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Artículo de investigación

Experiencias educativas, investigación y proyectos interdisciplinarios en entornos diversos

Impact of TEACH: A Virtual Pedagogical Model for Teaching English as a Foreign Language

Impacto de TEACH: un modelo pedagógico virtual para la enseñanza del inglés como lengua extranjera

Impacto do TEACH: um modelo pedagógico virtual para o ensino de inglês como língua estrangeira

William Ricardo Ortiz García[1], Johanna Patricia López Urbina[2]

Highlights

- This work developed a pedagogical model (TEACH) for English language teaching in virtual environments.
- The TEACH model was structured around five interconnected dimensions.
- The TEACH was model piloted in EFL virtual education classes.
- CLIL and problem-based learning approaches were incorporated into the model.
- The model can be adapted for teaching different foreign languages.

Abstract

This article proposes a virtual pedagogical model for English language teaching that is based on five dimensions: the technological-communicative dimension, the educational-pedagogical dimension, action-based research, competency development, and holistic learning. Its implementation involved 22 students from a bachelor's program in Languages with an emphasis on English at a Colombian university. This study was conducted in three phases: the creation of the TEACH model for virtual learning environments; the adaptation of the syllabus, based on content and language integrated learning (CLIL) and on problem-based learning (PBL) within the framework of an English-taught course; and data collection and analysis through interviews, Likert-scale surveys, observation, and learning analytics. The thematic analysis revealed three categories, yielding results related to interaction and research skills, the impact of task design, problem solving, and learning through experience. The findings highlight the interrelation of these aspects within the TEACH model, demonstrating improvements in English language learning. This study concludes that the model positively impacted learning by anticipating objectives, fostering critical thinking, enhancing communication, and facilitating implicit learning. Additionally, the structured interaction and the design of authentic, content-meaningful tasks played a key role in reinforcing learners' linguistic performance and engagement in real communication.

Keywords: 21st-century skills; CLIL; PBL; English as a foreign language; virtual pedagogical model

1 Doctor de investigación y docencia en Universidad Americana de Europa, México. Profesor de inglés en Universidad pedagógica y Tecnológica de Colombia:-Tunja, Colombia. Correo electrónico: william.ortiz@uptc.edu.co.

2 Magister de Economía y Política de la Educación en Universidad Externado de Colombia, Colombia. Docente de la Universidad Abierta y a Distancia (UNAD), Colombia. Correo electrónico: jplopezu@unal.edu.co.

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Resumen

Este artículo presenta la propuesta de un modelo pedagógico virtual para la enseñanza del inglés basado en cinco dimensiones: la tecnológico-comunicativa, la educativo-pedagógica, la investigación basada en la acción, el desarrollo de competencias y el aprendizaje holístico. Su implementación involucró a 22 estudiantes de un programa de pregrado en lenguas con énfasis en inglés de una universidad en Colombia. El estudio se desarrolló en tres fases: la creación del modelo TEACH para entornos virtuales de aprendizaje; la adaptación del programa de estudios siguiendo, un enfoque de aprendizaje integrado de contenidos y lenguas extranjeras (AICLE) y aprendizaje basado en problemas (ABP) en una asignatura impartida en inglés; y la recolección y análisis de datos mediante entrevistas, cuestionarios con escala Likert, observación y analíticas de aprendizaje. El análisis temático reveló tres categorías relacionadas con el desarrollo de habilidades de interacción e investigación, el impacto del diseño de tareas y la resolución de problemas, y el aprendizaje a través de la experiencia. Los resultados pusieron de manifiesto la interrelación de estos aspectos dentro del modelo TEACH, evidenciando mejoras en el aprendizaje de la lengua inglesa. Este estudio concluye que el modelo tuvo un impacto positivo en el aprendizaje al favorecer la anticipación de objetivos, el pensamiento crítico, la comunicación y el aprendizaje implícito. Del mismo modo, la interacción estructurada y el diseño de tareas auténticas y significativas desempeñaron un papel clave en el fortalecimiento del rendimiento lingüístico de los estudiantes y en su participación en la comunicación real.

Palabras clave: ABP; AICLE; inglés como lengua extranjera; habilidades del siglo 21; modelo pedagógico virtual

Resumo

Este artigo apresenta uma proposta de modelo pedagógico virtual para o ensino de inglês, baseado em cinco dimensões: tecnológico-comunicativa, educacional-pedagógica, pesquisa-ação, desenvolvimento de competências e aprendizagem holística. Sua implementação envolveu 22 alunos de um curso de bacharelado em Letras com ênfase em Inglês em uma universidade na Colômbia. O estudo foi conduzido em três fases: a criação do modelo TEACH para ambientes virtuais de aprendizagem; a adaptação do currículo, seguindo uma abordagem de aprendizagem integrada de conteúdo e língua (AICL) e aprendizagem baseada em problemas (ABP) em um curso ministrado em inglês; e a coleta e análise de dados por meio de entrevistas, questionários com escala Likert, observação e analítica de aprendizagem. A análise temática revelou três categorias relacionadas ao desenvolvimento de habilidades de interação e pesquisa, ao impacto do planejamento de tarefas e resolução de problemas e à aprendizagem experiencial. Os resultados destacaram a inter-relação desses aspectos dentro do modelo TEACH, demonstrando melhorias na aprendizagem da língua inglesa. O estudo conclui que o modelo teve um impacto positivo na aprendizagem, promovendo a antecipação de objetivos, o pensamento crítico, a comunicação e a aprendizagem implícita. Da mesma forma, a interação estruturada e a elaboração de tarefas autênticas e significativas desempenharam um papel fundamental no fortalecimento do desempenho linguístico dos alunos e no seu envolvimento na comunicação real.

