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# IMPLEMENTING CLIL-ESA INSTRUCTION TO ENHANCE WILLINGNESS TO COMMUNICATE IN ENGLISH AND ENVIRONMENTAL ATTITUDE OF THAI EFL UNIVERSITY STUDENTS: CLIMATE ACTION IN LANGUAGE EDUCATION

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## ABSTRACT

*English presentation and discussion play significant roles in EFL classrooms. This study examined the effects of CLIL–ESA instruction on second-year Thai EFL university students' willingness to communicate (WTC) and environmental attitudes (EA). Thirty-three students enrolled in an English for Discussion and Presentation course at a public university in Bangkok participated during the second semester of the 2022 academic year. Using a one-group pre-test/post-test design, six validated CLIL–ESA modules on environmental content were implemented. Quantitative data were collected through a WTC scale and an environmental attitude scale administered before and after instruction and analyzed using paired-samples t-tests. Qualitative data were obtained from semi-structured interviews and analyzed through inductive thematic analysis to explain the quantitative trends. Quantitative results indicated statistically significant gains in students' WTC for both presentation and discussion at the .05 level, alongside overall high EA scores after the intervention. Qualitative findings further supported these outcomes: students reported (1) empowerment in oral communication, (2) sustained engagement through ESA sequencing, and (3) holistic integration of four skills through meaningful environmental tasks. Students also described heightened critical awareness and emotional empathy toward environmental issues, while a counter-theme highlighted cognitive load as a challenge when managing new concepts and subject-specific vocabulary simultaneously. The convergent evidence suggests that CLIL–ESA can simultaneously promote communicative participation and sustainability-oriented learning in Thai EFL higher-education contexts, provided that task sequencing and scaffolding are calibrated to manage cognitive demands.*

**KEYWORDS:** CLIL, ESA, Willingness to Communicate, Environmental Attitude, Cognitive Load.

## 1. INTRODUCTION

English oral communication is a necessary skill in a variety of occupations since it is the primary mode of communication and the worldwide lingua franca in today's corporate world (Nickerson, 2013). Moreover, one of the important factors that may influence speaking ability is the willingness to communicate (WTC). WTC is defined as the willingness to engage in particular discussions with somebody in particular at an appropriate moment prior to engaging in L2 interaction (MacIntyre et.al., 1998). That is, if the students are unwilling to communicate with others, they may avoid communication opportunities, resulting in insufficient speaking practice. Hence, it was crucial to design the instruction concerning the factors that affected WTC.

In addition to fostering WTC, environmental attitude (EA) is a vital factor in shaping learners' values, beliefs, and behaviors toward the environment, influencing both their awareness and actions. In higher education, cultivating EA is essential not only for academic growth but also for developing social responsibility and sustainable mindsets. Embedding EA into English language education allows students to practice communication skills while engaging with global challenges, aligning with the United Nations Sustainable Development Goals (SDGs)—particularly SDG 4: Quality Education and SDG 13: Climate Action. By integrating climate action themes, language classrooms become transformative spaces where communicative competence and sustainability literacy reinforce each other, preparing students as global citizens capable of advocating for and contributing to a greener future (Baierl et al., 2022; Wang et al., 2022).

Language learners require both exposure to the target language and opportunities for practice to develop proficiency and maintain motivation (Harmer, 2007). Students develop better speaking skills when they receive sufficient language input and participate in engaging learning activities. To address this, Harmer developed the ESA (Engage, Study, Activate) teaching methodology to enhance students' English-speaking practice. This method begins with the Engage phase, which connects to students' prior knowledge and builds interest in the topic. Next, the Study phase delivers the necessary language input. Finally, in the Activate phase, students freely practice using the language they've learned. This teaching framework is versatile and can be incorporated into different teaching methods to give students opportunities to use the target language during class.

CLIL, one of the teaching approaches, could enhance the content and the language aspects within dialogic interactions as CLIL is a dual-focused approach that emphasizes the development of content knowledge and language (Coyle et al., 2010). This dual-focused approach has a framework known as the '4C's framework' and consists of four interrelated components, namely: Content, Communication, Cognition, and Culture (Coyle, 2007). "Content" refers to content knowledge of the subject. "Communication" refers to the usage of a language in the subject. For instance, language of learning, language for learning, and language through learning. "Cognition" refers to higher-order thinking skills tasks, for example, discussing and hypothesizing. Finally, "Culture" refers to the relationship between subject matters and the world. These components work together in influencing the learning environment to be content and language-focused to support students' development in content and language.

The integration of ESA methodology with CLIL offers a powerful approach to English language instruction. While CLIL effectively combines content learning with language acquisition, ESA provides the systematic framework needed to implement this integration successfully. When language and content teachers collaborate in CLIL settings, they naturally incorporate ESA's structured progression from engagement to active practice (Lo Presti, 2024). Research demonstrates that CLIL's effectiveness in developing productive language skills is enhanced when learners participate in meaningful activities – a principle that aligns closely with ESA's emphasis on motivation before deeper learning (Silva Herrera, 2024). Furthermore, studies with young learners show that CLIL approaches boost both engagement and immersion in language learning, complementing ESA's focus on active participation and practical application (Qizi, 2024).

