

Research Article

Cite this article: Huang, L.-W., & Hou, H.Y. (2025). Bridging the Gap: A Technology-Assisted Communicative Approach to Developing English and Workplace Competencies in Aeronautical Engineering Students. *Educational Process: International Journal*, 16, e2025190. <https://doi.org/10.22521/edupij.2025.16.190>

Received February 12, 2025

Accepted April 21, 2025

Published Online May 1, 2025

Keywords: English for specific purposes, communicative language teaching, workplace common competencies, innovative learning, technology integration

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Bridging the Gap: A Technology-Assisted Communicative Approach to Developing English and Workplace Competencies in Aeronautical Engineering Students

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Abstract

Background. English proficiency is extremely important for future careers, particularly in aviation education and training. However, the current regulated school framework includes an insufficient two-hour per week. This study investigates the effectiveness of an extracurricular program, "Fun Language Club," in improving English proficiency and workplace competencies among aeronautical engineering students at the University of Technology in Taiwan.

Methods. Grounded in the Communicative Language Teaching (CLT) approach and English for Specific Purposes (ESP), the program incorporated interactive activities such as role-playing, discussions, and problem-solving, supported by international teaching assistants (ITAs) and digital tools. Based on IELTS scores, 70 second-year students were divided into advanced and primary classes. A mixed-methods approach was employed, including independent sample t-tests, correlation analysis, and NVivo coding.

Results. The quantitative findings indicated an increase in English proficiency in both classes, with the primary class showing significant improvements, thereby reducing the performance gap. Moreover, the results of the University Competence Assessment Network (UCAN) assessment revealed statistically significant enhancements in various competencies, including communication, teamwork, and problem-solving. Correlation analysis indicated strong positive relationships among essential workplace skills. Qualitative feedback of ITAs highlighted growth in student motivation, communication, and cultural awareness through engaging classroom activities and the integration of technology.

Conclusion. The combination of CLT, ESP, ITA support, and technology-assisted learning proved to be effective, significantly improving in language performance and workplace competencies, particularly for lower-performing students. This integrated approach positively impacted English proficiency and essential workplace competencies, making a strong case for its wider adoption in globalized and technology-driven academic and professional settings.



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1. Introduction

In the 21st century, English serves as a lingua franca, enabling people from diverse backgrounds to communicate effectively across borders. Students studying in technology universities in Taiwan typically undergo one or two years of general English education. However, this level of instruction is insufficient for students majoring in aeronautical engineering, as they require specialized English skills to comprehend technical documents, communicate with international professionals, and meet industry-specific language standards. Stefanova (2022) emphasized that English language proficiency is essential as "employers tend to hire people who can join as full-fledged team members with all necessary qualifications" (p.333). It is particularly crucial for the international aviation industry. All aviation professionals from different countries require practical English communication skills to ensure safe and efficient air travel.

Moreover, many aviation regulatory bodies, such as the International Civil Aviation Organization (ICAO), mandate that aviation personnel demonstrate English proficiency. Compliance with these regulations is vital for obtaining licenses and certifications and operating in international airspace. Aviation professionals frequently use English for documentation, reporting, and record-keeping, including writing incident reports, completing maintenance logs, filling out flight plans, and communicating with regulatory authorities. Several aviation courses, manuals, and instructional materials are available only in English. Therefore, students and professionals should have a solid command of the language to access and utilize these essential resources effectively. Overall, these facts underscore the pivotal role of English proficiency in aviation education and training.

Therefore, the "Workplace English for Aviation" course designed for the Department of Aeronautical Engineering at Technology University in Central Taiwan aims to meet these needs in the aviation industry. The objectives are to motivate learning, to reinforce English-speaking ability, and to improve intercultural communication skills. Its general syllabus includes several practical topics, such as self-introduction in the workplace, social greetings, business trip planning, email writing, and other general workplace-related topics. Lectures and pair/group activities are used to facilitate the learning of thematic concepts. In addition to the main course, a two-hour weekly "Fun Language Club" extracurricular program is instructed by international teaching assistants (ITAs). This program complements the main course by providing students with opportunities to speak English, interact with international students, and develop intercultural communication skills. The additional program is designed to develop learners' future career needs. It stems from the core concept and theory of English for specific purposes (ESP), which focuses on equipping learners with the language skills required in professional contexts, namely, acquainting them with different cultures through interactions with multicultural ethnicities to improve their English proficiency and communication competence.

Research has shown that ESP plays a key role in enhancing communication skills essential for the workplace (Myles, 2009; Wood, 2009; Stefanova, 2022). Despite this, limited research has examined how Communicative Language Teaching (CLT) approach, combined with support from ITAs, improves workplace competencies within ESP contexts. This study aims to address that gap by focusing on designing and implementing the "Fun Language Club" program. Specifically, it evaluates the program's effectiveness in enhancing students' communication skills and preparing them for real-world professional demands.

The research questions (RQs) are as follows:

RQ1: How do learners benefit from the program?

RQ2: To what extent does the program benefit learners' future needs?