Palavras-chave: habilidades do século XXI; ABP; AICLE; inglês como língua estrangeira; modelo pedagógico virtual

Introduction

The rapid expansion of technological advancements has intensified the need for students and teachers to enhance the educational use of virtual learning platforms through models that emerge in response to the ever-changing demands of society, such as the cultivation of 21st-century skills and the language development (Fathi *et al.*, 2024; Herrera, 2017). However, recent research shows that virtual environments where English as a Foreign Language (EFL) is taught often fail to provide sufficient opportunities for intercultural engagement, autonomy in the learning of languages, and meaningful interaction, which are key elements for students in undergraduate language programs (Fathi *et al.*, 2023; Hwang and Lee, 2023; Xu *et al.*, 2025). These challenges are specifically related to cultural awareness courses in which students must show progress and consolidated communicative competences, as well as the development of their ability to interpret and respond to cultural meanings.

As a result, innovative teaching methodologies should be created to guarantee students' participation, foster meaningful learning and provide them with tools to develop communicative, cultural and 21st-century skills. That is why the authors proposed, in this study, the implementation of a virtual pedagogical model designed for a virtual cultural awareness course, leveraging content and language integrated learning (CLIL) and problem-based learning (PBL) to enhance the language teaching processes, as well as to develop intercultural competences and 21st-century skills in students, which are essential in current language education frameworks (Xu *et al.*, 2025; UNESCO, 2025). Given the scarcity of research studies on how to integrate models in current virtual EFL and cultural courses, this study can offer a preliminary response to this pedagogical necessity.

Our model's intersection between pedagogical and technological tenets is aimed at encouraging language learning to open linguistic, cultural, technological, and social horizons, thus favoring student autonomy, which is underexplored in virtual environments (Fathi *et al.*, 2023; Hwang and Lee, 2024). Current education needs to promote independent processes and adapt to new paradigms, reinventing the way of teaching and learning (*e.g.*, a platform that is applicable in various educational sectors). Therefore, students require educational strategies to strengthen the use of languages while developing their intercultural competencies (Fathi *et al.*, 2023; Herrera, 2017).

As stated by Álvarez and Ramírez (2021), culture is a dynamic collection of historical semiotic resources, including language, beliefs, and customs, which are shaped through social interaction. These resources are acquired during socialization within various groups, so language learning and the development of intercultural competencies are crucial for language students to understand diversity among multiple languages and cultures. Additionally, students need academic proposals that strengthen skills such as critical thinking, collaboration, communication, self-management, and problem-solving. All this, in addition to the use of information technologies (ITs), is applicable to all disciplines, especially for undergraduate students in virtual modalities (Fathi *et al.*, 2023; Herrera, 2017; Hwang and Lee, 2024).

Considering these issues, this study is articulated around the following question: *what are the effects and outcomes of implementing a pedagogical model specifically designed for a virtual learning environment in a cultural awareness course, utilizing the CLIL and PBL approaches within the framework of 21st-century skills development?* The findings of this research offer valuable propositions for teachers and curriculum designers aiming to their teaching skills in virtual learning environments. This study provides a preliminary pedagogical alternative for addressing these gaps in virtual language education settings.

Theoretical framework

The theoretical constructs of this research are based on the five dimensions of the model, which contribute to the generation of new ways to redirect teaching-learning educational practices, focusing on the concept of a virtual learning model, its definition, and how it is grounded in PBL, CLIL, and 21st-century skills. In this manner, the virtual pedagogical model is highlighted as dynamic and renewing.

Virtual pedagogical models

Ever since the emergence of virtual learning, there have been some variations in response to the demand and changes brought about by technology. E-learning is constantly evolving, and new knowledge is generated every day. According to Ahmad *et al.* (2023), Fousiya and Mohammed (2024), and Moleka (2023), we are still in the educational phase of Education 5.0, despite the significant advances in virtual learning and artificial intelligence (AI). However, we are still far from Education 6.0, where teachers integrate student autonomy, personalized learning by embracing AI, and its ethical and responsible use of information within education, in order for teachers to foster a learner-centered ecosystem grounded in ethical AI use and cognitive flexibility, resulting in a dynamic learning environment in which information and communication technologies (ICTs) and AI can be used and adaptative analytical learning is promoted (Ahmad *et al.*, 2023; Fousiya and Mohammed, 2024).