While the synergy between these two approaches creates a comprehensive framework that effectively supports both language development and content mastery, research specifically examining the combined CLIL-ESA approach remains limited. Although numerous studies have investigated the effectiveness of ESA and CLIL separately in developing students' language skills, few have explored their integrated application for investigating the students' level of WTC and EA in the CLIL-ESA instruction. The research questions were as follows

RQ 1: What effect does the instruction of CLIL-ESA have on the willingness to communicate in English of Thai EFL undergraduates?

RQ 2: What effect does the instruction of CLIL-ESA have on the environmental attitude of Thai EFL undergraduates?

RQ 3: What are the students' perceptions toward the instruction of CLIL-ESA?

## 2. LITERATURE REVIEW

### *2.1. Willingness to Communicate (WTC)*

WTC is a key concept in language learning, defined as a learner's readiness or desire to engage in conversations in a second or foreign language when the opportunity arises (MacIntyre et al., 1998). It plays a central role in language interaction and production, as students who exhibit higher WTC are more likely to use the target language in communication (Alemi & Pahmforoosh, 2012). MacIntyre et al. (1999) propose that WTC can be understood from two perspectives: as a personal trait and as situational influences. At the trait level, WTC reflects a learner's general tendency to initiate communication, while at the situational level, it is influenced by specific contextual factors that determine whether a learner chooses to engage in communication. Research in applied linguistics and language teaching has identified several factors that influence WTC, including behavioral and affective variables such as motivation, self-confidence, anxiety, and attitudes toward the second language (Dewaele, 2019; Fallah, 2014; Shirvan et al., 2019; Lin, 2019; Yashima et al., 2004). These factors are interconnected, often varying across individuals and learning environments. For example, students with high motivation and self-confidence, particularly those with a growth mindset and strong self-perceived communicative competence, are more likely to engage actively in communication tasks (Teshome et al., 2024). Additionally, a supportive and interactive classroom environment that leverages communicative language teaching (CLT) strategies can foster WTC by providing opportunities for language practice (Williyan et al., 2023). When classrooms provide support, reduce stress, and give constructive feedback, students feel more confident and motivated to practice English (Teshome et al., 2024). Trigueros et al. (2024) point out that making the classroom emotionally safe and welcoming helps reduce the anxiety many students feel about speaking, particularly in group settings. Interactive teaching methods like group discussions and role-play create an upward spiral. When students have positive experiences speaking English, they want to participate more. Classrooms need to support students' emotional well-being, encourage active participation, and provide the right environment to help students feel more comfortable speaking English (Fan et al., 2024).

However, psychological barriers such as communication anxiety and individual personality traits can hinder WTC, requiring educators to adopt strategies that address these challenges (Peng, 2013; Shirvan et al., 2019). Furthermore, cultural and situational variability also play a critical role in shaping WTC, as learners' willingness to engage may depend on specific cultural norms or familiarity with interlocutors. Recognizing these complexities, educators and researchers must tailor instructional approaches to accommodate diverse learner needs, foster positive attitudes toward communication, and create environments that encourage active participation, thereby enhancing language learning outcomes.

### *2.2. Environmental Attitude (EA)*

When combined with innovative pedagogical strategies and the integration of SDGs, environmental attitudes (EA) play a pivotal role in enhancing EFL learning. Cultivating environmental attitudes in EFL education enhances both language acquisition and environmental consciousness. This integration improves language proficiency while fostering eco-awareness and preparing learners to become responsible global citizens. This dual focus on language and environmental education is increasingly essential in addressing global sustainability challenges (Nakamura & Fujimoto, 2024). For example, sustainability-focused curricula have been shown to improve learning outcomes and heighten ecological consciousness, with EFL textbooks and teaching practices that embed environmental content effectively promoting eco-awareness (Raphael & Nandanan, 2024).

Innovative pedagogical strategies that integrate eco-social aesthetics and interdisciplinary designs enhance students' critical thinking, decision-making, and language acquisition (Kotova et al., 2024; Yu et al., 2024). Art-based eco-social aesthetics, in particular, strengthen eco-language skills and deepen environmental connections (Kotova et al., 2024). Approaches like eco-critical language awareness highlight the link between social, linguistic, and environmental justice, promoting sustainability within EFL classrooms (Micalay-Hurtado & Poole, 2022). Incorporating the SDGs into EFL curricula fosters global awareness, motivation, and cultural sensitivity, while

enhancing students' understanding of issues such as climate change and inequality (Lloret-Catalá & Alcantud-Díaz, 2023; Ning et al., 2024). This integration not only enriches language learning but also prepares students to become responsible global citizens, with SDG-related texts encouraging critical discussions and improved engagement (Mambu, 2022). Despite concerns about balancing SDGs with traditional language objectives, research demonstrates that when thoughtfully implemented, these strategies can enhance both language skills and global awareness (Mambu, 2022; Yu et al., 2024).

