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Enhancing University EFL Learners' Speaking Skills through Design Thinking: Preliminary Findings

Mejora de las habilidades de expresión oral de estudiantes universitarios de inglés como lengua extranjera mediante la técnica diseño de pensamiento: resultados preliminares

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ABSTRACT

In the 21st century, university programs must respond to the demands of the job market, which increasingly requires professionals capable of adapting to dynamic environments and generating innovative ideas. The development of critical and creative thinking, the promotion of collaborative learning, and preparation to face future challenges are essential to address complex problems and achieve professional success. In this context, Design Thinking (DT), a methodology focused on creative problem-solving, offers a promising strategy for integration into higher education, particularly in the teaching of English as a Foreign Language (EFL). This study examines the impact of a DT-based project on the development of speaking skills in 86 students from a public university in Ecuador, divided into a control group (n = 43) and an experimental group (n = 43). Quantitative data were analyzed using descriptive and inferential statistics, while qualitative responses were examined through thematic

coding. The findings indicate that the implementation of DT improved the speaking performance of the experimental group by 0.4 points and fostered the development of both cognitive and emotional competencies, such as problem-solving, intrinsic and extrinsic motivation, cognitive structuring, and teamwork. However, participants reported challenges related to time organization, and lack of confidence at the beginning of the project. Overall, the results support DT as an effective methodological approach to promote context-based oral communication. The authors recommend creating Design Thinking experiences based on students' professional interests to develop meaningful language skills to apply in real-world situations.

Keywords: design thinking, oral expression, creative problem-solving skills

RESUMEN

En el siglo XXI, los programas universitarios deben responder a las demandas del mercado laboral, el cual requiere cada vez más profesionales capaces de adaptarse a entornos dinámicos y generar ideas innovadoras. El desarrollo del pensamiento crítico y creativo, la promoción del aprendizaje colaborativo y la preparación para enfrentar los desafíos futuros son esenciales para abordar problemas complejos y alcanzar el éxito profesional. En este contexto, el Design Thinking (DT), una metodología centrada en la resolución creativa de problemas, ofrece una estrategia prometedora para su integración en la educación superior, especialmente en la enseñanza del inglés como lengua extranjera (EFL, por sus siglas en inglés). Este estudio examina el impacto de un proyecto basado en DT en el desarrollo de las habilidades de expresión oral en 86 estudiantes de una universidad pública en Ecuador, divididos en un grupo de control (n = 43) y un grupo experimental (n = 43). Los datos cuantitativos fueron analizados utilizando estadísticas descriptivas e inferenciales, mientras que las respuestas cualitativas se examinaron mediante codificación temática. Los resultados muestran que implementar Design Thinking (DT) mejoró en 0,4 puntos el rendimiento oral del grupo experimental y potenció competencias cognitivas y socioemocionales: resolución de problemas, motivación intrínseca y extrínseca, estructuración cognitiva y trabajo en equipo. Surgieron dificultades de gestión del tiempo y baja confianza inicial. En conjunto, la evidencia respalda al DT como un enfoque eficaz para promover la comunicación oral situada. Se recomienda diseñar experiencias de DT alineadas con los intereses profesionales, a fin de desarrollar habilidades lingüísticas significativas y transferibles a contextos del mundo real.

Palabras clave: design thinking, expresión oral, resolución creativa de problemas

INTRODUCTION

In today's interconnected world, speaking English fluently has become not only an important academic objective but also a crucial professional and social skill. As the primary language of global communication, English places increasing demands on students in public universities, particularly in non-English-speaking contexts like Ecuador, where limited classroom time and minimal real-world exposure create significant barriers to oral proficiency (Salomone, 2022). Although pedagogical approaches such as role-plays, group presentations, and dialogue tasks have been introduced, many learners continue to struggle with speaking. Common difficulties include fear of making mistakes, restricted vocabulary, insufficient speaking opportunities, and low self-confidence.

One of the most pervasive problems faced by non-native English learners in public universities is the lack of confidence when speaking. This insecurity often stems from a fear of making grammatical or pronunciation mistakes in front of others, which may lead to embarrassment or criticism. Many students have been conditioned through traditional, test-focused language instruction, where accuracy is emphasized over fluency, and errors are penalized rather than treated as part of the learning process. As a result, learners frequently hesitate to participate in oral tasks or avoid speaking altogether (Alazeer & Ahmed, 2024). This fear of failure limits their ability to practice, experiment with the language, and develop fluency, ultimately creating a cycle of silence and low performance in speaking skills. In large classrooms with limited individual attention, students may feel even more exposed and unsupported when trying to communicate in English, reinforcing their reluctance to speak.

Another major obstacle in the development of oral skills is the absence of authentic and meaningful interaction in English (Hwang, et. al, 2024). In many general English programs offered in public universities, speaking activities are often limited to controlled, scripted dialogues or repetition exercises that do not reflect real-life communication (Durán & García, 2021). This lack of real-world application makes it difficult for learners to engage with the language in a purposeful way; consequently, they fail to develop communicative competence. Students frequently report that they do not have enough opportunities to practice English outside the classroom or even within it, especially in environments where classmates and instructors also share the same native language. The limited exposure to spontaneous conversations, problem-solving discussions, or collaborative tasks in English results in low oral fluency levels, poor listening comprehension, and struggles to express ideas clearly and effectively in real situations (Granda, Parra, et al., 2024). Language learning, therefore, remains theoretical rather than practical without opportunities for meaningful interaction.

A third significant barrier to speaking development is the absence of learner autonomy in many classrooms, where students are not allowed to make choices or take responsibility for their learning. In traditional settings, learners get used to following rigid instructions and heavily rely on the teacher to validate their performance (Rahmasari et al., 2025). This teacher-centered model discourages learner initiative, self-correction, and decision-making skills that are essential for real communicative success.