According to recent literature, virtual pedagogical models are not limited to simply transferring content to virtual environments. Instead, they represent a formal structure that articulates coherent theoretical principles, didactic criteria, interactions, and assessment tools, as the TEACH model did. Means *et al.* (2014) indicated that a virtual model must guarantee conceptual continuity between instructional design, interaction, and technological support, while Garrison's (2016) community of inquiry approach defined the essential elements for sustaining teacher presence (cognitive and social) in virtual environments. Furthermore, Hodges *et al.* (2020) and Bozkurt *et al.* (2020) emphasized that a virtual model requires solid theoretical foundations that transcend the instrumental use of platforms.

According to González and Rivera (2020), and Camacho *et al.* (2024), virtual pedagogical models should be based on theoretical-formal constructions and scientific and ideological assumptions to address the needs of students and their educational realities, and, in this manner, achieve specific strategies, procedures, and techniques for their learning process. To establish a model, one must start with scientific modeling to navigate theory and practice, thereby defining a phenomenon, its best didactic understanding, and proposals to fulfil students' needs (Camacho *et al.*, 2024; Flores *et al.*, 2018).

In addition, this process is grounded in principles of current instructional design. Reigeluth (2020), Merrill (2012), and Branch and Varank (2009) argued that pedagogical models should incorporate authentic problems, meaningful interaction, continuous feedback, and coherence between objectives, content, technology, and assessment. From this perspective, the TEACH model aligns with current instructional design guidelines by applying theoretical principles in a practical proposal that is applicable to virtual English as a foreign language (EFL) courses.

In the case of this study, the authors projected a transition from theory to a reliable didactic proposal for cultural awareness classes in English, which were designed as virtual lessons. The methodology applied to these classes was entirely virtual but was complemented, according to students' needs, with in-person tutoring sessions.

Virtual pedagogical model: a proposal designed for an EFL course

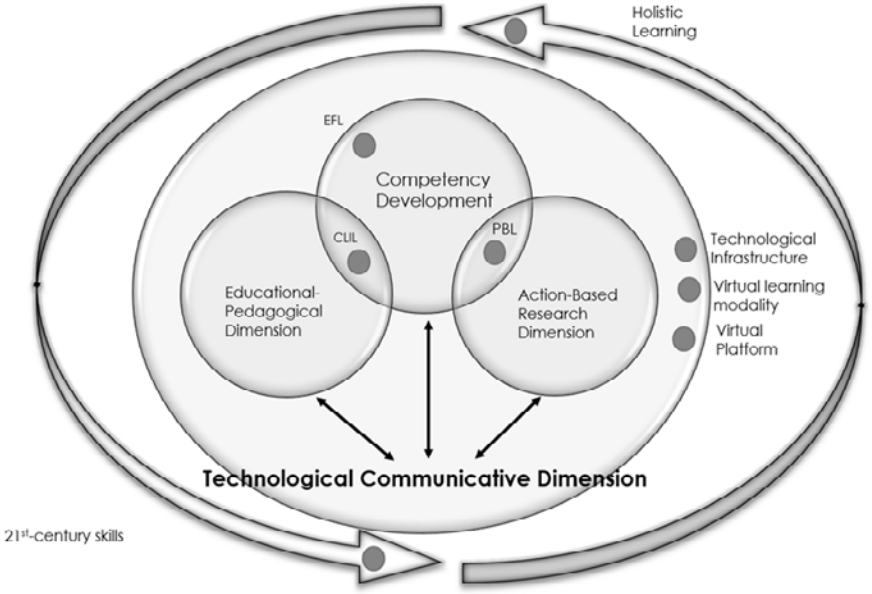
Structure and scheme. This proposal for a virtual pedagogical model represents the transition from theory to practice. Once some theoretical tenets have been analyzed, the design of a virtual pedagogical model is considered and proposed, serving as a conceptual reference in developing content for a foreign language-oriented class grounded in psychological, sociological, communicative, and ecological models of the learning process (Ortega and Romero, 2018). The aim is to move from the analysis and reflection of the educational process to the design and implementation of the pedagogical proposal. In this model, the technological pedagogical content knowledge (TPCK) framework is used as a reference. This framework is meant for teachers and aims to reinforce four elements originating from ICT use: technology, pedagogy, content, and knowledge. The model's structure is further strengthened by frameworks that explain how to coherently integrate content, pedagogy, technology, and interaction. This allows the model to work not only as a technical proposal but also as a formally grounded pedagogical model aligned with principles that have been widely validated in literature.

In contrast to the TPCK model, ours centers on the integration of dimensions that are properly articulated and implemented in a virtual class, which serves as a theoretical reference during its development, and not on the knowledge or skills a teacher needs to master to integrate ICT into teaching. It is structured as shown in Figure 1.

