turn can enhance their emotional experience in the classroom and their well-being at large. Finally, L2 researchers might benefit from this study as it offers a fresh perspective on the 'emotional dimension' in Gen AI-integrated classrooms, providing a basis for further research. The literature revealed that not many studies have investigated learners' emotional dimensions in Gen AI-integrated classrooms, and earlier studies on learners' ERSs have mostly focused on technology-integrated classrooms (not specifically Gen AI-integrated), thus overlooking the nuances of the emotional dynamics experienced by learners in Gen AI-integrated classrooms.

REFERENCES

Annamalai, N., & Bervell, B. (2025). Exploring ChatGPT's role in English grammar learning: A Kolb model perspective. *Innovations in Education and Teaching International,* 1–17. https://doi.org/10.1080/14703297.2025.2451328

Bai, Y., & Phromphithakkul, W. (2024). Using generative artificial intelligence to improve Chinese college student learning outcomes: Self-determination theory and self- efficiency theory perspectives. *Nanotechnology Perceptions*, *20*(7), 2086-2099. https://doi.org/10.62441/nano-ntp.v20i7.4273

Baidoo-Anu, D., & Ansah, L. O. (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Journal of AI*, *7*(1), 52-62. https://doi.org/10.61969/jai.1337500

Bielak, J., & Mystkowska-Wiertelak, A. (2020). Investigating language learners' emotion-regulation strategies with the help of the vignette methodology. *System*, 90, Article 102208. https://doi.org/10.1016/j.system.2020.102208

Bin-Hady, W. R. A., Ali, J. K. M., & Al-humari, M. A. (2024). The effect of ChatGPT on EFL students' social and emotional learning. *Journal of Research in Innovative Teaching & Learning*, *17*(2), 243-255. https://doi.org/10.1108/JRIT-02-2024-0036

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: a tool to enhance trustworthiness or merely a nod to validation?. *Qualitative Health Research*, *26*(13), 1802-1811. https://doi.org/10.1177/1049732316654870

Chea, P., & Xiao, Y. (2024). Artificial intelligence in higher education: The power and damage of AI-assisted tools on academic English reading skills. *Journal of General Education and Humanities*, *3*(3), 287–306. https://doi.org/10.58421/gehu.v3i3.242

Chu, H. C., Tsai, W. W. J., Liao, M. J., Chen, Y. M., & Chen, J. Y. (2020). Supporting e-learning with emotion regulation for students with autism spectrum disorder. *Educational Technology & Society*, *23*(4), 124-146. https://www.jstor.org/stable/26981748

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, *39*(3), 124–130. https://doi.org/10.1207/s15430421tip3903_2

Deng, X., Sang, B., & Luan, Z. (2013). Up-and down-regulation of daily emotion: An experience sampling study of Chinese adolescents' regulatory tendency and effects. *Psychological Reports*, *113*(2), 552-565. https://doi.org/10.2466/09.10.PR0.113x22z4

Fui-Hoon Nah, F., Zheng, R., Cai, J., Siau, K., & Chen, L. (2023). Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *Journal of Information Technology Case and Application Research, 25*(3), 277–304. https://doi.org/10.1080/15228053.2023.2233814

Guo, Y., & Wang, Y. (2025). Exploring the effects of artificial intelligence application on EFL students' academic engagement and emotional experiences: A mixed-methods study. *European Journal of Education*, *60*(1), Article e12812. https://doi.org/10.1111/ejed.12812

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74*(1), 224–237. https://doi.org/10.1037/0022-3514.74.1.224

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*(1), 1-26. https://doi.org/10.1080/1047840X.2014.940781

Klimova, B., & Pikhart, M. (2025). Exploring the effects of artificial intelligence on student and academic well-being in higher education: A mini-review. *Frontiers in Psychology*, *16*, Article 1498132. https://doi.org/10.3389/fpsyg.2025.1498132

Kohnke, L., & Moorhouse, B. L. (2025). Enhancing the emotional aspects of language education through generative artificial intelligence (GenAI): A qualitative investigation. *Computers in Human Behavior*, Article 108600. https://doi.org/10.1016/j.chb.2025.108600

Kruk, M., & Kałużna, A. (2025). Investigating the role of AI tools in enhancing translation skills, emotional experiences, and motivation in L2 learning. *European Journal of Education*, *60*(1), Article e12859. https://doi.org/10.1111/ejed.12859

Liu, Y., Zhang, H., Jiang, M., Chen, J., & Wang, M. (2024). A systematic review of research on emotional artificial intelligence in English language education. *System, 126*, Article 103478. https://doi.org/10.1016/j.system.2024.103478

Merriam S. B. (2002). Introduction to qualitative research. In S. B. Merriam & Associates (Eds.), *Qualitative research in practice: Examples for discussion and analysis* (pp. 3-16). Jossey-Bass.