2. Literature review

2.1. *Communicative language teaching (CLT)*

The communicative language teaching (CLT) approach was introduced in the 1970s as a reaction against the grammar-translation method and the audio-lingual method. After Noam Chomsky (1965) proposed the concept of universal grammar and emphasized the importance of linguistic structure in language teaching, many educators advocated functional and communicative language learning, bringing about a shift from a linguistic structure and teacher-centered approach to a communicative learner-centered approach in the late 1970s. Dell Hymes (1972, 1974) criticized the limitations of structure-centered teaching and emphasized the significance of communicative competence. He identified four areas of communicative competence: linguistic, sociolinguistic, discourse, and strategic. Building on Hymes' work, Canale and Swain (1980) further refined these components, forming the foundation of the CLT approach. Their framework emphasized that language learners must know how and when to use language appropriately in real-world contexts.

CLT promotes communicative competence through tasks that balance fluency and accuracy (Radosavlevikj, 2020). Although CLT emphasizes communication, the development of learners' communicative competence is the objective of language teaching, as per Hyme's theory. The goal of CLT is meaningful communication, in which the learning of linguistic forms occurs as communicative competence develops (Littlewood, 1981; Banciu & Jireghie, 2012). Richards (2006) emphasized that speaking is central to language learning and that communicative activities are efficient in English for Specific Purposes (ESP) contexts. As language education has evolved, there has been a clear transition from structure-oriented to communication-oriented instruction (Littlewood, 2007). CLT is a learner-centred approach in which teachers act as instructors, facilitators, or counsellors of learning (Littlewood, 1981; Voller, 1997; Richards & Rodgers, 2014).

David Nunan (1991) outlined the following five main features of CLT:

1. Emphasis on communication through interaction in the target language.
2. Use of authentic texts in learning.
3. Focus on language and the learning process.
4. An enhancement of the learner's personal experiences into classroom learning activities.
5. The connection between classroom learning and real-world language use.

Later, some educators, for instance, Benati (2009), Gondova (2012), Metruk (2018), and Wang (2013), expanded on the characteristics of CLT, adding:

- Emphasis on meaning and communication over form.
- Emphasis on usage.
- Focus on contextualized teaching.
- Development of all language skills during the learning process.
- Emphasis on student autonomy and student engagement.
- Learner-centeredness, with teachers serving as facilitators.
- Use of the mother tongue to facilitate learning.
- Various assessments and positive feedback for learners to support learner growth.

Then, Brown (2014) summarized the principles and philosophy of CLT as authentic, meaningful, productive, accurate, and fluent.

The CLT approach utilizes meaningful and authentic teaching materials in situational tasks, such as discussions, role-plays, problem-solving, information gaps, and games (Burns, 1998; Desai, 2015). These tasks create opportunities for learners in real-life contexts. Through a wide range of activities, students explore, reflect, and engage in trial and error, facilitating the development of critical thinking (Iglesias Xamani, 2013). In summary, CLT promotes active, learner-centred instruction that fosters language proficiency and cognitive development. Given the global role of English as a lingua franca, CLT remains a widely practiced and influential approach in modern language education.

2.2. English for specific purposes

ESP has developed over the years to address the growing demand for fast-paced language training in occupational and professional contexts. Salmani-Nodoushan (2020) identified two aims of ESP courses: to support international students in universities cope with academic writing tasks and to assist non-native scholars with their publications in English-language journals. With the rapid development of technology, the dominance of English as a global lingua franca, and the adoption of more effective teaching methodologies—particularly Communicative Language Teaching (CLT)—ESP has become a practical method for teaching English to non-native speakers.

Carver (1983) categorized three types of ESP: "English as a restricted language," "English for academic and occupational Purposes", and "English with specific topics" (Robinson, 1991; Belcher, 2009). However, English as a restricted language is not recognized as a "language" (Mackay & Mountford, 1978), while English for academic and occupational purposes is separated into English for academic purposes and English for occupational purposes. Later, many scholars integrated purposes with topics into ESP programs, training learners for specific topics. Therefore, Hutchinson and Waters (1987) explained that ESP differs from English for general purposes in practice, arguing that "ESP is an approach to language teaching in which all decisions regarding content and methods are based on learners' reasons for learning" (p.19). As such, This approach revolves around five core elements: "purpose," "specificity," "learners' needs," "target situation," and "authenticity and genuineness" (Salmani-Nodoushan, 2020).

ESP is often characterized by three main characteristics: authentic materials, purpose-related orientation, and self-direction (Carter, 1983; Salmani-Nodoushan, 2020). In ESP courses, materials are designed to simulate real-life situations, enabling learners to use language as autonomous and active participants. Tahir (2009) explained that the pivotal aim of ESP syllabi is to incorporate learners' needs and equip them with the language skills necessary for real-world communication (p.117).

ESP differs from English for general purposes or general English. ESP values the importance of the purpose; it emphasizes learners' specific communication needs in particular fields or social settings (Hyland, 2002; Kenny et al., 2020). Authentic learning contexts allow students to engage in meaningful communication relevant to their professional or academic goals. Through this targeted instruction, ESP fosters functional communicative competence (Stefanova, 2022.) Oral communication skills are critical in workplace settings. Many companies use English as a basic requirement during recruitment. However, workplace communication in English is particularly challenging for second-language learners due to both linguistic barriers and cross-cultural differences (Myles, 2009; Wood, 2009; Holmes, 2005). As Clark (1996) stated, "face-to-face conversation is the cradle of language use" (p.9). In summary, communication serves as the medium through which language is acquired, and improving English communication skills has a direct and meaningful impact on learners' career development.