For Thai EFL learners, integrating eco-conscious themes can simultaneously develop environmental attitudes and language proficiency. Embedding sustainability topics in EFL textbooks and employing theme-based instruction have been shown to engage students and promote critical thinking about ecological issues (Özcan & Gürsoy, 2024; Raphael & Nandanan, 2024). Collaborative projects addressing local environmental challenges, such as forest conservation, further deepen students' understanding of sustainability and foster collective action, especially through intergenerational initiatives (Gallagher et al., 2000). Eco-pedagogical approaches, such as writing essays on environmental topics, combine language learning with environmental education, enhancing both linguistic skills and ecological awareness (Özcan & Gürsoy, 2024; Setyowati et al., 2022). Enhancing both SDG content and EA not only benefits students' knowledge but also provides meaningful opportunities to practice English language skills, making the learning process more purposeful. This dual integration can therefore be considered a significant variable in research focused on EFL education, sustainability, and global awareness. Despite challenges like limited resources and varying levels of teacher preparedness, these strategies effectively prepare learners to address both global and environmental challenges while strengthening their language abilities.

### *2.3. Engage-Study-Activate (ESA) Method*

Language learners need consistent exposure to the target language and opportunities to use it in order to remain motivated and develop their language skills effectively (Harmer, 2007). Harmer's ESA (Engage, Study, Activate) model is designed to promote student engagement and create a student-centered learning environment. The model consists of three stages: Engage, Study, and Activate, each focusing on different aspects of language acquisition. In the Engage stage, the primary goal is to spark students' curiosity and interest in the language. Teachers use interactive activities such as games, music, and discussions to emotionally involve students in the learning process, which in turn enhances their motivation and increases their participation. Jiang (2023) highlights the effectiveness of this stage in high school English writing classes, where it successfully motivated students and improved their writing performance. This initial engagement helps create a positive and dynamic classroom atmosphere that sets the stage for active language learning. The Study stage shifts attention to the language components, such as grammar, forms, and pronunciation. During this stage, the focus is on helping students understand how the language works. Harmer (2007) encourages teachers to use discovery activities that allow students to notice language rules on their own, rather than simply providing explicit explanations. This approach not only deepens students' understanding of the language but also maintains their engagement by promoting active learning. By encouraging students to explore language structures independently, they are more likely to internalize the rules and retain the information. The Activate stage is where students get the opportunity to use the language freely through speaking and writing tasks. This stage emphasizes real-world language use, allowing students to practice language in authentic contexts, which builds their confidence and prepares them for practical communication.

The ESA model has been widely recognized for its effectiveness in various language-learning contexts. For instance, Matyakhan and Sukavatee (2021) found that the method significantly improved speaking abilities among eighth-grade students, as evidenced by a substantial increase in their post-test scores. Additionally, research by Katemba and Sinuhaji (2021) and May and Vikasari (2019) highlighted the ESA model's effectiveness in improving vocabulary acquisition. Tools like Quizizz have further enhanced student participation, making learning more enjoyable while reinforcing vocabulary knowledge.

Overall, the ESA model offers a structured yet flexible framework that promotes active student involvement in the learning process. Its three stages help create an interactive and student-centered environment conducive to language acquisition. The research highlights the effectiveness of the ESA model in improving writing, speaking, and vocabulary mastery, thus demonstrating its potential to enhance English language learning across diverse educational contexts. However, the

ESA model is primarily a teaching sequence and should be combined with another instructional approach for optimal effectiveness. This study utilized the ESA model in conjunction with CLIL.

### *2.4. Content and Language Integrated Learning (CLIL)*

In higher education contexts, CLIL offers an effective framework for enhancing both language proficiency and subject-specific knowledge, particularly in fields related to environmental and sustainability education. The dual-focused approach of CLIL integrates language learning with complex academic content, preparing students for professional and academic challenges in a globalized world. CLIL's role extends beyond basic language acquisition, fostering advanced communication skills, critical thinking, and interdisciplinary understanding vital for addressing global sustainability issues (Sudarso et al., 2024).

In the context of environmental education in higher education, CLIL provides students with the linguistic tools and conceptual frameworks necessary to engage deeply with topics like climate change, renewable energy, and conservation. By embedding language learning within these subjects, CLIL helps students not only understand the content but also articulate their insights and solutions in a global academic and professional environment (Lysak, 2024). The method's emphasis on real-world applications ensures that students can relate their learning to actual environmental challenges, making their education more relevant and impactful (Preksha & Kaur, 2024).

Moreover, in sustainability education at the higher education level, CLIL's interdisciplinary nature enhances students' cognitive and analytical skills, preparing them to address multifaceted sustainability issues. By engaging with content in a second language, students develop the ability to think critically and solve problems from diverse perspectives, which is essential in the field of sustainability (Shykun, 2023). The cultural competence fostered through CLIL also prepares students for international collaboration, an increasingly important aspect of sustainability efforts, where cross-cultural understanding and communication are key (Lysak, 2024). Thus, CLIL in higher education not only equips students with language and content expertise but also prepares them to contribute effectively to global sustainability initiatives.

Integrating CLIL with the ESA model significantly enhances English language proficiency and fosters environmental awareness in higher education settings. CLIL's multidisciplinary strategy blends language instruction with topics such as climate change and sustainability, enhancing critical thinking and communication skills essential for addressing global issues (Lysak, 2024; Sudarso et al., 2024). By teaching language through real-world environmental topics, CLIL makes learning more applicable and meaningful (Preksha & Kaur, 2024). When combined with the ESA model, which captivates students' interest, emphasizes language structure, and encourages active use through practical exercises, this approach fosters an interactive learning atmosphere. The ESA model's stages of engagement, study, and activation support student-centered learning and real-world language practice, complementing CLIL's focus on content integration. This fusion not only enhances language abilities but also equips students with the skills needed to tackle environmental challenges, merging linguistic expertise with a deeper understanding of ecological issues (Harmer, 2007).