When students are not trained to take ownership of their learning or make decisions independently, they struggle with speaking tasks that require planning, creativity, or spontaneity. In project-based or interactive learning environments, these students may experience discomfort or confusion, as they are unaccustomed to the roles of active participant or co-creator of their own prompts. This lack of autonomy limits oral practice and prevents students from building confidence, setting personal goals, or engaging meaningfully with peers in English (Li, et al., 2024).

These persistent problems suggest a gap between the teaching strategies employed and the learners' personal needs, emotional readiness, and communicative realities. The challenge is not only about creating opportunities to speak, but also about designing meaningful, supportive learning experiences with authentic interaction in the English language that would help these present university students to make decisions later as a job team member in professional settings. In this context, Design Thinking (DT) emerges as a promising approach to address the complex and interconnected challenges that English learners face in developing oral communication skills. Design Thinking fosters empathy, collaboration, creativity, assertive communication, and reflection—all of which are essential to overcome fear of speaking, encourage authentic interaction in real-life settings, and promote learner autonomy to resume student accountability (Cleminson & Cowie, 2021). Unlike traditional pedagogies, DT sets the learner at the core of the process and emphasizes a human-centered and iterative process through its five structured stages: Empathize, Define, Ideate, Prototype, and Test, students engage in tasks that simulate real-world communication, require peer collaboration, and support a growth mindset as active problem-solvers. (Baird & Dilger, 2023)

Therefore, this study aims to examine the impact of implementing DT on speaking skills among EFL students in a public university in Ecuador. It seeks to answer the following research questions: (a) To what extent does the implementation of the Design Thinking approach improve the oral expression skills of EFL students compared to those who follow traditional instruction in a public university setting? (b) What perceived benefits do EFL students identify after participating in a Design Thinking-based speaking project? (c) What challenges do students face when integrating the Design Thinking approach into the EFL curriculum at the university level?

Design Thinking

Design Thinking is a human-centered problem-solving approach that emphasizes creativity, empathy, and iterative learning (Brown, 2009). It was popularized in the early 2000s by David Kelley, founder of the design company IDEO and the Stanford school. The process typically includes five key stages: Empathize, where designers seek to understand users' needs and experiences; Define, where the core problem is clearly articulated; Ideate, which involves generating a wide range of creative solutions; Prototype, where simple, low-cost versions of the best ideas are built; and Test, where these prototypes are evaluated with users and improved based on feedback. This iterative cycle helps refine both understanding of the problem and the solutions.

Each step encourages active participation, collaboration, and critical thinking, making Design Thinking particularly suitable for educational contexts. When applied in the classroom, especially in language learning, it can engage students in meaningful tasks that require communication, problem-solving, and reflection, which are essential for developing oral skills in English.

Design Thinking and EFL

Design Thinking, though originally developed in the fields of engineering and product design, has found meaningful applications in education, including the teaching of EFL. Its emphasis on empathy, creativity, collaboration, and iterative learning aligns well with communicative language teaching approaches (Liedtka, 2018). In the EFL classroom, Design Thinking can foster engaging, real-world tasks where learners use the target language to define problems, brainstorm ideas, and present solutions, activities that naturally promote speaking practice. According to Richards (2006) and Brown (2007), language learning is most effective when it is interactive, student-centered, and embedded in real communication, which mirrors the core principles of Design Thinking. Puccio et al. (2011) also emphasize how creativity and innovation, central to Design Thinking, can enhance learners' engagement and communicative competence.

Numerous studies have explored this intersection. For instance, Jones (2024) highlights how Design Thinking supports 21st-century skills in language learning, particularly critical thinking and communication. Similarly, Cleminson, & Cowie (2021) demonstrate how applying Design Thinking in EFL contexts encourages deeper learner involvement and sustained motivation. Through group collaboration, idea development, and peer feedback activities built into the Design Thinking cycle, learners can improve fluency, vocabulary usage, and confidence in speaking English.

Theories Behind Design Thinking

A key theory that supports Design Thinking is Constructivim. Particularly rooted in Jean Piaget and Lev Vygotsky and later increased in scope by Seymour Papert. The authors Schcolnik et al. (2006) explain that constructivism views the mind as an active agent seeking knowledge as it is constructed through interaction with the environment, not merely transferred. This interaction is developed through activities, culture and specific contexts where learners build meaningful knowledge through construction and evaluation. While Piaget focused on cognitive structures, Vygotsky remarked on the social origins of cognition. Therefore, this theory can reshape educational practices, highlighting active knowledge construction.

Seymour Papert's (1982) theory, which is closely aligned with Design Thinking, is called Constructionism, an evolution of Piaget's and Vygotsky's Constructivism. While Constructivism highlights how people construct knowledge, Constructionism adds that learning happens most effectively when people are actively making things in the world. This theory emphasizes student-centered, discovery-based learning where learners build on prior knowledge through hands-on experiences and creative problem-solving. Often described as "learning-by-making," it encourages students to draw their own conclusions by creating meaningful, social artifacts. Teachers act as

facilitators rather than direct instructors, guiding students to explore and support each other's understanding. One key method, problem-based learning, challenges students with multiple problems, promoting deep engagement—especially effective in subjects like mathematics, where diverse problem-solving strategies stimulate critical thinking.

Design Thinking (DT) offers an innovative, student-centered approach that complements well-established EFL theories such as Communicative Language Teaching (CLT), Task-Based Language Teaching (TBLT), and Constructivism. CLT emphasizes meaningful communication and learner interaction (Richards, 2006), both of which are core elements of the DT process. In DT, students engage in real-world problem-solving tasks that require collaboration, empathy, and language use for authentic purposes (Brown, 2006). This aligns with TBLT, which values tasks as the central unit of planning and instruction, encouraging learners to use the language to accomplish specific goals (Ellis, 2003). Design Thinking's iterative process—empathize, define, ideate, prototype, and test—mirrors the kind of learning cycles found in constructivist classrooms, where learners build knowledge through exploration, reflection, and adaptation (Schön, 1983; Puccio et al., 2011). By integrating these theoretical foundations, DT offers a pedagogical framework that enhances communicative competence and learner engagement in EFL settings.