3. Methodology

3.1. Participants and context

The program began in the fall semester of 2022 and was exclusively designed for this group of students in the Aeronautical Engineering Department; 70 sophomores, including 68 males and 2 females, were selected as a purposive sampling. First, students were placed in two classes based on their English ability. Thirty Students reaching Band 4.5 and above in the official International English Language Testing System (IELTS) test were placed in the advanced class. Forty low achievers who scored below Band 4 on the IELTS test were placed in the primary class. The program consisted of two components: a main course on practical English for the workplace and an extracurricular activity called the Fun Language Club. In the main course, an international teacher instructed both classes with the aim of teaching survival English skills in the workplace, especially with regard to speaking ability, such as telephone conversation, email writing, business trip arrangements, and cross-cultural acknowledgment. The Fun Language Club provided students with additional opportunities to engage with international peers and immerse themselves in an English-speaking environment. Students from advanced and primary classes were organized into small teams with around 8 to 10 members to participate in the "Fun Language Club," which ran for 14 weeks during the semester.

Before the club began, eight international teaching assistants (ITAs) were recruited. There were four Indonesians, two Indians, one Mexican, and one Filipino; three of them were graduate students pursuing doctoral program, and the remaining four were undergraduate students enrolled in English-related programs in various departments. They were fluent in English and enthusiastic about sharing their cultures. Before the Fun Language Club began, these ITAs attended pre-training courses with the program coordinator to learn about lesson plan design and to discuss classroom management skills. To apply CLT approach, we sought to include authentic, interesting and relaxing contents in the club with well-organized, motivated, and learner-centered context. In the Fun Language Club, we aimed to create a real-life and English-friendly learning environment for the learners. Therefore, lesson plans were built around interactive learning and communication-centered activities. Throughout the semester, the program coordinator and ITAs held regular monthly meetings to review learners' performances and make necessary instructional adjustments to meet students' needs.

3.2. Research instruments

3.2.1. The University Career and Competency Assessment Network (UCAN)

The Ministry of Education launched the University Career and Competency Assessment Network (UCAN) platform to assist students in understanding the direction of their work development and enhancing their workplace-related competencies. UCAN is based on industry-demand-driven competencies. It is a comprehensive online platform designed to support students' career development and help them assess and develop their competencies. In this study, we adopted the assessment of common workplace competencies (Table 1), which includes eight common competencies, — communication skills (C), continuous learning (L), interpersonal interaction (H), teamwork (G), problem-solving (P), innovation (I), work responsibility and discipline (R), and application of information technology (T) — to evaluate students' skill development and improvement through the ITA curriculum design. Each category contains several items, and students conducted self-evaluations using a scale from 5 to 1, with 5 indicating strong performance and 1 indicating the weakest. The questionnaire was written in Chinese to ensure that students fully understood the descriptions (Appendix 1).

Table 1. Categories and definitions of common workplace competencies

Category of common workplace competency	Definition
Communication skills (C)	Expressing ideas through oral and written communication in a way that others can understand and try to comprehend the information conveyed by others.
Continuous learning (L)	Understanding the importance of developing abilities and exploring, planning, and effectively managing one's own skills while maintaining the ambition to continue learning.
Interpersonal interaction (H)	Using appropriate methods such as active listening and personal styles like assertiveness to interact or collaborate with others.
Teamwork (G)	Actively participating in team tasks and interacting well with team members helps achieve common goals, fosters a collaborative environment, enhances interpersonal skills, and boosts professional growth.
Problem-solving (P)	When confronted with a situation, the act of clearly defining the problem and suggesting solutions through methodical information collection, and analysis is crucial.
Innovation (I)	With limited resources, not being confined to existing work models, and being able to proactively propose new suggestions or ideas and implement them in the workplace.
Application of information technology (T)	Utilizing the necessary information technology tools in various industries to effectively access, manage, integrate, and transmit information.

3.2.2. Curriculum design of the Fun Language Club

The Fun Language Club, instructed by ITAs, spanned 14 weeks a semester, and its curriculum concluded with four themes —career and profession, exotic food cultures, leisure activities, and cross-cultures— based on which the ITAs plan lessons on various topics; the following chart shows the topics implemented in each thematic category. Figure 1 presents themes and topics of the Fun Language Club.