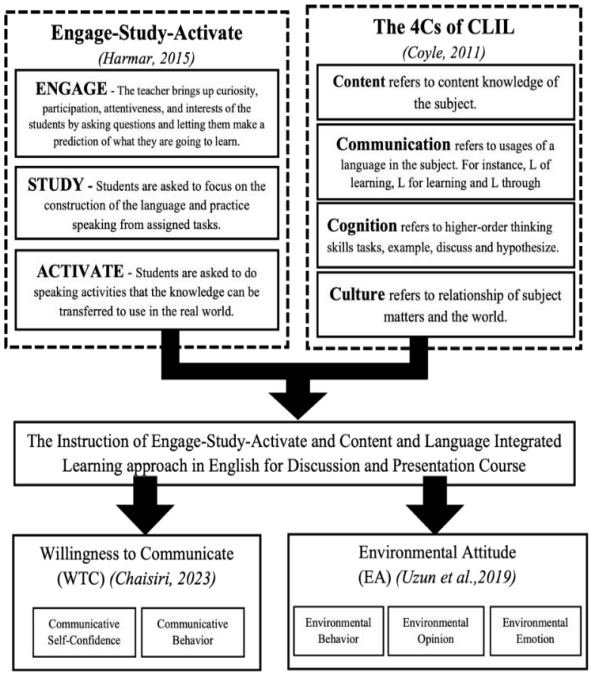


***Figure 1: Research Framework of CLIL-ESA Instruction in English for Discussion and Presentation Course.***

## 3. METHODOLOGY

The present study employed a mixed-methods design (Creswell & Creswell, 2017). The research consisted of two types of data: quantitative and qualitative data. The quantitative data was collected as WTC (addressing RQ 1) and EA scales (addressing RQ 2). Then, the qualitative data was

collected through a focus group interview protocol after the intervention of the CLIL-ESA instruction to address RQ 3. After that, both types of data were analyzed.

### 3.1. Setting and Participants

The population of the present study was university students in a public university in Bangkok, Thailand. Thirty-three non-English major students from the second year were selected based on the convenience sampling technique. Their English proficiency ranged from lower intermediate to intermediate based on their English grade from the previous year. They took a course called English for Discussion and Presentation in their second semester of the academic year 2022. In this course, English was used as a medium of instruction. The course was divided into six environmental topics: 1) P.M. 2.5 in Thailand, 2) deforestation in Northern Thailand, 3) wastewater in Bangkok canals, 4) bushfire crisis, 5) species extinction, and 6) climate change.

### 3.2. Research Instruments

#### 3.2.1. Six Modules of CLIL-ESA Lesson Plans

The researchers created six modules of CLIL-ESA lesson plans based on the course contents, which are 1) P.M. 2.5 in Thailand, 2) deforestation in Northern Thailand, 3) wastewater in Bangkok canals, 4) bushfire crisis, 5) species extinction, and 6) climate change. After the lesson plans were created, the experts, who are two science lecturers and one English lecturer, were requested to validate the lesson plans using the index of congruence (IOC). The result was 0.78, which means the created lesson plans are acceptable. The lesson plans were then pilot-tested with 10 students who were not part of the main research study. After that, the lesson plans were adjusted based on the experts' comments and the findings from the pilot study.

#### 3.2.2. Willingness to Communicate (WTC) Scale

The Willingness to Communicate (WTC) scale was adapted from Chaisiri (2023) to align with the purpose and the context of the study, which focused on English oral communication in the classroom. The instrument comprised two main components: (1) communicative behaviors (10 items) and (2) communicative self-confidence (10 items). The communicative behavior section employed a five-point Likert scale ranging from 1 (strongly unwilling) to 5 (strongly willing), while the communicative self-confidence section used a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Content validity was established through expert judgment by three specialists in English language teaching, yielding an IOC result of 0.89, which was deemed acceptable. Reliability analysis using Cronbach's alpha produced a coefficient of 0.85, indicating a high level of internal consistency.

#### 3.2.3. Environmental Attitude (EA) Scale

The Environmental Attitude (EA) scale was adapted from Uzun et al. (2019) to suit the context of Thai EFL learners. The instrument consisted of three subscales: environmental behavior (13 items), environmental opinions (11 items), and environmental emotions (16 items), totaling 40 items. A five-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree). Content validity was examined, yielding an IOC of 0.67, indicating acceptable validity. Reliability analysis using Cronbach's alpha demonstrated satisfactory internal consistency, with a coefficient of 0.85.

#### 3.2.4. Semi-Structured Interview Questions

The researchers composed five semi-structured interview questions to investigate the aspects of WTC, EA, and students' perceptions towards the CLIL-ESA instruction. The sample questions are

1) How did the CLIL-ESA instruction impact your confidence and willingness to communicate in English during class activities? Can you share any specific experiences?
2) In what ways has the integration of environmental topics through the CLIL-ESA instruction influenced your attitudes or awareness of environmental issues?
3) What aspects of the CLIL-ESA lessons did you find most engaging or motivating, and how did these elements affect your learning of English and environmental topics?