The TEACH (technological-communicative, educational-pedagogical, action-based research, competency development, and holistic learning) model consists of five dimensions that are articulated for a virtual course with specific characteristics. The central dimension is the technological-communicative one, as the course is virtual and technology and its branches serve as the main foundation. The

Figure 1

Virtual pedagogical model proposal: TEACH



technological-communicative dimension, in turn, encompasses the educational-pedagogical dimension, competency development, the action-based research dimension, and the holistic learning dimension—it is the transversal axis of the model, as it is directly related to each of them, thus creating a bidirectional work symbiosis.

For this reason, a relational process is presented, beginning with the largest dimension, and passing through the educational-pedagogical component, where students are provided with the foundations and the way classes are planned. Once the students understand the pedagogical bases on which the work will be done, the course content is introduced, and its execution is presented, following the approach for addressing the content throughout the semester, both academically and socially.

All dimensions, including the technological-communicative one, are framed within a key factor of this research: 21st-century skills, which learners today must possess and, given their nature, encompass all the components outlined in each dimension and the course.

Technological-communicative dimension. In this dimension, a learning management system (LMS) called *modular object-oriented dynamic learning environment* (Moodle) was used to take advantage of the integrated package of resources it contains, which promotes interactivity among students (Ontoria, 2014). Some of these resources are text page editing, website editing, linking to files, linking to web pages, and the design of quizzes, surveys, assignments, forums, chats, glossaries, and wikis. These components were used as part of the technological infrastructure, establishing communication channels.

In a virtual context, it is crucial to establish communication processes, as they promote personal and learning development, where participants engage in an instructional situation to understand the content (Fathi *et al.*, 2023; Hwang and Lee, 2024). In other words, communication is central to the teaching and learning process, where participants reach knowledge through technological mediation and interaction (Fathi *et al.*, 2023; Hwang and Lee, 2024).

From the perspective of technological mediation, Vargas *et al.* (2024) argued that technology transforms learning when it redefines opportunities for interaction, collaboration, autonomy, and analysis. This underscores the role of this dimension in the TEACH model as the central axis for all communicative and pedagogical processes.

Educational-pedagogical dimension. This study aimed to teach students how to actively participate in their process, drawing from their educational experiences and social reality to intervene, innovate, propose, collaborate, manage, decide, and share their learning. Furthermore, another construction used for the creation of the model was the incorporation of CLIL in its development, as this methodology allows students to redirect learning processes towards the appropriation of knowledge through content (Camacho *et al.*, 2024; Eggen and Kauchak, 2015; Yaguara *et al.*, 2022).

The CLIL approach is grounded in socio-constructivist principles that promote meaning-making through authentic tasks, scaffolding, and the functional use of language (Coyle *et al.*, 2010). Similarly, Becker and Park (2011) showed that integrated approaches strengthen deep learning by integrating cognitive and linguistic domains. Therefore, it was incorporated into the TEACH model.

Action-research. In our model, a coinvestigative dimension fosters social learning and cooperation through experiential dialogue, allowing individuals and organizations to collaboratively explore crises and conflicts. This dimension also enables shared understanding and the production of social knowledge, fostering transformative change in uncertain situations (Aguirre, 2018; Valenzuela, 2008).

Moreover, there is a correlation between the educational-pedagogical dimension and the action-based research one. In this convergence, PBL becomes useful, and, due to its nature, students are able to showcase their social skills in order to problematize both individually and with others, thus contributing to the socio-constructivist theory and other elements that facilitate working with peers.

PBL is grounded in socio-interactionist theories, which posit that knowledge is constructed through the shared analysis of real-world situations (Walker and Leary, 2023). Regarding this, Sinaga (2021) explained that structured collaboration facilitates the collective construction of knowledge, which supports the articulation between action research and PBL within the TEACH model.

The reason these two dimensions converge has to do with the way we combined CLIL with PBL. The former is an integration of content and language (Yaguara *et al.*, 2022), largely supported by the principles of PBL.

Competency development. This dimension is designed to address the needs of EFL students concerning the development of English language skills and their intercultural competencies. The cultural awareness course aims to consolidate the language and improve linguistic and intercultural skills through the input and output with which students work. This dimension is closely related to the technological-communicative dimension, since students must possess knowledge related to technology and communicative resources—they must collaborate with peers to communicate during specific tasks with the teacher.

EFL develops within this convergence. The content is developed in English, and virtual meetings are also held in this language. The reason these two dimensions converge has to do with the way we combined CLIL, EFL, and competencies, as CLIL is an integration of content and language, and language-related issues were worked on while teaching and learning English (Camacho *et al.*, 2024; Eggen and Kauchak, 2015; Yaguara *et al.*, 2022). The proposed activities are designed in such a way that the student consolidates the receptive (listening and reading) and productive (speaking and writing) skills, which develop through their use of the target language.

Competency-based education requires the use of knowledge in authentic situations. Ponomariovienė *et al.* (2025) pointed out that competencies are developed when students articulate knowledge, skills, and attitudes to solve real-world tasks. Likewise, Rahman and Pandian (2018) demonstrated that CLIL-EFL integration in virtual environments fosters both linguistic and intercultural competences, thus reinforcing the relevance of this dimension in the TEACH model.