In the EFL classroom, applying DT means moving beyond textbook dialogues to experiential learning, where students co-create solutions, engage in peer feedback, and present ideas using English. These practices foster autonomy, creativity, and higher motivation. As Richards (2006) and Brown (2007) argue, language acquisition flourishes in environments that are interactive, meaningful, and socially constructed. Design Thinking supports this by framing language use within relevant, collaborative challenges. Moreover, scholars like Batubara et al. (2024) emphasize that integrating creativity and innovation through DT can significantly enhance learners' communicative competence, especially in speaking. Thus, Design Thinking is not just a methodology for design fields—it is a robust framework that enriches EFL pedagogy by deepening student engagement and promoting authentic language use.

Implementing DT to improve speaking

Design Thinking (DT) has emerged as a valuable pedagogical approach to enhance speaking skills in English as a Foreign Language (EFL) contexts. Cleminson, & Cowie (2021) emphasize that the integration of DT into classroom instruction significantly improves learners' oral fluency and confidence. This is largely due to the interactive and student-centered nature of DT, which engages learners in meaningful communication throughout its core phases—empathizing, ideating, prototyping, and testing. The structure of DT encourages students to explore real-life issues that are relevant to their lives, promoting a stronger sense of ownership over their learning. As a result, students are not only more motivated but also more engaged in language tasks that are purposeful and personal.

In addition to fostering motivation, DT supports the development of critical thinking and collaborative skills that enhance oral communication. Granda et al. (2024) note that students are

encouraged to reflect on ideas, articulate thoughts clearly, and engage with peers in meaningful discussion. These experiences help learners to use English in functional ways, improving both fluency and clarity. Guaman-Quintanila et al. (2020) further argue that the DT process promotes teamwork and interpersonal communication, as learners co-construct solutions and provide mutual feedback. This collaborative environment fosters a psychologically safe space, enabling students to take speaking risks without fear of judgment.

Perhaps most significantly, DT helps to reduce students' anxiety when speaking in front of others. As learners become more comfortable through repeated interaction, peer support, and iterative feedback, their fear of public speaking decreases. Gregersen and Horwitz (2002) explain that speaking anxiety is a significant barrier in EFL contexts, and lowering it is key to improving performance. The DT framework addresses this by allowing students to gradually build their confidence across multiple stages, from initial brainstorming to final presentations. By the time they reach the testing stage, many students report feeling far more relaxed and secure in expressing themselves in English. This increased comfort leads to better oral outcomes and a more positive language learning experience overall.

METHODOLOGY

Context

This study was conducted at the Language Center in a public university in Ecuador with an enrollment of over 10,000 students, all of whom are required to take English modules as part of their academic curricula. It is developing students' communicative skills in foreign languages, especially English. The program is structured into five progressive modules aligned with the Common European Framework of Reference for Languages (CEFR): Module 1 corresponds to level A1, Module 2 to A2, Module 3 to B1, Module 4 to B1+, and Module 5 to B2. Each module focuses on strengthening listening, reading, speaking, and writing skills, preparing students to communicate effectively in both academic and professional contexts.

Research approach and method

A mixed-method approach with an exploratory sequential design study was applied. It is a research design used to assess the impact of an intervention or treatment in situations where random assignment is not feasible (Creswell, 2012). In this study, participants were assigned to different groups by convenience, as the researcher was immersed in the learning process, and to respect the ethical procedures of this public Institution.

Participants

The participants of this study are enrolled in a blended B1 course during a semester where they have 56 in-person hours and 56 autonomous learning hours. This study involved 43 students with an intermediate level of English proficiency in the intervention group. Over a 10-week semester, these participants engaged in the implementation of the Design Thinking approach aimed at enhancing their speaking skills. In parallel, a control group of 43 students with the same proficiency level followed the

regular curriculum without the Design Thinking intervention. Prior to this intervention, a pre-survey was administered to the 117 students at the same proficiency level during the previous semester to explore the perceived need and feasibility of introducing a new instructional strategy for developing oral communication skills.

Techniques and instruments to collect information

This study employed a combination of data collection tools, including pre-tests, post-tests, pre-surveys, post-surveys, and interviews, to systematically gather, analyse, and interpret data in response to the research questions. These instruments contributed to ensuring the study's credibility, validity, and reliability. In the exploratory phase, a pre-survey to B1+ 117 was applied to collect information on students' prior experiences and perceptions related to oral English use, teaching strategies perceptions, and speaking challenges. Cohen et al. (2018) state that pre-surveys serve as diagnostic tools to explore participants' prior knowledge, beliefs, or attitudes before an intervention. They help researchers identify needs, tailor instruction, and establish baseline data for measuring impact.

As noted by Guskey (2015), in the context of social research, these tools are practical when assessing the academic progress of students during a particular period. In this research, the pre- and post-tests played a central role in measuring the impact of the design thinking approach on students' speaking performance, wherein it was required to deliver a 3-minute problem-solving oral presentation. As part of the implementation, the teacher introduced the topic, explained the expected structure, and provided prior guidance to support students in their preparation. The evaluation criteria were communicated through a rubric, which assigned specific weight to each component: Pronunciation (12.5%), Fluency (12.5%), Grammar and Vocabulary (25%), Delivery (15%), Structure (10%), and Content (25%). (Table 1). The given structure is this one: (1) Introduction: hook, significance, and presenter's name and purpose. (2) Problem Explanation: Identification of the problem and consequences. (3) Proposed Solution: Multiple Solutions and Benefits. (4) Conclusion: Recap, Call Attention, and Closing.

Following the implementation of the pre-test and pre-survey, the instructor presented the Design Thinking methodology to the experimental group and outlined the collaborative nature of the upcoming project. Students were tasked with identifying a challenge associated with learning English and designing an innovative solution. They were grouped according to similar learning difficulties and chose a common topic to work on collaboratively. Over ten weeks, students engaged in both synchronous and asynchronous collaboration through a shared PowerPoint presentation, which served as a platform for the teacher and students to offer ongoing feedback.