### 3.3. Research Procedure and Data Collection

The present study was divided into two main phases: 1) preparing the CLIL-ESA using climate action contents, and 2) implementing the CLIL-ESA using climate action contents. The details are as follows.

In phase 1, the researchers explored and studied the concepts and related literature about CLIL, ESA, WTC, and EA. Then, both instructional and research instruments were designed. Once the instruments were constructed, they were validated by three

experts in the field of English language teaching and science teaching. Subsequently, the researchers conducted a pilot study with non-participants who possessed comparable language proficiency and content knowledge. After the validation process and pilot study, the researchers adjusted the instruments based on the experts' comments and findings from the pilot study accordingly.

In phase 2, once the instruments were adjusted, the implementation took place for 15 weeks. In the first week, the researchers administered the WTC and EA scales for the pre-survey. From weeks 2 to 14, the participants studied in a course called English for Discussion and Presentation with the CLIL-ESA instruction as an intervention. After that, in week 15, the participants were asked to complete the post-survey of the WTC and EA scales, followed by a focus group interview to elicit their opinions. Ultimately, the researchers analyzed both quantitative and qualitative data.

### *3.4. Data Analysis*

The quantitative data collected from the WTC and EA scales was analyzed using a paired sample *t*-test to compare data from pre-and post-surveys. Then, the results were shown as mean scores and standard deviations. To analyze the qualitative data, the researchers employed content analysis in order to investigate themes that emerged. The qualitative data was utilized to provide more insightful information about WTC, EA, and students' perceptions towards CLIL-ESA instruction.

## 4. RESULTS AND DISCUSSION

### *4.1. Willingness to Communicate*

The study aimed to investigate EFL university students' level of willingness to communicate through the CLIL-ESA instruction. The findings regarding the WTC are divided into 1) communicative behaviors and 2) communicative self-confidence.

***Table 1: Paired Sample t-Test Results for WTC Constructs: Pre- and Post-Survey.***

| WTC | Pre-survey | | Post-survey | | 95% Confidence Interval of the Difference | | *t* | *df* | *p*-value | Effect Size (Cohen's *d*) |
|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | Lower | Upper | | | | |
| Communicative behaviors | 3.31 | .91 | 4.68 | .19 | -1.55 | -1.18 | -14.61 | 96 | <.001 | .92 |
| Communicative self-confidence | 3.25 | .74 | 4.49 | .22 | -1.40 | -1.08 | -15.48 | 96 | <.001 | .79 |

According to the table, a paired-sample t-test was conducted to examine the effects of the intervention on participants' WTC. For communicative behaviors, the post-survey mean ($M$ = 4.68, $SD$ = .19) was significantly higher than the pre-survey mean ($M$ = 3.31, $SD$ = .91), $p < .001$, with a large effect size ($d$ = .92). Similarly, communicative self-confidence increased significantly from pre-survey ($M$ = 3.25, $SD$ = .74) to post-survey ($M$ = 4.49, $SD$ = .22, $p < .001$, also indicating a large effect ($d$ = .79). These findings suggest that the intervention substantially improved both communicative behaviors and self-confidence among participants.

Moreover, the positive effects were also echoed in the participants' perception received by the interview. For instance, in terms of communicative behaviors, some students mentioned more active participation in conversation in terms of willingness to join the conversation and initiation of the conversation, as follows.

"Before the class, I was usually quiet, but now I try to talk with my friends."

"When doing a group speaking activity, I can start speaking English without waiting for my teachers or friends to ask me."

The excerpts revealed the shift of students' role from passive to active in classroom communication. These results may be attributed to the Engage stage, which captures students' attention and curiosity through interactive activities designed to increase participation. The Activate stage encourages students to use language freely in an authentic context.

Additionally, not only initiating the conversation, being able to maintain the conversation is also reported by the students. Some students reported more spontaneous and natural speaking in terms of no anxiety about making mistakes and a supportive context.

"I learned some vocabulary in the games we played at the beginning of the class, and I tried to use those words in the group activities."

"Group activities helped me speak more naturally because I'm not worried about making everything perfect."

"The activities helped me talk like in real life, not just answer questions."

The results focus on the positive effects of the

ESA method, especially in the stage of Activate, where fluency is more emphasized than accuracy, and meaning-focused language is integrated in the lessons. Furthermore, peer support enabled students to engage more actively in interactive activities compared to individual tasks. These results align with findings by Khajavy et al. (2016), who indicated that the classroom environment was the strongest predictor of WTC in English among Iranian EFL learners. Key elements such as teacher support, student cohesiveness, and task orientation significantly enhanced students' WTC by fostering a supportive, low-anxiety atmosphere conducive to interaction.

Apart from ESA, it can be argued that CLIL is another significant factor enhancing students' WTC. Menezes and Juan-Garau (2014) found that CLIL students' WTC is higher than that of non-CLIL participants in an EFL context. The possible explanation is that the CLIL approach provides them with a more intensive exposure to the target language and with more real opportunities to use this language than traditional EFL learning contexts (Lorenzo et al. 2010). Additionally, the difference in WTC between CLIL and non-CLIL students can also be related to the hypothesis by Yashima et al. (2004), according to which learners who have an image of themselves as possible or ideal users of the foreign language make more effort to become proficient users and develop a higher WTC.