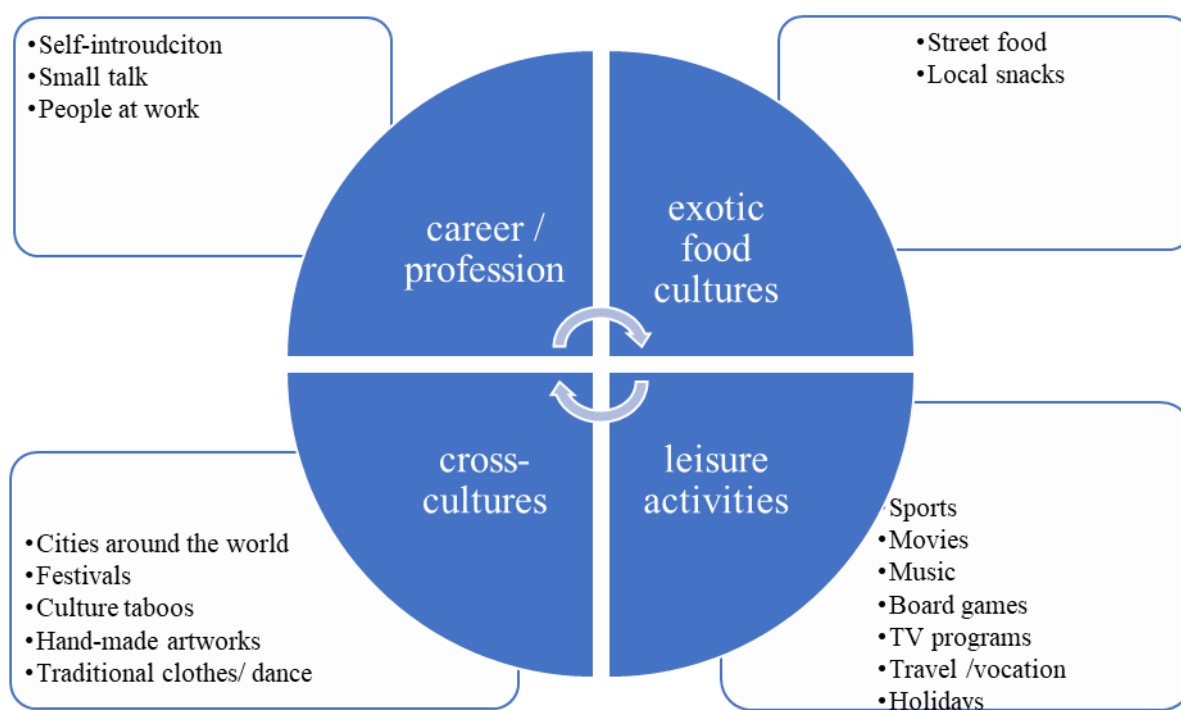


Figure 1. Themes and topics of the Fun Language Club

The goal of the Fun Language Club was to enhance students' communication and speaking skills; as a result, various interactive activities and games were implemented in pairs, groups, or individually to motivate them to get involved. To capture students' attention, most ITAs implement high-tech information technology devices, such as laptops and smartphones devices and all sorts of applications. As students interacted and responded through IT devices, the sessions became more engaging, and students could demonstrate their IT competencies. For example, during a unit on food, students began with a brainstorming activity to describe their personal preferences before learning words to describe flavors and tastes. After that, students worked in groups to create a recipe for a famous local dish by listing ingredients, providing cooking instructions, and describing flavors as an oral presentation learning task. Through such class activities, students demonstrated their continuing learning competence, improving not only knowledge but also communication, interpersonal, and problem-solving skills, engaging in teamwork and shouldering responsibility. All of these with the indicators of UCAN common workplace competencies.

3.3. Data collection

The study carried out a blended quantitative and qualitative research. Firstly, two-semester class reports that assessed students' learning performance were collected. Because the main course, practical English in the workplace, is a two-semester lesson, quantitative data were obtained from the grades of each semester's class reports in both advanced and primary courses. Moreover, the UCAN questionnaire survey (Appendix 1) was conducted the year after the course was completed to measure students' development of career competency. In terms of qualitative data, face-to-face interviews and the open-response questionnaire on Google Form were undertaken to gather feedback from ITAs, which was the data for qualitative analysis (Appendix 2.) The collected data were analyzed using a t-test and Nvivo. The concept of this research was depicted in Figure 2. This study assumed that by implementing courses and extracurricular activities, students' English language performance would improve to meet their career needs. A UCAN assessment was conducted to verify this assumption and prove the hypothesis.

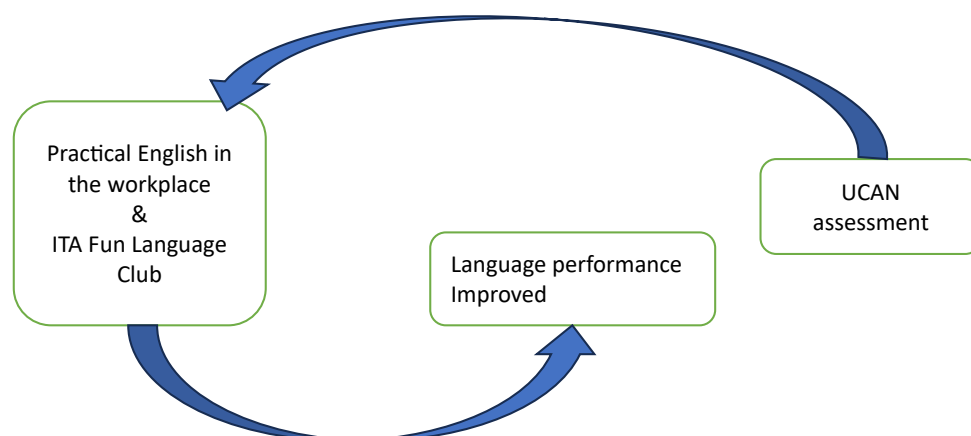


Figure 2. Research framework

4. Results

4.1. Basic statistics of the scores of two classes

Table 2 presents the descriptive statistics of students' English performance across two semesters and class levels. In the advanced class, students achieved a slightly higher mean score in the 1st Semester ($M = 78.80$, $SD = 6.462$) compared to the 2nd Semester ($M = 78.50$, $SD = 8.435$). Conversely, in the primary class, students performed better in the 2nd Semester ($M = 77.38$, $SD = 6.979$) than in the 1st Semester ($M = 74.80$, $SD = 7.700$). These findings may imply that students in the primary class benefited more from instruction over time while advanced class students maintained a relatively consistent performance.