The students followed the five key stages of Design Thinking:

1. **Empathize**: Students aimed to identify a real problem and understand the needs and experiences of other learners. They conducted both secondary and first research by reading relevant articles in terms of their project topic and creating and applying first interviews with their classmates at the university. The objective of primary research is to collect original data directly from sources,

allowing researchers to gain firsthand insights into specific problems, behaviours, or experiences that have not yet been extensively documented or explored. Conducting interviews in this phase will enable students to gain a deep understanding of their students' needs, experiences, challenges, and motivations from their perspective. Surveys serve as a tool for collecting data directly from the target users. Students need to listen actively, interact with other students, and conduct individual and group analysis.

2. **Define**: In this phase, students identified the core problem, created a matrix of attributes related to the issue, and wrote a "point of view" statement to frame the challenge. The attribute matrix is a visual or tabular tool that helps students break down the problem into specific components or characteristics—such as causes, effects, frequency, emotional impact, or learning context—which allows for a deeper understanding of the challenge. After analysing their survey data and observations, they used this matrix to map patterns and recurring elements in their findings.

Subsequently, they formulated a "point of view" (POV) statement, a sentence structure that combines the user, their need, and the insight derived from the research. Throughout the Define phase, students enhanced their critical thinking, data analysis, synthesis, and teamwork abilities. As a result, they learned to clearly define real problems, organize their thoughts more coherently in English, and strengthen their argumentation and logical organization skills.

3. **Ideate**: Learners generated a wide range of creative ideas to address the problem. These ideas were later evaluated using a difficulty-impact matrix. This decision-making tool helps prioritize solutions by plotting them based on two dimensions: how difficult they are to implement and how much positive impact they would have if implemented. Students positioned each idea on a simple 2x2 grid with four quadrants:
    - High impact / Low difficulty → Quick wins (top priority)
    - High impact / High difficulty → Major projects (valuable but complex)
    - Low impact / Low difficulty → Minor improvements
    - Low impact / High difficulty → Avoid or postpone

By using this matrix, students learned to assess the feasibility and effectiveness of their proposals objectively, which encouraged strategic thinking. During this phase, students developed creativity, problem-solving abilities, decision-making, and collaborative skills. The ideation process provided a judgment-free space that encouraged open exploration of ideas. As a result, learners were able to expand their vocabulary, express ideas more fluently in English, and evaluate and refine proposals constructively, based on their relevance and viability.

4. **Prototype**: Students developed a simple version of their best solution, presented in a storyboard format—a visual sequence of sketches or slides that illustrated how their proposed solution would work in a real-life context. This allowed them to conceptualize abstract ideas and communicate them more clearly. The prototype was then evaluated using a feedback matrix that included four categories: "likes" (what worked well), "critiques" (what could be improved), "doubts"

(uncertainties or unclear elements), and "suggestions for improvement". This structured feedback process promoted reflective thinking and peer collaboration.

During this phase, students practiced active listening, learned to observe non-verbal cues such as gestures and facial expressions, and avoided interrupting the speaker to understand better the user's perspective—key components of empathic communication. They also cultivated visual thinking, effective communication, organization, teamwork, and openness to feedback. As a result, learners were able to simplify complex ideas, improve their oral production in English, and develop perseverance by refining their prototypes through multiple iterations. This iterative mindset helped reinforce the idea that making mistakes is part of the learning and design process.

5. Test: Finally, students individually applied the prototypes for 10 days, which was evidenced in the document. Then, they conducted peer assessment, received feedback from other students, and made improvements based on the gathered comments and reactions. This stage promoted adaptability, self-evaluation, reflective thinking, and time management. Learners experienced authentic feedback, refined their solutions, and strengthened their oral competence through public presentation. They also learned to embrace errors as an essential part of the learning process.

After completing the intervention, students were asked to perform the same type of oral presentation (post-test), following the same structure and assessment rubric. However, this time, they presented on a topic they had chosen at the beginning of the intervention and had been working on throughout the ten weeks. They also had the opportunity to generate more ideas before the presentation, write them down, and discuss them with their peers and students from other groups. They listened to new ideas and received feedback, which helped them find better solutions to their problem. In this way, they got more input before giving their post-test. To determine whether the implementation of the new technique had a significant effect on student performance, an Independent Samples t-test was conducted. This compared the students' pre- and post-speaking test about a problem-solving oral presentation before and after the intervention.

The experimental group also responded to a post-survey, and participated in interviews to share their perspectives and reflections on the use of the Design Thinking methodology. The post-surveys highlight how the implementation of design thinking influenced their speaking skills in ways that standardized tests could not fully reveal. Additionally, it confirmed the implementation of its key phases and its benefits. In addition, interviews were employed to obtain a more comprehensive understanding of participants' experiences during the application of the five DT phases. As noted by Billups (2019), interviews serve as a valuable qualitative method for capturing nuanced perceptions, emotional reactions, and contextual influences that might be overlooked in quantitative research. This approach also helped identify persisting challenges and examine aspects such as motivation, transferability, and

the development of supplementary skills. The use of interviews was crucial for assessing both the effectiveness and the long-term viability of the intervention.

The survey and interview instruments were conducted in Spanish. Although the participants possessed a B1 level of English, the researchers deemed it necessary to use the students' first language in order to ensure participants' complete understanding of the questions and allow them to express their thoughts more clearly and confidently. Using participants' first language in data collection instruments enhances the validity of both qualitative and quantitative research by reducing linguistic barriers and encouraging more authentic and accurate responses. (Temple & Young, 2004).

The research followed ethical guidelines throughout. Consent was obtained from participants, ensuring confidentiality and confirming that all collected data would be used solely for this study's objectives. Participation was voluntary, and students were informed that they could withdraw at any point without academic consequences. The study involved no extra points, did not affect class development, and would not harm students' grades. Data was anonymized and stored securely on password-protected devices, accessible only to the research team, and measures were taken to safeguard participants' well-being.

RESULTS

F-sample- and Independent Samples t-test were conducted to determine whether the implementation of the new technique had a significant effect on student performance, descriptive statistics,. Additionally, the Interview analysis was codified with AI-assisted and analyzed by the authors.