At this point, a relationship between the tenets of CLIL, PBL, and EFL can be pointed out. The relationship lies in the fact that the content, which is primarily aimed at developing students' 21st-century skills, is worked on and supported by PBL, so there is a combination of CLIL and the PBL methodology, and the language component is oriented towards EFL.

Holistic learning dimension. This dimension encompasses the other four, given its integrative nature. It has to do with the expected learning outcomes of the model's implementation, aiming for students to develop skills across all dimensions in a comprehensive manner. These include content mastery, language proficiency, competency development, technological skills related to ICTs use, and 21st-century skills. Learning within this dimension should seamlessly integrate all aspects that constitute the proposed model.

Holistic learning integrates multiple dimensions, including cognitive, emotional, social, and technological ones. Miller (2019) claimed that this approach strengthens comprehensive educational processes, wherein learners integrate multiple ways of knowing and acting. Accordingly, the holistic dimension of the TEACH model consolidates the expected outcomes of the other dimensions and provides overarching coherence.

Finally, 21st-century skills represent a central axis of the TEACH model. Thornhill-Miller *et al.* (2023) described them as a set of required competencies for navigating technological and challenging environments, *i.e.*, critical thinking, creativity, communication, collaboration, and digital literacy. Therefore, these skills function as a cross-cutting component that integrates and guides all dimensions of the TEACH model.

Methodology

This study adopts a qualitative reflective action-research approach. A distinguishing feature of this approach is the self-reflection of the professionals or teachers involved in the proposed practice (Paukner and Sandoval, 2018). As noted by Botella and Ramos (2019), although various action research models exist, they all rest on the cyclical process of action-analysis-reflection-action. As additional advocacy, the study also included statistical support based on categorical data collected from the participants.

This study was conducted in three distinct phases. During the first phase, the TEACH model was developed alongside the instruments necessary for observing the outcomes of its implementation; within this framework, students' processes and interactions were monitored throughout the study. Them, we validated these instruments with the input of field experts and colleagues, which prompted various enhancements to the instruments. In the second phase, the model was implemented in the cultural awareness course, involving a total of 22 pre-service teachers. Simultaneously, in the third phase, the researchers collected and analyzed data while following the principles of action research. This process enabled thoughtful reflection on the students' learning experiences, which in turn facilitated improvements in the model's design.

Context and participants

This study was conducted at a private university in Bogotá, Colombia, with pre-service teachers of a virtual undergraduate program in languages with an emphasis on English, whose students are located across various regions of the country. The participants were enrolled in a cultural awareness course where 20% of the work is synchronous and 80% is asynchronous. Initially, the study aimed to include 50 students. However, a sample of only 22 students was selected to complete the instruments. This non-probabilistic and intentional sample was chosen based on our goal of maximizing the model's contribution to the

development of cultural course content and 21st-century skills as well as reinforcing students' EFL proficiency. The participants demonstrated varying levels of English proficiency, which was measured according to the Common European Framework of Reference for Languages (CEFR). The student population was predominantly female, with 70% women and 30% men, and their ages ranged from 20 to 35 years. Notably, some of the students were already working as teachers in schools.

Data collection instruments

When designing the instruments, the researchers drew upon the framework established by Méndez and Peña (2007), ensuring alignment between research problem, study objectives, research question, and justification. The first instrument employed was learning analytics, which focuses on optimizing learning and educational environments through the measurement, analysis, and reporting of data. Learning analytics was selected for this research due to the necessity of monitoring users' interactions in the virtual learning environment. These data allowed evaluating the consistency of the pedagogical model in order to better support students' needs and assess the effectiveness of learning paths from the statistical information obtained.

The second instrument comprised Likert-type surveys, supplemented with open-ended questions. The first survey comprised 19 questions regarding the procedural process, while the second included 20 questions that encouraged students to elaborate on their learning experiences and provide justifications for their responses (López and Fachelli, 2016).

Comparatively, the third instrument included interviews designed to capture the participants' perspectives, including their feelings, thoughts, emotions, beliefs, opinions, meanings, and actions (Schettini *et al.*, 2017). The researchers conducted two semi-structured interviews: one was conducted midway through this implementation and consisted of seven questions, while the other was given at the end and comprised eight questions.

For this study, some observations were conducted during synchronous classes to assess students' specific and overall performance. It is worth noting that observations and learning analytics were combined to report the findings. Each of these instruments was crafted to contribute to a comprehensive understanding of the research question and the study's objectives. These instruments were designed and selected to ensure internal consistency with the qualitative nature of the study while allowing for analytic depth and pedagogical insight.

Pedagogical design

The implementation of the cultural awareness course followed a series of structured steps to ensure pedagogical coherence and an effective instructional approach. First, a content-focused subject delivered in English was selected, and its syllabus was redesigned based on the principles of CLIL. Content topics were chosen and aligned with current global issues, and the course was structured around the development of 21st-century skills. The course lasted four months, divided into three terms with an equal number of weeks and instructional hours. Four core tasks were designed: discussion forums, assignments, reading quizzes,

and film forums. All tasks promoted the use of the four language skills (listening, speaking, reading, and writing). However, two tasks emphasized receptive skills, while the other two focused on productive ones. The course was uploaded on the Moodle platform and guided through a combination of synchronous and asynchronous classes, applying PBL principles. The study was implemented following the pedagogical guidelines of the TEACH virtual model, which was specifically designed for this course. Over a period of two years, the model underwent four iterative cycles, wherein it was implemented, evaluated, and refined until it reached its final version, which was used in the last implementation cycle.