An independent sample t-test, a statistical method used to determine a significant difference between the means of two groups, demonstrated that the average score of the two classes in the second semester was better than that of the previous semester (Table 3). Because the classes were arranged according to the students' English ability, the average score of the advanced class was higher than that of the primary class. In the fall semester (Semester 1), the performance of both classes showed a significant difference ($F=5.294$, $P<0.05$, where F is the test statistic and P is the p-value). However, in the spring semester (Semester 2), the English performance of the two classes was nearly equivalent ($F=0.372$, $P>0.05$) as shown in Table 4. The learning performance of the primary class was transformed, and the grade performance was higher than that of the previous one and slightly lower than that of the advanced class in the spring semester.

Table 2. Descriptive Statistics of English Course Performance

Class	Semester	Mean	N	SD
Advanced Class	1st Semester	78.8	30	6.462
	2nd Semester	78.5	30	8.435
Primary Class	1st Semester	74.8	40	7.7
	2nd Semester	77.38	40	6.979
Total	1st Semester	76.51	70	7.419
	2nd Semester	77.86	70	7.599

Table 3. Basic statistics of the scores of the classes

	Mean	N	SD	MSE
Group 1	76.51	70	7.419	.887
Group 2	77.86	70	7.599	.908

Table 4. Analysis of variance (ANOVA) of the performance across two semesters

			SS	df	MS	F	P value
Semester 1 (fall)	Between	(Combined)	274.286	1	274.286	5.294	0.024
	Within		3523.200	68	51.812		
	Total		3797.486	69			
Semester 2 (spring)	Between	(Combined)	21.696	1	21.696	0.372	0.544
	Within			68	58.278		
	Total			69			

4.2. Analysis of variance (ANOVA) and correlation of UCAN

The UCAN assessment included eight categories: communication skills (C), continuous learning (L), interpersonal interaction (H), teamwork (G), problem-solving (P), innovation (I), work responsibility and discipline (R) and application of information technology (T); in each category, the Cronbach's alpha revealed that the questionnaire results were reliable ($\alpha > 0.7$). Moreover, the mean score implied that, in each category, the score in the advanced class was higher than that in the primary class. It is noteworthy that continuous learning, interpersonal interaction, teamwork, and problem-solving indicated a significantly different level ($P < 0.05$). Nonetheless, the item "innovation" (Sig.=0.145, $P > 0.05$) did not reach a significant difference level in Table 5. In addition, there was a strong correlation between teamwork and problem-solving with Pearson's coefficient of 0.902. The Pearson's coefficient between problem-solving and innovation was 0.924. The correlation between work responsibility, discipline, and information technology application was 0.910. These results showed a high Pearson's correlation coefficient (Table 6).

Table 5. Analysis of variance of UCAN

		SS	df	MS	F	P value
C	Between	2.144	1	2.144	4.549	.037
	Within		62	.471		
	Total		63			
L	Between	3.125	1	3.125	7.595	.008
	Within		62	.411		
	Total		63			
H	Between	2.641	1	2.641	6.799	.011
	Within		62	.388		
	Total		63			
G	Between	2.878	1	2.878	8.846	.004
	Within		62	.325		
	Total		63			
P	Between	2.313	1	2.313	6.654	.012
	Within		62	.348		
	Total		63			
I	Between	.803	1	.803	2.177	.145
	Within		62	.369		
	Total		63			
R	Between	1.226	1	1.226	4.097	.047
	Within		62	.299		
	Total		63			
T	Between	1.373	1	1.373	4.354	.041
	Within		62	.315		
	Total		63			

Table 6. Correlation analysis of UCAN categories

	C	L	H	G	P	I	R	T
C	1							
L	.760**	1						
H	.688**	.857**	1					
G	.604**	.835**	.891**	1				
P	.648**	.866**	.873**	.902**	1			
I	.685**	.880**	.832**	.840**	.924**	1		
R	.648**	.759**	.834**	.844**	.813**	.780**	1	
T	.654**	.852**	.860**	.867**	.875**	.884**	.910**	1

** $p < .01$

4.3. Qualitative research analysis

A qualitative analysis method was used to gain an in-depth understanding of human behavior and the reasons that governed such behavior. NVivo was implemented to analyze the frequency of the keywords in feedback from the ITAs. Both in the communication and problem-solving categories, "English," "group," and "team" were frequently mentioned. Interestingly, the application of the

information technology categories "Kahoot," "Quizlet," and "Scattergories" (online interactive learning applications) appeared repetitively, implying that these technologies are often implemented in the Fun Language Club. These findings suggest that using these technologies in classrooms can enhance communication and problem-solving skills.

5. Discussion

The findings of this study highlight the effectiveness of the "Fun Language Club" program in enhancing English proficiency and developing essential workplace competencies among aeronautical engineering students. The program, based on the principles of CLT and ESP, facilitated active learning and communicative competence through interactive activities and learning tasks.