Quantitative Data

Table 1

Descriptive Statistical Analysis of Pre-test and Post-test Results by Criterion for Experimental and Control Groups

Group	Test	Pronunciation	Fluency	Use of English	Delivery	Structure	Content	Total
Intervention	Pre-test	1.10	0.98	2.02	1.16	0.98	2.36	8.60
Intervention	Post-test	1.15	1.12	2.22	1.33	1.00	2.48	9.30
Control	Pre-test	1.10	0.98	1.82	1.17	1.00	2.43	8.50
Control	Post-test	1.18	1.05	2.03	1.23	0.98	2.43	8.90

Criterion	Weight (%)	Improvement – Intervention (%)	Improvement – Control (%)
Pronunciation	12.5	+0.63%	+1.00%
Fluency	12.5	+1.75%	+0.88%
Use of English	25.0	+5.00%	+5.25%
Delivery	15.0	+2.55%	+0.90%
Structure	10.0	+0.20%	–0.20%
Content	25.0	+3.00%	+0.00%
Total	100.0	+13.13%	+7.83%

The pre- and post-test scores reveal a notable improvement in the speaking performance of the intervention group across all assessed criteria. In particular, the most significant gains were observed in the areas of fluency (from 0.98 to 1.12), use of English (from 2.02 to 2.22), and delivery (from 1.16 to 1.33). These improvements suggest that the implementation of Design Thinking encouraged more fluent, accurate, and confident oral communication. Furthermore, slight but positive changes in pronunciation, structure, and content show that students not only articulated their ideas more clearly but also became more capable of organizing and enriching their discourse. This growth aligns with the collaborative and iterative nature of DT, which provides multiple opportunities for students to express, refine, and receive feedback on their ideas through real-world speaking tasks.

In contrast, the control group showed more modest gains in their post-test scores, especially in fluency (from 0.98 to 1.05) and use of English (from 1.82 to 2.03), but with minimal or no improvement in structure and content. This insight suggests that while traditional instruction may help maintain or slightly improve speaking performance, it lacks the dynamic, student-centered engagement fostered by DT. The overall total score increased in the intervention group (from 8.60 to 9.30), which was more pronounced than that of the control group (from 8.50 to 8.90), supporting the statistical findings that confirm a significant difference in outcomes. These results suggest that the Design Thinking approach not only enhanced students' speaking skills more effectively than traditional methods, but also helped standardize performance across students, as shown by the reduced standard deviation from 1.4 in the pre-test to 0.8 in the post-test, and the range in scores.

Table 2

Experimental and Control Group Descriptive Statistical Analysis

	Experimental group		**Control Group**	
	Pre-test	***Post-test***	***Pre-test***	***Post-test***
Mean	8,6	9,3	8,5	8,9
Standard Error	0,2	0,1	0,1	0,1
Median	9,0	9,5	8,5	9,0
Mode	9,5	10,0	8,7	9,0
Standard Deviation	1,4	0,8	0,7	0,8
Sample Variance	1,9	0,6	0,5	0,7
Kurtosis	6,873	2,013	-0,765	0,612
Skewness	-2,301	-1,272	0,046	-0,899
Range	6,4	3,4	2,55	3,4
Minimum	3,6	6,6	7,25	6,6
Maximum	10	10	9,8	10
Sum	369	400	364	382
Count	43	43	43	43

Note. M mean; SD Standard deviation; SE Standard error. The table presents descriptive statistics for both the experimental and control groups. Results include measures of central tendency (mean, median, mode), variability (standard deviation, sample variance, range), and distribution (skewness, kurtosis) before and after the intervention

Table 1 shows the descriptive statistics for both the experimental and control groups within the pre and post-test sections. In the experimental group, the mean score increased from 8.6 to 9.3, depicting an improvement after the intervention. Similarly, the control group showed a slight increase in mean

score from 8.5 to 8.9, although the increase was less pronounced. Additionally, both the media and mode values in the experimental group rose significantly, with the mode reaching the highest score of 10 in the post-test, suggesting a higher students' performance; however, the control group experienced a lesser extent.

The standard deviation decreased from 1.4 to 0.8, and the sample variance dropped from 1.9 to 0.6 in the experimental group, indicating a more consistent performance among participants after the treatment. Conversely, the control group showed almost the same variability in both phases.

In terms of distribution, the skewness in the experimental group moved from -2,301 to -1.272, and kurtosis decreased by 4.860 points, suggesting a shift towards a more normal distribution. However, in the control group, these values changed only marginally. Moreover, the minimum score in the experimental group improved substantially by 3 points, implying a significant and positive effect on lower-performing students as well as the range, which narrowed by 3 points, reinforcing the consistency in improvement. The control group, in contrast, showed a minimal difference in range and a slight decrease in the minimum score.

Table 3

F-Test Two – Sample for Variances

	Exp. Post	Ctrl Post
Mean	9,3	8,9
Variance	0,6	0,7
Observations	43	43
Df	42	42
F	0,852	
P(F<=f) one-tail	0,303	
F Critical one-tail	0,598	

Note. Results of THE f-test for equality of variances. The test revealed no statistically significant difference in variances, F(42,42)= 0.85, P= .303

An F-test for equality of variances was conducted to determine whether the assumption of equal variances could be made for the post-test scores of the experimental and control groups. The result was not statistically significant, f(42,42)= 0.85, p=.303, indicating that the variances were equal. Therefore, a two-sample T-test assuming equal variances was used in the subsequent analysis

Table 4

T-test for Independent samples

	Exp. Post	*Ctrl Post*
Mean	9,3	8,9
Variance	0,6	0,7
Observations	43	43
Pooled Variance	0,6	
Hypothesized Mean Difference	0	
df	84	
t Stat	2,411	
P(T<=t) one-tail	0,009	
t Critical one-tail	1,663	
P(T<=t) two-tail	0,018	
t Critical two-tail	1,989	

Note. Results of an independent sample t-test assuming equal variances. A significant difference was found between the groups, t (84) = 2.41, p= .018 (two-tailed), indicating that the experimental group outperformed the control group.