Data analysis

Following data collection, and when data saturation was determined, the researchers opted to employ thematic analysis in order to explore the data, adhering to the model proposed by Naeem *et al.* (2023). This process incorporated both deductive and inductive coding of the collected data, along with the triangulation of all designed instruments. The systematic coding process was succeeded by comparative and axial analysis, which facilitated the identification of concepts and subthemes that contributed to the emerging themes. Ultimately, the researchers established these emerging themes as the categories of the study.

Likewise, when creating the categories, the researchers focused on identifying the qualities and characteristics of the data, noting both differences and similarities. Data exhibiting similar characteristics were grouped into the same category and analyzed using the applied instruments. The three main categories share the findings.

Results and analysis

This research demonstrates the impact of the TEACH model. In this section, the authors show the results obtained after examining data collected, based on the categories that emerged.

Language or content? Rethinking learning objectives in English classes through learner-content interaction

Students argued that a content-based approach to language learning promotes meaningful learning, rather than focusing on structural or formal aspects. They pointed out that this approach intuitively and naturally improves their productive language skills, such as speaking and writing. This approach has allowed them to develop critical thinking and reflection in terms of their learning process, and to consider the target language as a tool in learning, rather than as the final goal of the process. Similarly, this approach allowed them to develop other skills simultaneously, including language awareness, knowledge acquisition, vocabulary development, and explicit language skills, as reported in similar studies by Doiz *et al.* (2014), Lasagabaster and López (2015), and Berdiyeva (2024).

> LH: When we (our team) realized that grammar, fluency, and pronunciation were not the criteria for evaluation, we focused more on the content. We didn't worry about how we were going to say it, how we were expressing ourselves, or whether we were speaking well. I got much less frustrated. [Int[3], Nov of 2022]
>
> AR: It works for me that the teacher evaluates based on content because it gives me more freedom and allows me to make mistakes. Sometimes, when we're in a class where we're evaluated more on language use, that fear of making mistakes makes us make even more mistakes. [Int, Nov of 2022]

Students reported that focusing on the content reduced their anxiety and allowed them to express themselves more easily. They felt motivated to speak freely without fear of error, knowing that their performance would be assessed by their contributions to the class. Consequently, they overcame the barriers in communication, anxiety, or nervousness, which has also been reported in other studies (Dalton-Puffer *et al.*, 2009; Lasagabaster and Doiz, 2016), since the participants accepted errors as part of a process that was not meant to be punitive.

Student performance was analyzed through three evaluations for two distinct scenarios that emerged from two criteria considered in the assessment section: scenario 1 implied the identification and use of relevant information presented in oral presentations; scenario 2 implied the development and fulfillment of task parameters in oral presentations. The data indicate a significant improvement in student performance across scenarios 1 and 2 across the three academic terms. Specifically, there were notable increases of 34.78 and 29.08% in the 'excellent' and 'very good' performance categories, respectively. Conversely, the 'good' performance category experienced a decline, suggesting a transition towards higher levels of achievement, with decreases of 21.27 and 17.39% in scenarios 1 and 2, respectively. Furthermore, the lowest performance category, 'did not meet the criteria', also exhibited a minimal reduction in its number of students.

Previous results illustrate this positive progression, highlighting a marked shift from the 'good' and 'did not meet the criteria' categories to the 'very good' and 'excellent' ones, as observed in the learning analytics. This contrast between the two scenarios emphasizes the efficacy of targeted interventions in enhancing students' oral presentation competencies [Obs, Aug-Nov of 2022].

The participants claimed to have improved their performance in productive skills through assertive and relevant interventions in class. They stopped considering mastering the target language as a final goal and instead focused on other aspects such as critical and reflective thinking, on deepening content understanding, on acquiring higher levels of knowledge, on assertive communication, and on building self-confidence. This shift allowed them to stop thinking inductively about formal language resources and adopt a deductive approach, focusing on competencies rather than structures.

> LL: When we are stuck in the structuralism and formalism of the language, it feels as though we are limited. It's as if we're told, "You have to think this way and express yourself this way". The way we work in this class is useful because it gives us the freedom to expand, to think, and not to focus on how we are going to

3 To protect the sample's confidentiality, the participants will be identified using the first letter of their first name and the first letter of their last name. For instance, Diego Florez as DF. Int. = interview; Obv. = observation.

> say it, which is the limiting factor. It gives us the opportunity to use our cognitive abilities and allows us to think even in our mother tongue. [Int, Nov of 2022]

Similar to previous studies, the use of the mother tongue fostered the students' fluency, confidence in the interaction, and critical thinking (Littlewood and Yin, 2011; Berdiyeva, 2024), all without the pressure of being graded based on formal and strict language use. This approach decreased their concerns about mistakes while promoting linguistic skills in English.