In terms of communicative self-confidence, students also reported feeling more confident about speaking English. This increased confidence is evident in the interview as follows.

"Even though my English isn't very good, I felt more confident because I knew the content; for example, PM 2.5 in Thailand. It's something close to me that I can talk more about than other topics that I don't know."

"I used to be silent when the teacher asked questions to the whole class. Now I tried to speak more because I'm not afraid of being wrong, and the learning vocabulary game at the beginning of the class really helped me to be able to speak more."

The CLIL-ESA framework's Engage stage proved particularly effective in building initial speaking confidence through content-driven curiosity. Some students reported feeling more confident because they had some previous knowledge and opinions to share. Discussing topics that students are already familiar with allows them to focus primarily on language use rather than simultaneously managing both content and grammar, which, in turn, enhances their speaking confidence.

Furthermore, the cycle of ESA within CLIL instruction created a confidence-building spiral. Each cycle began with content-driven engagement that activated prior knowledge and interest, moved through focused language study that built linguistic tools for content expression, and culminated in authentic communication that reinforced both content mastery and language confidence. This structured progression provided predictable support while gradually increasing communicative demands. Research supports that the classroom environment directly predicts WTC and influences communication confidence (Mulyaningsih & Murtafi'ah, 2022), validating the supportive learning context created through this instructional approach.

### *4.2. Environmental Attitude*

The findings showed a significant increase in students' environmental behavior after CLIL-ESA instruction, with post-survey means ($M$ = 4.70, $SD$ = .25) significantly higher than pre-survey means ($M$ = 3.43, $SD$ = .82), $t(96)$ = -23.97, $p < .001$, with a medium-to-large effect size ($d$ = .68). This improvement indicates that students demonstrated greater intention to take eco-friendly actions such as conserving energy, reducing plastic use, and participating in local initiatives. The outcome aligns with Raphael and Nandanan (2024), who highlight that embedding sustainability topics in EFL curricula motivates learners to transfer classroom knowledge into responsible daily behaviors. Similarly, the integration of ESA's Engage phase provided authentic contexts (e.g., PM2.5 in Thailand, deforestation, and water pollution) that enabled students to relate language learning directly to real-world practices, reinforcing the behavioral dimension of environmental attitudes.

***Table 2: Paired Sample t-Test Results for EA Constructs: Pre- and Post-Survey.***

| EA | Pre-survey | | Post-survey | | 95% Confidence Interval of the Difference | | *t* | *df* | *p*-value | Effect Size (Cohen's *d*) |
|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | Lower | Upper | | | | |
| Environmental behavior | 3.43 | .82 | 4.70 | .25 | -1.78 | -1.51 | -23.97 | 96 | <.001 | .68 |
| Environmental opinions | 2.85 | .91 | 4.60 | .23 | -1.93 | -1.58 | -19.94 | 96 | <.001 | .87 |
| Environmental | 3.43 | .82 | 4.70 | .25 | -1.44 | -1.08 | -14.12 | 96 | <.001 | .88 |

| EA | Pre-survey | | Post-survey | | 95% Confidence Interval of the Difference | | *t* | *df* | *p*-value | Effect Size (Cohen's *d*) |
|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | Lower | Upper | | | | |
| emotions | | | | | | | | | | |

Students' environmental opinions also improved considerably, moving from pre-survey means ($M$ = 2.85, $SD$ = .91) to post-survey means ($M$ = 4.60, $SD$ = .23), $t(96)$ = -19.94, $p < .001$, with a large effect size ($d$ = .87). This result suggests that the instruction deepened their ecological understanding and critical perspectives on issues such as climate change, species extinction, and waste management. CLIL's emphasis on cognition and critical thinking (Coyle, 2007) encouraged learners to evaluate environmental challenges from multiple perspectives, while ESA's sequencing scaffolded their analytical discussions. This is consistent with Lloret-Catalá & Alcantud-Díaz (2023) and Mambu (2022), who argue that embedding SDG-related content in English classes fosters critical engagement and enhances learners' ability to articulate well-informed positions. In this study, students were not only exposed to environmental facts but also asked to debate solutions, which supported the development of reflective and evaluative opinions.

The dimension of environmental emotions also showed strong growth, with post-survey means ($M$ = 4.70, $SD$ = .25) significantly higher than pre-survey means ($M$ = 3.43, $SD$ = .82), $t(96)$ = -14.12, $p < .001$, with a large effect size ($d$ = .88). These results indicate that the CLIL-ESA instruction heightened students' emotional attachment to ecological issues, fostering empathy for affected communities and concern for future generations. As Kotova et al. (2024) emphasize, eco-social aesthetics and affective engagement deepen learners' emotional connection with environmental topics, making learning more memorable and transformative. Similarly, Yu et al. (2024) highlight that integrating sustainability in language classrooms enhances both affective motivation and eco-awareness. In this study, multimedia activities during the Engage phase (such as videos of bushfires and extinction crises) elicited emotional responses, while the Activate stage encouraged students to express feelings in English, reinforcing the role of emotion as a catalyst for action.