An independent sample T-test assuming equal variances was conducted to compare post-test scores in both groups; experimental group (m=9.3, SD= 0.77) and the control group (M= 8.9, SD=0.84). The results indicated a statistically significant difference in performance, t (84) = 2.41, p= .018, suggesting that the implementation of the Design thinking approach contributed significantly to improving oral expression outcomes.

As part of the post-survey analysis in this study, key areas in terms of the DT stages are being examined to evaluate the impact of the intervention. These include the frequency and context in which students practice spoken English, as well as the specific oral practice strategies employed throughout the project, and students' interests in this new innovative method. Closed-ended questions used a Likert scale: Totally Agree (TA), Agree (A), Neutral (N), Disagree (D), and Totally Disagree (TD). Additionally, the interview explores the holistic benefits perceived by participants in each stage of design thinking, such as increased confidence, motivation, and engagement. Special attention is given to students' interest in innovative methodologies, particularly the integration of Design Thinking as a pedagogical approach. Finally, the analysis considers the difficulties students face in oral expression, offering insight into ongoing challenges and areas for instructional improvement

Table 5

Post survey results

#	*Survey Item (Summarized Statement)*	*TA*	*A*	*N*	*D*	*TD*	*Total*
1	Practiced oral English outside class	2	15	13	2	4	36
2	Practiced oral English in class	5	22	8	1	0	36
3	Oral English improved through project	2	23	9	0	2	36
4	Strategies used were effective	3	24	6	3	0	36
5	Teacher promoted empathy in activities	19	15	2	0	0	36
6	Used methods to generate creative ideas	13	18	5	0	0	36
7	Worked in team-based problem solving	14	16	6	0	0	36
8	Improved ideas through feedback	14	18	4	0	0	36
9	Experimented before selecting solution	14	17	5	–	–	36
10	Easier to speak in public in English	5	16	12	3	0	36
11	Can express ideas better in English	4	17	12	3	0	36
12	Would like more mini-projects	3	12	17	4	0	36
13	Interested in future DT-like projects	6	20	9	1	0	36
14	Content helped oral skill development	6	13	9	5	3	36

Note: Elaborated by Mariscal, Castillo & Contreras (2025)

The survey revealed that students practiced oral English both inside and outside the classroom, although classroom-based speaking was more frequent. Specifically, 75% of respondents (n = 27) agreed or totally agreed that they practiced their oral English skills inside the classroom (Item 2), compared to only 47% (n = 17) who reported doing so outside of it (Item 1). This suggests that the structured environment of the DT-based sessions provided more consistent opportunities for students to engage in oral communication. While informal or spontaneous speaking practice outside class was

less common, the classroom activities designed during the project offered a meaningful context for language use, aligned with the empathize and ideate stages of DT, where real-world problems and peer collaboration are emphasized.

The results also highlight the effectiveness of the oral practice strategies embedded in the DT process. Regarding the improvement of speaking skills, 69% of students (n = 25) agreed or totally agreed that their oral English improved during the project (Item 3). In comparison, 75% (n = 27) found the strategies used to be effective (Item 4). These outcomes reflect the interactive and student-centered nature of DT, which allows for sustained oral practice through brainstorming, prototyping, and feedback cycles. Additionally, 94% of students (n = 34) confirmed that they used methods promoting creativity before selecting a solution (Item 6), and 83% (n = 30) noted that they engaged in team-based problem-solving (Item 7). These findings align with Cevikbas and Kaiser (2022), who emphasized that DT enhances interpersonal communication and teamwork. The fact that 32 students also acknowledged that their teacher encouraged them to refine ideas based on feedback (Item 8) illustrates the iterative nature of DT and its role in scaffolding language production.

Further, 31 students (Item 9) agreed or totally agreed that they experimented with different solutions before choosing one, indicating their active engagement in the prototyping and testing phases. These stages often required presenting ideas verbally, receiving peer or teacher input, and then refining the spoken content. Such iterative, communicative experiences are key to promoting both fluency and confidence, as supported by Almalki (2023). Moreover, the confidence to speak in public in English saw modest improvement, with 58% (n = 21) indicating it became easier (Item 10), and a similar number stating they could now express ideas better (Item 11). This aligns with Gregersen and Horwitz's (2002) findings that structured, low-stress speaking environments reduce anxiety, leading to better oral performance.

Finally, students' interest in continuing with the DT methodology was evident. A significant number expressed enthusiasm for future projects involving creative problem-solving and collaboration: 72% (n = 26) said they would like to participate again in similar mini-projects (Item 13), and 42% (n = 15) agreed or strongly agreed with continuing collaborative work through design (Item 12). Although 17 students remained neutral about continuing, none expressed strong disagreement, indicating openness to the approach. This enthusiasm suggests that DT not only supports oral development but also motivates students by offering a more dynamic and participatory learning experience. As the abstract emphasizes, aligning university instruction with 21st-century skills requires approaches like DT that develop not just language skills but also creativity, critical thinking, and collaboration—skills highly valued in the labor market.

Qualitative data analysis

The table below comprises the students' insights shared during the interview. The data was organized and classified into six themes that covered their perceptions after the ten weeks of the Design Thinking implementation. The themes were: (1) Fluency and Confidence, (2) Motivation and

engagement, (3) Cognitive structuring, (4) Feedback and Reflection, (5) skills developed beyond English, and (6) Challenges and resolutions.