5.1. Academic performance

The students were assigned to classes based on their English performance on the official IELTS test; thus, undoubtedly, the final score of the advanced class was, on average, higher than that of the primary class in both the fall and spring semesters. In both semesters, although the average score of the advanced class differed slightly, the performance of the primary class improved significantly, underscoring the program's success in engaging lower-achieving students. This success can be attributed to incorporating board games, hands-on projects, role-playing, and group activities that encouraged students to use meaningful, purposeful and authentic language. Activities applied in CLT make learning enjoyable (Desai, 2015) and benefit learners' communicative competence (Ho, 2020). Since both classes practiced ITA language learning, the interactive and engaging nature of the club, facilitated by ITAs, likely contributed to the significant progress of the lower achievers. This practice aligns with CLT's emphasis on meaningful communication and learner-centeredness (Littlewood, 1981; Richards & Rodgers, 2014). Furthermore, when the COVID-19 pandemic broke out, all the lessons had to be conducted online for a while. ITAs then introduced interactive teaching applications, such as Kahoot, Quizlet, and Scattergorise to boost students' learning motivation using game-based learning platforms. Many studies have shown that game-based learning creates a fun and interactive atmosphere that boosts participants' enthusiasm and motivation, leading to positive learning outcomes (Sabandar et al., 2018; Mahbub, 2020; Siwalette, 2021). The ITAs' assistance lessons helped lower-achieving students progress and attain excellent final scores. The use of interactive online applications during the pandemic maintained student motivation and facilitated continued learning, reflecting the adaptability and effectiveness of communicative approaches in diverse learning environments.

5.2. Performance in terms of common workplace competencies

The advanced class made notable progress in developing workplace competencies. In particular, students were significantly stronger than others in several competencies, such as continuous learning, interpersonal interaction, teamwork, and problem-solving, which can be attributed to the culturally enriching lessons and regular interactions with ITAs. Interaction is essential for language acquisition and is the basic action involved in CLT with learners learning through communication (Berezenko et al., 2022). First of all, in the "continuous learning" competency, with regular ITA time once per week, students showed good attendance. Their learning motivation may be attributed to the variety of cross-cultural topics each week, which had been well-designed by ITAs and the project coordinator. Because ITAs came from different countries, they introduced exotic cultures and show enthusiasm for sharing their hometown cultures with students. Topics such as self-introduction, local snacks, cultural taboos, and traditional clothes were interesting to local students as they broadened their viewpoints and horizons, allowing them to interact with people from different parts of the world. Regular contact with international students was rare. These factors could explain students' enthusiasm for continuous learning. Secondly, with regard to the "human interaction" competency, since many class activities were conducted in pairs or groups, students must collaborate with peers

to discuss and communicate to reach an outcome. For instance, for the topic of travel, students had to work in a group to brainstorm a destination, explore exciting sightseeing spots, plan an itinerary, and check out transport tickets and accommodations in order to fulfill the requirements. Communication, cooperation, and collaboration were essential components that contributed to “human interaction.” The competency of “group work” was equally important because students worked on projects as a team, highlighting the “group work” competency. For the “problem-solving” competency, students had to accomplish a learning task and present it in front of the class. These project-based learning tasks encouraged students to work with their peers, demonstrate their strength in English, and determine ways to accomplish tasks. In the process, students discussed, agreed, assumed work duties, and presented their work appropriately. By performing learning tasks, students demonstrated their problem-solving competency while simultaneously acquiring learning confidence.

These in-class learning tasks are similar to a small-scale learning project that can “develop students’ autonomy and increase cross-cultural awareness” (Avsheniuk et al. P133). Moreover, project-based language learning benefits communication, especially among students with lower levels of English proficiency because they continue to discuss, cooperate and collaborate on work (Omar, et al. 2012). In summary, this finding aligns with the ESP principle of meeting learners’ specific needs and preparing them for real-life communication situations (Hutchinson & Waters, 1987; Salmani-Nodoushan, 2020). Exposure to diverse cultures and perspectives fosters cross-cultural awareness and communication skills that adapt to the demands of globalized professional environments.

5.3. Correlations between common workplace competencies

The strong correlations observed among the eight categories of common workplace competencies—such as between teamwork and problem-solving, problem-solving and innovation, and work responsibility and application of information technology—underscored the interconnectedness of these skills in the workplace. First, the better the cooperation and collaboration in teamwork (G), the more likely students are to develop problem-solving skills (P). The Pearson's coefficient is 0.902. The stronger the problem-solving skills, the more innovative(I) the skills students develop. The Pearson's correlation coefficient is 0.924. In the Fun Language Club, students completed various kinds of tasks, primarily working in groups or teams. While participating in games to solve problems and reach goals, students engaged in brainstorming and shared ideas or strategies to identify a solution. When classes had to be implemented online, interactive applications, such as Jamboard, benefited team learning, even though the students were far away from each other. In the meta-analysis, Lin et al. (2024) concluded that the game-based learning approach reinforced learners' creativity. Implementing information technology attracts students' attention and leads to innovative learning methods. Creativity contributes to problem-solving and results in better outcomes from teamwork. Moreover, the competencies of work responsibility and discipline (R) and application of information technology (T) reveal a high correlation, with Pearson's correlation coefficient being 0.910. Students' work responsibilities included participating in classes, completing assignments, and becoming involved in learning. Since ITAs used digital devices and various IT-assisted tools in lessons, such as Kahoot, Jamboard, Quizlet, and Scattergories, students had to follow instructions and rules to respond to the requirements accordingly.