The qualitative data further validated the quantitative findings, as students articulated how CLIL-ESA instruction reshaped their environmental attitudes and expressed stronger emotional engagement.

"Before this course, I thought environmental problems were too big for me, but now I believe even small actions matter, like saving water and using fewer plastics."

"Discussing climate change in English made me feel connected to global issues, not just local problems."

"When I saw pictures of forest fires in the lesson, I felt really sad and wanted to help more in my community."

These voices illustrate the synergy between language learning and environmental education, confirming that the CLIL-ESA instruction fostered behavioral shifts, critical awareness, and emotional empathy. As studies (Nakamura & Fujimoto, 2024; Ozcan & Gursoy, 2024), contend, such integration not only strengthens linguistic competence but also nurtures learners as responsible global citizens. Taken together, the quantitative gains across all three EA components and the qualitative insights from student voices strongly indicate that the CLIL-ESA instruction effectively enhanced environmental attitudes. By merging meaningful environmental content with structured language learning, the approach fostered behavioral change, critical reflection, and emotional engagement. These findings underscore CLIL-ESA's potential as a transformative pedagogy for simultaneously advancing language proficiency and sustainability education in EFL contexts.

### *4.3. Students' Perceptions toward the CLIL-ESA Instruction*

Based on the interview, even though the majority of students positively reported the benefits of the CLIL-ESA instruction, some of them also reported the challenges they perceived. The researchers coded and analyzed the interview data; it emerged as follows.

#### *4.3.1. Empowerment in Oral Communication*

Implementing the CLIL-ESA instruction, the students positively reported its benefit, especially in the Activate stage, because the cycle seemed to unlock a new sense of agency for many learners. Here are the examples.

"It was the moment I finally dared to express my ideas, even when I wasn't sure my grammar was perfect, I just spoke."

"Before, I would stay silent if I didn't know a word; now I just speak out my opinions because my opinion counts."

Based on the excerpts above, the content-driven

context to speak through the cycle of the CLIL-ESA instruction helped scaffold from the Engage and Study phases and elevated the students from hesitation to active participation. The findings align with previous studies (Pérez-Cañado, 2012; Preksha & Kaur, 2024). CLIL makes learning more applicable and meaningful with students participating in classes through discussions. In addition, the ESA cycle in this present study allows students to build both motivation and competence before free-speaking and move straight into content-rich discussions without initial grammar pressures, giving them the freedom to speak, which shows the connection to the prior research (Harmer, 2007; Matyakhan & Sukavatee, 2021).

### *4.3.2. Sustained Engagement through ESA Sequencing*

In our focus-group interviews, many students highlighted how the CLIL-ESA sequencing kept their interest and engagement alive from start to finish. In other words, pacing the CLIL lessons kept their curiosity and focus intact across the lessons. Here are what students reported.

"I liked that we didn't just learn grammar. First, we talked about the topic, then studied some words, and then used them in speaking. It made everything easier."

"In other classes, I get bored quickly. But in this class, time went fast because each part was different. I never felt tired."

These responses show that when the lesson began with something fun or surprising (Engage), moved to clear language input (Study), and ended with a speaking activity (Activate), students stayed focused and motivated. Additionally, the ESA sequencing gave them time to understand the topic, learn the vocabulary, and then use it in real communication. This shows the similar purpose of the ESA model (Harmer, 2007). More importantly, Khoshsima and Shokri (2017a) similarly reported that the Engage phase captured students' attention, the Study phase clarified language input, and the Activate phase sustained motivation through meaningful communication. Thus, ESA sequencing can deepen engagement affectively as well as cognitively (Khoshsima & Shokri, 2017b). The pedagogical efficacy of CLIL-ESA instruction kept CLIL students curious, focused, and motivated throughout each session.

### *4.3.3. Holistic Skill Integration*

Another theme emerged through the interview. Students positively reflected that the CLIL-ESA instruction helped them practice all four skills, listening, reading, writing, and speaking, together with real environmental topics.

"I listened to a short video about climate change, then read a poster, and later wrote my ideas on a piece of paper before talking with my partner."

"In other classes, we only do grammar. Here, I do everything in one lesson, so I feel my English is stronger. When we speak about species extinction, I also use new words I read and heard. It makes learning more useful."

The progression from engaging input to focused study, and finally to active use enables learners to integrate the four language skills within a coherent and meaningful context. This approach allows students not only to practice English but also to engage with environmentally related content, thereby fostering holistic skill development. Within the CLIL-ESA instruction, content serves as the unifying element that links the four skills with environmental themes—listening and reading facilitate the acquisition of new knowledge, while speaking and writing enable learners to articulate perspectives and propose solutions. Evidence from CLIL implementation in higher education highlights benefits extending beyond language proficiency to include disciplinary thinking and communicative competence, particularly when instructional tasks are situated in authentic, real-world contexts (Pérez-Cañado, 2012; Preksha & Kaur, 2024; Silva Herrera, 2024). Such integration promotes transfer across modalities and purposeful language use, conditions that have been shown to support vocabulary development and enhance fluency in ESA-based classrooms (Aprilia et al., 2023; Katemba & Sinuhaji, 2021; May & Vikasari, 2019).