Table 6

Theme and Codification of interview transcripts

Theme	Subtheme	Code	Representative quote (Spanish / English)
Fluency and confidence	Overcoming fear of speaking	Confidence through repeated practice	*"At first, I felt embarrassed, but since we had to present several times... I started speaking with more confidence."*
	Preparation leads to self-assurance.	Confidence through preparation	*"Because I researched the topic myself, I felt more prepared… that increased my confidence."*
	Using familiar classroom dynamics	Continuity across courses	*"I had already seen this kind of dynamic in the ARP course…"*
Motivation and engagement	Group collaboration	Team-based motivation	*"I felt motivated by working in a group and knowing I had to share my part."*
	Authentic, real-world connection	Personal relevance	*"Talking about a real problem related to learning English made me feel more connected to the topic."*
	Active classroom environment	Dynamic learning experience	*"The interactive class activities and constant feedback… gave me more confidence."*
Cognitive structuring	Project stages: Define and Ideate	Organizing and focusing ideas	*"In the Define stage, I learned to focus my ideas… in Ideate, I practiced how to explain solutions more clearly."*
	Project stages: Prototyping	Structuring speech logically	*"I was able to organize my ideas better and evaluate whether the proposed solution was valid or not."*
Feedback and reflection	Peer feedback	Awareness of habits and delivery	*"Some classmates pointed out that I spoke too fast or used repetitive words."*
	Instructor feedback	Specific language improvement	*"My English teacher also gave me specific suggestions on how to improve my pronunciation."*

Skill development beyond English	Collaboration and listening	Teamwork and empathy	*"I learned to listen to different ideas, collaborate better, and divide tasks more effectively."*
	Coping with public speaking	Stress management and resilience	*"I learned how to better manage my nerves during a presentation."*
	Reading and vocabulary expansion	Academic literacy growth	*"I strengthened my reading comprehension… which was essential to prepare my explanations."*
	Thinking under pressure	Clarity in expression	*"I improved my ability to think clearly under pressure and express ideas in a simple way."*
Challenges and resolution	Public speaking anxiety	Performance anxiety	*"The lack of self-confidence and the nervousness I usually feel during presentations at the beginning of the project."*
	Team coordination and time	Group logistics	*"It was also difficult to coordinate with the group… I overcame it by organizing ideas more effectively."*

Note. The codification process was supported by artificial intelligence (AI) using ChatGPT (OpenAI, 2025), which assisted the researcher in identifying themes, generating codes, and organizing representative quotes. The researcher made final interpretations and thematic decisions following qualitative analysis standards

Table 6 portrays the interview data organized in the six main themes related to students' experiences with a problem-solving oral presentation project. The coding process was AI-assisted using Chatbot Data Analyst (OpenAI, 2025). Researchers retained full control over analytical decisions, ensuring adherence to qualitative research standards.

Fluency and confidence, for instance, showed a consistent pattern. The interview stated that there was a significant increase in both fluency and self-confidence when speaking. Along the same line, participants emphasized that repeated opportunities to communicate, combined with peer interaction and preparation, helped reduce initial anxiety, depicting how constant exposure to public speaking contributed to the interpretation and understanding of oral expression. Additionally, it was expressed that working with familiar content fostered confidence to articulate ideas.

Regarding the criterion of Motivation and Engagement, it was found that in terms of engagement, "it was strongly impacted positively by collaborative dynamics and the authenticity of the tasks. Learners frequently mentioned that Teamwork motivated them to actively participate using the language with a specific purpose. Furthermore, the real-world context of the project topic made the activity more meaningful and less intimidating than traditional classroom tasks, which increases the willingness to speak and contribute.

Additionally, Cognitive structuring was emphasized by the design thinking stages embedded in the tasks, playing a key role when helping students organize their thoughts and plan their speech. Those applied stages acted as a cognitive scaffold, encouraging also to clarity, sequence and coherence in students' oral expression, which is also connected to feedback and reflection, wherein students reported that both peer and teacher feedback were key in improving their performance, increasing awareness of their pacing, clarity and word choice showing in this way, how a supportive learning environment encourages reflective practices and continual oral development.

Beyond improvements in English speaking, learners also described gaining broader competencies, as evidenced in Table 6, within the students' answers. These reflections, considered as a metacognitive process, suggest that design thinking approach not only enhanced linguistic skills, but also fostered critical competences in both academic and real-world context which also impact significantly on how challenges when producing orally can be achieved from a more reflective pattern rather than affecting emotion-cognition, becoming learners aware of their strengths and weaknesses and what is more problem-solvers.

CONCLUSIONS

The following conclusions are detailed based on the research questions considered for this study:

(a) To what extent does the implementation of the Design Thinking approach improve the oral expression skills of EFL students compared to those who follow traditional instruction in a public university setting?

The findings of this study revealed that the integration of the Design Thinking (DT) approach significantly improved the oral expression skills of EFL students in the experimental group compared to those in the control group. Quantitative analysis showed a statistically significant increase in speaking performance ($t(84) = 2.41$, $p = .018$), with notable gains in fluency, delivery, and use of English, while also reducing variability among learners as seen in the decreased standard deviation and range. This improvement can be attributed to the iterative, student-centered nature of the DT methodology, which provided meaningful opportunities for authentic speaking practice. By engaging students in real-world problem-solving tasks and peer collaboration, the DT approach fostered increased motivation, reduced anxiety, and more consistent speaking outcomes than traditional teacher-led instruction.

(b) What perceived benefits do EFL students identify after participating in a Design Thinking-based speaking project?

Students reported multiple benefits from participating in the DT-based project, including increased confidence, enhanced motivation, improved cognitive structuring, and metacognitive and interpersonal development. Confidence grew through repeated presentations, better preparation, and familiar classroom tasks, which reduced their fear of public speaking and allowed them to express themselves more effectively. Motivation and engagement were boosted by collaborative work, real-world problem solving, shared responsibilities, and personally relevant topics, making learning more

meaningful. Cognitive structuring improved as students learned to organize and articulate ideas clearly, particularly during the Define and Ideate stages, which also enhanced planning and self-awareness. Finally, metacognitive and interpersonal growth was fostered through giving and receiving feedback, reflection on language use, teamwork, stress management, and critical thinking, contributing to their overall academic and professional competence.

(c) What challenges do students face when integrating the Design Thinking approach into the EFL curriculum at the university level?