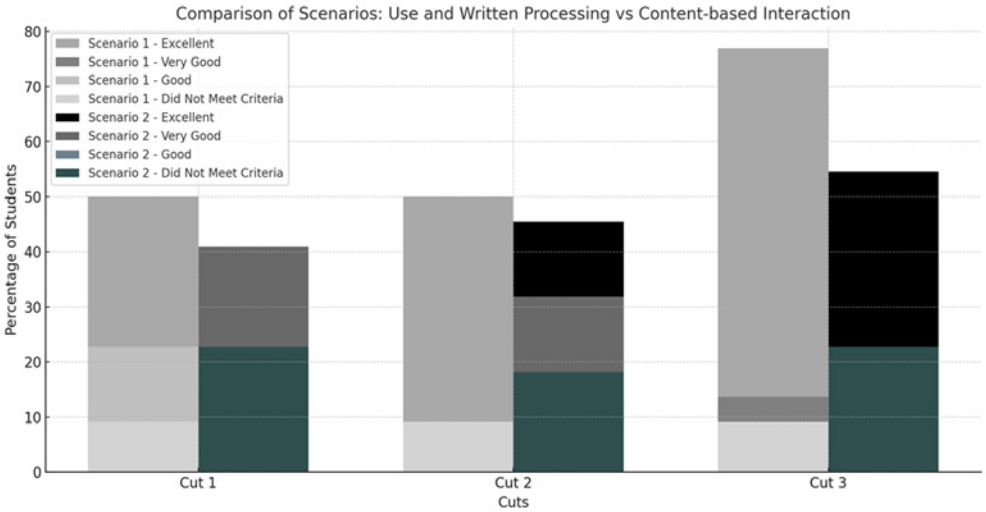
> GR: I prefer being assessed on content rather than language use because I feel more comfortable and freer to express myself. In other classes, worrying about mastering the language correctly limits me. But when I focus on content, I can express myself better, and I end up producing more English. [Int, Nov of 2022]

Thereby, authors could establish that this approach allowed students to use the language for meaningful communication in both oral and written form.

Figure 2 illustrates a performance comparison across three evaluation cuts for two scenarios. On the one hand, scenario 1 implied the use and written processing of information. On the other hand, scenario 2 implied content-based written interaction. In scenario 1, there was a marked increase (27%) in students achieving the 'excellent' rating, underscoring an enhanced capacity for processing and engaging with written materials. The elimination of the 'good' category, declining by 22.73%, indicates that students progressed to higher performance tiers. In the case of scenario 2, it reflects an increase in the 'excellent' category (18.19%), signaling improved interactions with content-based written assignments. The modest increase in the 'good' category and the absence of students in the 'did not meet the criteria' category points to overall academic success.

Figure 2.

Learning analytics: written processing of information vs. content-based written interaction



The findings indicate effective pedagogical strategies leading to enhanced learning outcomes, as evidenced by a greater number of students achieving elevated performance levels by the third assessment period. Figure 2 illustrates student engagement dynamics when content comprehension is prioritized. The absence of a language-focused interaction pressure appears to have alleviated student anxiety, allowing them to review and refine their submissions before finalization [Obs, Ago-Nov of 2022].

Using English supports lifelong learning, allowing students to use the language naturally and spontaneously, within a more realistic approach to language development (Flores *et al.*, 2018; Ortiz and Navarrete, 2024), accepting errors as part of the process. A learner who thinks in terms of content expresses ideas based on content, while a learner focused on language formalism expresses limited ideas that conform to structural constraints.

Focusing on the learning objective led to positive results through learner-content interaction. This shift creates opportunities for critical thinking and communication, framed within 21st-century skills (Dede, 2010; Binkley *et al.*, 2012; Hilton and Pellegrino, 2012; Lamb *et al.*, 2017), such as conceptualization, reasoning, comprehension, and negotiation, to facilitate knowledge construction and production expressed linguistically (Li, 2023; Ling, 2023). Thus, language is seen and used as part of the learning process, not as the goal itself. These findings highlight the importance of teaching approaches: when content is valued more than linguistic precision, English transitions from being the objective to serving as a means for learning, contemplation, and engagement. This viewpoint transforms the language classroom into a setting for critical thinking, cultural awareness, and meaningful communication, instead of mainly emphasizing language accuracy.

Learning through interaction: fostering research skills via a structured procedural process

PBL represents a form of real interaction that facilitates learning the target language through its use. Students are confronted daily with decision-making, interactions, socializing, mediating, and correcting (Ali, 2019). Particularly, they develop habits in the foreign language just as they do with their mother tongue. As a result, constant interaction with problematic situations encourages them to develop linguistic skills (implicitly) and communicative skills (explicitly), as they are engaged in argumentation and in-depth cognitive analysis (Othman and Shah, 2013; Ansarian and Mohammadi, 2018; Kök and Duman, 2023). Essentially, they simulate their daily life, fostering higher cognitive aspects in English.