### *4.3.4. Cognitive Load*

Another critical theme that emerged from the students' reflections was cognitive load. Many students expressed that learning through the CLIL-ESA instruction felt overwhelming. They explained that the challenge was not only in understanding and using the target language, but also in memorizing subject-specific terms and processing the lesson content at the same time. This dual demand made them feel mentally exhausted and sometimes hindered their ability to fully grasp the material. For some, the effort of simultaneously juggling language and content created a sense of overload, reducing their motivation.

"Studying in each lesson was exhausting because I had to learn the English language and the subject content at the same time. The number of new terms

and concepts made me feel overloaded, and sometimes I could not follow the lesson well."

"I found it difficult because every lesson introduced many new terms, especially in English. I had to remember the vocabulary, but also the concepts. It felt like double work, and sometimes I couldn't keep up."

Students reported that the CLIL-ESA instruction imposed a heavy cognitive load, as they had to manage both language learning and subject content simultaneously. Many described the experience as exhausting, with the need to memorize new English terms and academic concepts at once often leading to feelings of overload and difficulty keeping pace. This dual demand sometimes reduced their motivation and hindered full comprehension of the lessons. This reflects CLIL's inherent dual focus on learning new disciplinary concepts while mobilizing the target language—the 4Cs framework (Content–Communication–Cognition–Culture) raises cognitive demands when language of/for/through learning and complex content are processed together (Coyle, 2007; Coyle et al., 2010). To manage this in the CLIL-ESA instruction, tasks should be staged so Engage activates schema and motivation, Study makes key lexis/structures explicit and Activate integrates content and language in purposeful output (Harmer, 2007). Previous studies (Lo Presti, 2024; Qizi, 2024; Silva Herrera, 2024) indicate that meaningful, dialogic activity sequences enhance productive skills and that aligning CLIL with ESA is pedagogically coherent, supporting calibrated task sequencing to contain cognitive load.

## 5. CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS

### *5.1. Pedagogical Implications*

The findings of this study indicate that CLIL–ESA instruction constitutes a practical and effective pedagogical approach for simultaneously fostering content mastery and language proficiency in speaking-focused EFL courses. For classroom application, lesson design should prioritize affective factors, such as WTC, EA, motivation, and self-confidence through structured cycles that (a) engage learners with familiar and locally salient sustainability topics (e.g., PM2.5, deforestation) to generate interest, (b) provide explicit instruction on high-utility lexis and discourse strategies required for communication, and (c) activate learning through authentic communicative tasks. These processes highlight the communicative benefits of the CLIL–ESA instruction, while scaffolding strategies reduce cognitive load by gradually integrating content and language demands. Visible supports, including model texts, rehearsal activities, and structured reflection, further consolidate these learning gains.

At the policy level, the evidence supports the CLIL–ESA instruction as a scalable pedagogy for speaking-intensive courses that integrate sustainability themes with language outcomes. Institutional adoption could be advanced by: (1) funding co-teaching models that pair content and language specialists, (2) investing in professional development to expand CLIL expertise, (3) curating institutional repositories of ESA-ready, SDG-aligned modules (e.g., air pollution, deforestation, water resources, climate change) to ensure both cognitive and affective engagement, and (4) embedding learning-oriented assessments of affective factors (WTC and EA) alongside traditional performance rubrics. Such measures would institutionalize a context-responsive, data-driven model that strengthens students' disciplinary knowledge while enhancing their communicative competence across curricula.

### *5.2. Limitations*

Several limitations should be acknowledged. The one-group pre-test and post-test design without a control group limits causal claims, as improvements in environmental attitude cannot be attributed solely to the CLIL-ESA instruction as an intervention (Creswell & Creswell, 2017). The small convenience sample of 33 Thai undergraduates from a single public university also reduces the generalizability of the findings, given the diverse contexts of CLIL implementation in Thailand (Kewara & Prabjandee, 2018). Additionally, the use of self-report questionnaires raises the possibility of social desirability bias, even though interview data helped provide triangulation (Mambu, 2022). Finally, the six-module intervention conducted within a single semester may not capture long-term attitudinal or behavioral change, highlighting the importance of longitudinal research to examine the durability of CLIL-ESA's effects (Yu et al., 2024).

### *5.3. Recommendations for Future Research*

Future research should extend the scope of the CLIL-ESA by implementing it in Hard-CLIL environmental studies courses and evaluating both language and content outcomes through tightly aligned, performance-based assessments. For oral communication, researchers might design high-fidelity tasks (e.g., data-driven briefings, stakeholder negotiations, solution pitches) mapped

to Engage–Study–Activate sequences and scored with analytic rubrics covering fluency, accuracy, interactional competence, discourse management, and content knowledge. Environmental learning outcomes should also be captured through authentic assessments such as problem-based tasks, field reports, and data interpretation activities, ensuring construct validity through evidence-centered design. Capstone projects like community-facing environmental action plans could integrate recurrent ESA cycles and generate triangulable artifacts (presentations, portfolios, reflective memos) for mixed-methods analysis. Methodologically, multi-site and longitudinal quasi-experiments or design-based studies are recommended, incorporating comparison conditions, pre-/post-/delayed measures, and learning analytics. Future work should also explore potential moderators (e.g., enjoyment) and mediators (e.g., feedback engagement) to better explain how CLIL-ESA enhances both oral communication performance and environmental content mastery in authentic learning contexts.

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