Morrish, L., Rickard, N., Chin, T. C., & Vella-Brodrick, D. A. (2018). Emotion regulation in adolescent well-being and positive education. *Journal of Happiness Studies*, *19*, 1543-1564. https://doi.org/10.1007/s10902-017-9881-y

O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: Debates and practical guidelines. *International Journal of Qualitative Methods*, *19*. https://doi.org/10.1177/1609406919899220

Opara, V., Spangsdorf, S., & Ryan, M. K. (2023). Reflecting on the use of Google Docs for online interviews: Innovation in qualitative data collection. *Qualitative Research*, *23*(3), 561-578. https://doi.org/10.1177/14687941211045192

Rezai, A., Soyoof, A., & Reynolds, B. L. (2024). Disclosing the correlation between using ChatGPT and well-being in EFL learners: Considering the mediating role of emotion regulation. *European Journal of Education, 59*(4), Article e12752. https://doi.org/10.1111/ejed.12752

Rigdel, K. S., & Wangdi, T. (2024). Exploring the hierarchy of foreign language enjoyment and boredom in English language learners. *TESL-EJ*, *28*(3). https://tesl-ej.org/pdf/ej111/a6.pdf

Schutz, P. A., Hong, J. Y., Cross, D. I., & Osbon, J. N. (2006). Reflections on investigating emotion in educational activity settings. *Educational Psychology Review*, *18*, 343-360. https://doi.org/10.1007/s10648-006-9030-3

Shimray, R., & Wangdi, T. (2025). Boredom in online foreign language classrooms: Antecedents and solutions from students' perspective. *Journal of Multilingual and Multicultural Development*, *46*(2), 288-303. https://doi.org/10.1080/01434632.2023.2178442

Thomas, C., & Zolkoski, S. (2020). Preventing stress among undergraduate learners: The importance of emotional intelligence, resilience, and emotion regulation. *Frontiers in Education*, *5*, Article 94. https://doi.org/10.3389/feduc.2020.00094

Waluyo, B., & Kusumastuti, S. (2024). Generative AI in student English learning in Thai higher education: More engagement, better outcomes?. *Social Sciences & Humanities Open*, *10*, Article 101146. https://doi.org/10.1016/j.ssaho.2024.101146

Waluyo, B., & Wangdi, T. (2024). Task-based language teaching in academic English higher education: A Case of low-proficiency learners in Thailand. *3L: Language, Linguistics, Literature® The Southeast Asian Journal of English Language Studies*, *30*(3), 246-264. http://doi.org/10.17576/3L-2024-3003-17

Wangdi, T., & Rigdel, K. S. (2025a). Exploring perceived factors influencing teachers' behavioural intention to use ChatGPT for teaching. *Journal of Education for Teaching*, *51*(1), 202-204. https://doi.org/10.1080/02607476.2024.2362197

Wangdi, T., & Rigdel, K. S. (2025b). English teachers' emotions and regulation strategies in response to students' disruptive behaviour. *Profile: Issues in Teachers' Professional Development*, *27*(1), 49-65. https://doi.org/10.15446/profile.v27n1.114147

Wangdi, T., Rigdel, K. S., Dawa, T., & Tshering, K. (2025). Using ChatGPT as an assessment tool in education: A systematic literature review of practices and limitations. *Issues in Educational Research*, *35*(2), 818-837. https://www.iier.org.au/iier35/wangdi.pdf

Wangdi, T., & Shimray, R. (2025). Exploring the reticence of Thai university students in English classrooms: Student-centred coping strategies. *Journal of Education Culture and Society*, *16*(2), 297-315. https://doi.org/10.15503/jecs2025.3.297.315

Xin, Z., & Derakhshan, A. (2025). From excitement to anxiety: Exploring English as a foreign language learners' emotional experiences in the artificial intelligence-powered classrooms. *European Journal of Education*, *60*(1), Article e12845. https://doi.org/10.1111/ejed.12845

Yang, L., & Zhao, S. (2024). AI-induced emotions in L2 education: Exploring EFL students' perceived emotions and regulation strategies. *Computers in Human Behavior*, *159*, Article 108337. https://doi.org/10.1016/j.chb.2024.108337

Yu, X., Wang, Y., & Liu, F. (2022). Language learning motivation and burnout among English as a foreign language undergraduates: The moderating role of maladaptive emotion regulation strategies. *Frontiers in Psychology*, *13*, Article 808118. https://doi.org/10.3389/fpsyg.2022.808118

Zhang, X., & Wang, Y. (2024). Chinese EFL teachers' perceptions of positive emotionality and emotion regulation strategies: A qualitative study. *The Asia-Pacific Education Researcher*. https://doi.org/10.1007/s40299-024-00900-y

Zhang, Z., Liu, T., Gao, X., & Lee, C. B. (2024). A longitudinal examination of language learners' group-level enjoyment and emotion regulation in online collaborative learning. *Language Teaching Research*, *0*(0). https://doi.org/10.1177/13621688241227584

Zheng, S., & Zhou, X. (2022). Positive influence of cooperative learning and emotion regulation on EFL learners' foreign language enjoyment. *International Journal of Environmental Research and Public Health*, *19*(19), Article 12604. https://doi.org/10.3390/ijerph191912604

Appendix

Open-ended questions for a written interview.

1. How do you feel when using generative AI tools in the classroom? Please describe your emotional experiences in as much detail as possible.
2. How do the emotions (positive/negative) you experience while using generative AI tools in the classroom impact your learning, yourself, and the classroom environment? Please describe in detail.
3. How do you manage/regulate the emotions (positive/negative) you experience while using generative AI tools in the classroom? Please describe in detail.