In sum, the implementation of information technologies strengthened learners' responsibilities and discipline. These findings align with the holistic nature of communicative competence, which encompasses linguistic, sociolinguistic, discourse, and strategic components (Canale & Swain, 1980; Hymes, 1972; 1974). Developing these competencies in an integrated manner prepares learners for complex and multifaceted communication challenges they may encounter in their future careers.

5.4. Feedback from ITAs

This study conducted an open-ended response survey of ITAs to obtain qualitative data. Feedback from the ITAs emphasized the program's positive influence on students' communication skills, cultural awareness, and motivation. Many keywords were extracted by processing the text, indicating recurring themes related to students' communication skills and their differences, the use of English in class, classroom activities and engagement, and the implementation of technology and interactive tools. The Fun Language Club, led by ITAs, aimed to equip students with cultural awareness and improve communication skills. English was the target and instructional language used to apply a communicative approach in class. Classroom activities and interactive tools motivated students to learn and participate in lessons. As the feedback revealed, there was a significant difference between students and classes.

Nevertheless, the statistical results indicated that the primary class of lower achievers improved significantly after one year of learning and participation. The implementation of language clubs and communicative teaching strategies boosted student motivation and language performance. In a systematic review study, Salam & Luksfinanto (2024) summarized that the integration of the Communicative Language Teaching (CLT) approach in an immersive English learning environment has demonstrated effectiveness in fostering learners' communicative competence and enhancing their motivation to learn. These findings, which are in line with the fundamental principles of CLT, emphasize the importance of meaningful interactions, authentic contexts, and learner autonomy (Littlewood, 2007; Nunan, 2021).

Overall, the Fun Language Club demonstrates the potential of a well-designed, communicative, and technology-enhanced language program to meet the specific needs of learners in specialized fields, such as aeronautical engineering. By integrating CLT and ESP principles, it effectively bridged the gap between academic learning and real-world workplace communication demands, equipping students with the necessary language proficiency and competencies for their future careers. In summary, these findings support the continued use and expansion of such programs to prepare students better to meet the demands of the global workforce in the aviation industry.

6. Conclusion

In general, this study reveals the various benefits of the Fun Language Club program, which satisfies learners' future career needs and improves their essential career competencies. These initiatives provide students with cross-cultural awareness and enhance their global communication skills. This study emphasizes the importance of integrating international perspectives into language teaching. Programs involving ITAs can provide students with unique cultural insights and enhance their global communication skills. Institutions should consider expanding these initiatives to other departments and disciplines. This study also highlights the role of technology in facilitating language learning. Educators should continue exploring and incorporating innovative digital tools to create engaging and effective learning environments.

7. Suggestion

Although this study demonstrated positive outcomes in many ways, it is essential to consider the limitations and avenues for future research. The sample size was relatively small, and the study was confined to a single university department. Expanding the program to include more extensive and diverse student populations across different departments and universities could provide more comprehensive results. In addition, conducting longitudinal studies to track students' career progress after graduation could provide deeper insights into the program's long-term impact on their professional development. Future research should investigate the impacts of different technological tools on various aspects of language learning and competency development.

Declarations

Author Contributions. Huang, L. -W.: Literature review, conceptualization, and data collection.

Huang, L. -W.; Hou, H. Y.: Methodology design and statistical analysis.

Huang, L. -W.; Hou, H. Y.: Review, editing, and original manuscript preparation.

All authors have read and approved the final version of the manuscript for publication.

Conflicts of Interest. The authors declare no conflict of interest.

Data Availability Statement. The data supporting the findings of this study are available from the corresponding author upon reasonable request. All datasets were collected and stored in compliance with institutional research ethics and privacy guidelines.

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Appendix 1

UCAN assessment 共通職能量表(共54題)

- 1分表示：我無法完成這件事情，且自認學習起來有困難。
- 2分表示：我無法完成這件事情，可能努力學習可以完成。
- 3分表示：我無法完成這件事情，但是努力學習就能做好。
- 4分表示：我可以將這件事情完成，但還能改進。
- 5分表示：我可以將這件事情做得非常好。

1.溝通表達◎

- 透過口頭、書面等方式，表達自己的想法使他人瞭解，並努力理解他人所傳達的資訊。

(1)	工作上與人談話時，能先確認彼此的主題與目的。
(2)	與人談話時，能專注傾聽觀察對方傳達的訊息，即使他人和自己意見不相同，仍然樂於傾聽接納。

(3)	會依據不同對象，運用適當方法技巧，清楚表達訊息及進行對話。
(4)	能夠正確解讀工作相關文件，如文字或圖表資料、技術文件、測試報告等。
(5)	能夠使用正確的文法、格式或邏輯製作符合組織或工作所要求之書面資料。
(6)	能對不同對象，能以書面方式適切地陳述欲表達之訊息。
(7)	運用組織或工作所要求之外語能力進行資訊溝通傳達。

2.持續學習(L)

● 了解能力發展的重要性，並能探索、規劃和有效管理自身的能力，並保持繼續成長的企圖心。

(1)	能夠持續表現出對學習新事物及知識技能的好奇心。
(2)	能明確掌握個人職涯發展所需知識、技能和必要條件。
(3)	能夠對自己能力的成長訂定具體目標
(4)	了解並進行職涯發展上所需的持續學習和訓練。
(5)	能夠持續因應產業趨勢進行專業能力發展。
(6)	能從與他人的互動中，汲取正面有益的經驗。
(7)	持續應用各種方法及管道提升自己的能力。