Despite the positive impact of Design Thinking on students' speaking skills, some challenges emerged during implementation. Time management was initially complex, as students struggled to complete all stages of the DT cycle within the course schedule, especially when grammar gaps or limited vocabulary slowed progress. However, over time, they gradually organized themselves more effectively. The stage that required the most time was the Test phase, where students implemented their solutions at home and requested additional time to ensure proper execution. Irregular attendance of a few students and varied levels of engagement occasionally disrupted collaborative planning, but asynchronous communication through WhatsApp groups helped maintain group cohesion and productivity. Finally, learners suggested that project topics be customized to reflect their academic areas, which would foster more relevant language use and increase the real-world applicability of the skills being developed. This approach could enhance relevance, motivation, and long-term language retention, while continuing to support improvements in oral expression.

Limitations

A significant limitation in implementing the Design Thinking approach in the EFL courses was adapting its five stages into the course program. This adaptation demanded careful design foresight, and consistency to ensure that activities are coherent, feasible, and aligned with learning objectives. Likewise, students needed time to respond to this approach, especially during the Test phase, which was part of their asynchronous hours during the course. Still, thoughtful scheduling allowed students to reflect, rehearse, and ultimately improve their speaking skills.

REFERENCES

Almalki, A. (2023). The impact of integrating design thinking on EFL students' oral performance. *International Journal of Language and Linguistics, 11*(2), 45–52.

Alazeer, A. N. M., & Ahmed, Z. A. (2023). Students' speaking anxiety in EFL classroom. *International Journal of English Literature and Social Sciences, 8(2), 100-107.*

Baird, N., & Dilger, B. (2023) Supporting Discourse-based Interviews: Developing a Methodological Resource for Researchers and Students Using Design Thinking. *In Proceedings of the 41st ACM International Conference on Design of Communication (pp. 229-234).*

Batubara, K. B., Natalia, C. H., & Khairina, Y. (2024). Designing Innovative Learning Media for Speaking Skill based on the 4Cs (Critical Thinking, Communication, Collaboration, and Creativity). *In Talenta Conference Series: Local Wisdom, Social, and Arts (LWSA) (Vol. 7,* No. 2*, pp. 142-147).*

Brown, H. D. (2007). *Principles of language learning and teaching* (5th ed.). Pearson Education.

Brown, H. D. (2007). *Teaching by principles: An interactive approach to language pedagogy* (3rd ed.). Pearson.

Brown, T. (2009). *Change by Design: How Design Thinking Creates New Alternatives for Business and Society*. Harvard Business Press.

Cevikbas, M., & Kaiser, G. (2022). Enhancing student engagement through design thinking: A model for interdisciplinary collaboration. *Thinking Skills and Creativity, 43*, 101013. https://doi.org/10.1016/j.tsc.2021.101013

Cleminson, T., & Cowie, N. (2021). Using design thinking as an appr Using design thinking as an approach to creative and communicative and communicative engagement in the English as a Foreign Language (EFL) classroom. *Journal of University Teaching and Learning Practice, 18, 63-81.*

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Durán, E., & García, K. (2021). Exploring EFL teaching and learning processes in two undergraduate mandatory courses. *Profile Issues in TeachersProfessional Development, 23*(1), 145-160.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.

Guskey, T. R. (2015). *Pre-assessment: Promises and cautions*. https://tguskey.com/wp-content/uploads/Assessment-1-Pre-assessment-Promises-and-Cautions.pdf

Granda, G. A., Parra, J. A., Romero, E. R., & Vásquez, V. C. (2024). Design Thinking to Facilitate the Development of TEFL Students' Competencies. *Polo del Conocimiento, 9(12), 1345-1361.*

Gregersen, T., & Horwitz, E. K. (2002). Language learning and perfectionism: Anxious and non-anxious language learners' reactions to their own oral performance. *The Modern Language Journal, 86*(4), 562–570. https://doi.org/10.1111/1540-4781.00161

Guaman-Quintanilla, S., Chiluiza, K., Everaert, P., & Valcke, M. (2020, May). Mapping impact of design thinking in teamwork, problem-solving and creativity. *In Proceedings of the Design Society: DESIGN Conference (Vol. 1, pp. 1715-1724). Cambridge University Press.*

Jones, P. A. (2024). Design Thinking in Action: Fostering 21st-Century Skills Alongside Subject Specific

Knowledge at Key Stage 3 in D&T. *Design and Technology Education, 29* (2)*, 219-247.*

Liedtka,, G. J., Rahimi, M., & Fathi, J. (2024). Enhancing EFL learners' speaking skills, foreign language enjoyment, and language-specific grit utilising the affordances of a MALL app: A microgenetic perspective. Computers & Education, 214, 105015.

Li, R., Razali, F., Ismail, L., Muhamad, M. M., & Ma, X. (2024). Fostering autonomous learning in oral English through role play: An exploration in course setting. *International Journal of Instruction, 17*(3)*, 581-598.*

Liedtka, J., Holden, M., & Eldridge, J. (2018). Experiencing design: The innovators' journey. Columbia Business School Publishing.

Papert, S. (1982). Mindstorms: children, computers and powerful ideas. London: Harvester Press.

Puccio, G. J., Mance, M., & Murdock, M. C. (2011). *Creative leadership: Skills that drive change* (2nd ed.). SAGE Publications.

Rahmasari, B. S., Munir, A., & Nugroho, H. M. A. (2025). Fostering learner autonomy in EFL reading: a study of strategy-based instruction at two Indonesian universities. *Cogent Education, 12*(1)*, 2477367.*

Richards, J. C. (2006). *Communicative language teaching today*. Cambridge University Press.

Salomone, R. C. (2022, February 1). The inequities of English use in global HE must be addressed. Times igher Education

Schcolnik, M. Kol, S. and Abarbanel, J. (2006). Constructivism in Theory and in Practice. *English Teaching Forum.* N. 4. https://files.eric.ed.gov/fulltext/EJ1107896.pdf

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Temple, B., & Young, A. (2004). Qualitative research and translation dilemmas. *Qualitative Research*, *4*(2), 161–178. https://doi.org/10.1177/1468794104044430