3.人際互動(H)

● 依不同情境，運用適當方法及個人風格，與他人互動或共事。

(1)	能以同理心主動瞭解他人的需求與感受，藉以建立良好的人際關係。
(2)	能夠分析自己的領域，主動找出需要建立或改善的重要關係。
(3)	會尋找或製造機會去接觸他人，並與其建立人脈關係。
(4)	工作時對於能提供資訊或協助的人會主動表達善意。
(5)	工作上能提供他人協助及支持，以建立彼此未來的互惠合作關係。
(6)	會運用適當方法有系統地管理人脈資源。

4.團隊合作(G)

● 能積極參與團隊任務，並與團隊成員有良好互動，以共同完成目標

(1)	能夠以團隊目標為優先，支持團隊的決定。
(2)	積極參與團隊並真誠地表達個人的看法。
(3)	對於團隊成員提出的意見能夠給予建設性的回應。
(4)	真誠地重視團隊成員的意見和專業知識，願意向其學習。
(5)	會以正面的話語來談論團隊成員，不會背地批評。

(6)	能將個人喜好排除，在必要時調整自己的角色或行為。
(7)	能夠與團隊成員共同解決問題並承擔責任。

5.問題解決(P)

- 遇到狀況時能釐清問題，透過系統化的資訊蒐集與分析，提出解決方案。

(1)	系統化的收集與所發生狀況相關的資訊
(2)	能夠根據事實證據、謹慎評估並合理判斷可能的問題所在
(3)	能夠以系統化的方式釐清問題
(4)	透過各種管道蒐集相關資料及意見，提供解決問題的各種可能方案
(5)	能夠評估各種解決方案的利弊，找出最佳問題解決方案
(6)	為可能發生的問題預作準備，找出解決問題可能需要的資訊

6.創新(I)

- 在有限的資源下，不侷限既有的工作模式，能夠主動提出新的建議或想法，並落實於工作中。

(1)	能評估原來的作法，並提出有效改善、簡化服務、制度和流程的方法。
(2)	不會侷限於原有的作法，能夠嘗試用新的方式達成目標或解決問題。
(3)	能夠蒐集、分析及組織各方意見與想法，並提出嶄新的觀點或見解。
(4)	能提出新穎且具體可行的產品或服務構想。
(5)	能夠想像及預測可能的新趨勢及發展。
(6)	能夠在任務進行中保持彈性。

7.工作責任及紀律*

- 瞭解並執行個人在組織中的責任，遵守組織及專業上對倫理、制度及誠信的要求。

(1)	能夠認同組織的目標或價值，並積極為組織的利益努力。
(2)	能了解並積極完成自己應負責的工作任務及確保產出品質。
(3)	了解並確實遵循組織的紀律、制度與工作規範。
(4)	能注意確保個人的工作安全與身心健康。
(5)	找出自我排解壓力的適當方式，並勇於承擔需要面對的壓力。
(6)	了解並遵循組織倫理及各部門及人員合理的互動關係與方式。
(7)	以誠信為行事原則，瞭解違反組織及專業上的道德法律標準之後果，並落實責任與紀律於日常工作表現。

8.資訊科技應用(T)

- 運用各行業所需的資訊技術工具，有效存取、管理、整合並傳遞訊息。

(1)	能夠依據不同的情況，判斷並選擇使用/運用資訊科技工具，有效率地完成工作任務
(2)	透過網路瀏覽和檢索資訊，經過篩選與衡量後，進一步管理、儲存及分析資料
(3)	能有效運用資訊科技工具，產出數位內容(如文字、照片、影像)，以符合組織或工作任務之要求
(4)	能依據不同的狀況與情境，使用適當的資訊科技工具與他人進行溝通及互動
(5)	瞭解使用資訊/數位內容版權與授權的規範
(6)	瞭解數位環境中存在的風險及威脅，並以適當的措施保護個人資料及使用裝置之安全
(7)	能夠透過使用資訊科技工具解決自己碰到的問題或找出相應的解決方法
(8)	能將產業的相關知識與資訊科技工具結合，並應用在工作任務上

Appendix 2

ITA interview questions.

1. 在課程中，學生在「溝通表達」中有何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their communication skills in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
2. 在課程中，學生在「人際互動」中有何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their interpersonal skills in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
3. 在課程中，學生在「團隊合作」中有何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their teamwork skills in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
4. 在課程中，學生在「持續學習」，「問題解決」與「責任及紀律」上如何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their continuing learning attitude in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
5. 在課程中，學生在「問題解決」上如何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their problem-solving skills in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
6. 在課程中，學生在「責任及紀律」上如何表現或差異變化? (請盡量仔細描述並註記學生英文程度) How do students present their responsibility-taking, and discipline in class? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
7. 在課程中，你是否使用「創新」教學，請描述學生對此學習運用表現如何或差異變化? (請盡量仔細描述並註記學生英文程度) Do you implement innovative teaching in classrooms, such as Kahoot or others? How do students present their interest in it? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.
8. 在課程中，你是否應用「資訊科技」，請描述學生對此學習運用表現如何或差異變化? (請盡量仔細描述並註記學生英文程度) Do you implement information technology in classrooms, such as Kahoot or others? How do students present their interest in it? Are there any significant differences? Please describe in detail, give examples, and note students' English ability.