When the participants were told about the PBL methodology, 87.50% agreed that problem-solving is useful for them. The reasons varied, *e.g.*, "problem-solving is part of our daily life in any context. Also, it enriches our vocabulary and places us in a less structured context, where communication is of the utmost importance" [survey excerpt, Q7, Oct of 2022]. Similarly, team formation fosters real interaction and communication.

> LR: I like teamwork and working in groups because you must listen to others, which is very important. Also, while we're practicing our English, there is a student-to-student and student-to-teacher relationship where a classmate who knows more than you can explain things, and you might learn from that. [Int, Nov of 2022]

This approach also gave students the opportunity to teach their classmates and learn at the same time. This created a win-win relationship, where all team members benefited while developing lifelong learning capabilities such as authentic integration of skills and the processing of information from varied sources (Sultana and Zaki, 2015; Ali, 2019). Moreover, approaching content from a problem-centered perspective generated spaces for discussion where students reconsidered their positions or strengthened their arguments to validate them in front of others.

> When solving a problem as part of an activity, it requires me to do extensive reading to come up with the correct solution. At the same time, I take note of the points I find interesting and then focus on my response, whether oral or written. [Survey excerpt Q. 6, Oct of 2022]

Additionally, the authors designed tasks in which students used all skills, not as the main purpose of the class, but as a tool within it. Therefore, this approach is both inductive and natural, so students can focus on a process rather than on the formal use of the language. It is worth noting that, throughout this process, the students had the opportunity to develop essential skills: problem-solving, decision-making, and social and communicative skills, all framed within the context of 21st-century skills (Wolff, 2007; Dede, 2010; Binkley *et al.*, 2012; Hilton and Pellegrino, 2012; Lamb *et al.*, 2017).

Similarly, the procedural behaviors required that students reviewed the resources used in class multiple times. This constant review, and even consulting other sources of information, involved a continuous process of interaction with the materials and other resources in English. One participant expressed: "what I do is focus on what is being asked, using the material you offer us. Based on that, I investigate more about the topic, gather other readings, and then prepare myself to participate" [Int, Nov of 2022]. Throughout the course, students had the opportunity to consult sources beyond those provided in class, helping to establish a learning path focused on their active participation, ensuring assertive contributions.

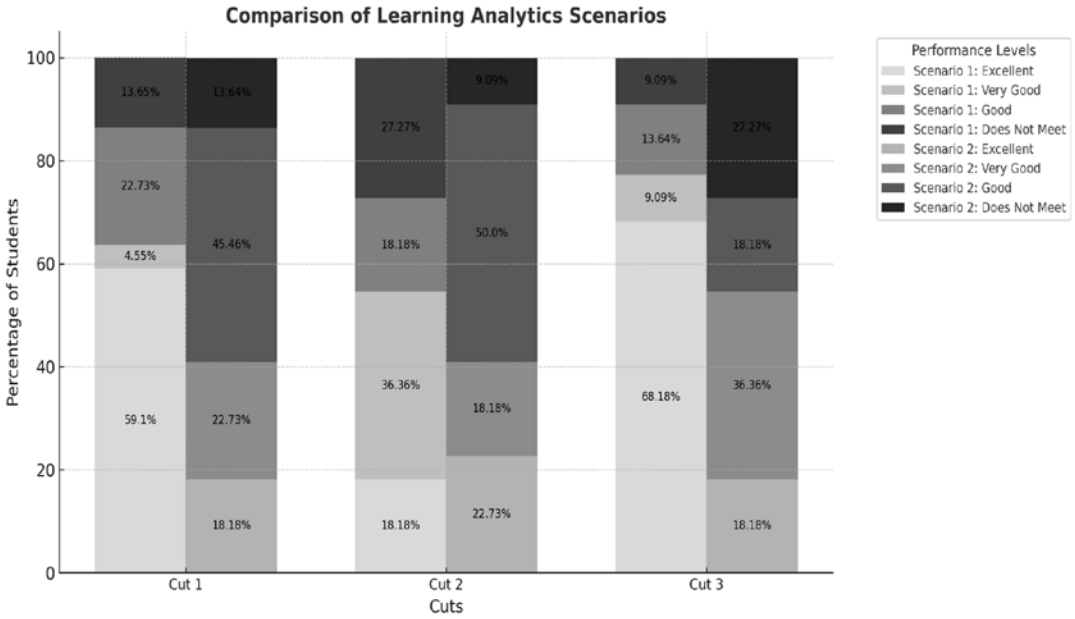
Indeed, question 6 from survey 1 showed that 75% of the students consulted additional sources of information, reinforcing their interaction with content and beginning to develop research behaviors.

Figure 3 provides a comparative analysis of two scenarios that emerged from two criteria considered in the assessment section: scenario 1 implied the instructions followed, and the problem solved in the written forums; scenario 2 involved the instructions followed and the oral assignments' problem.

Scenario 1 shows consistent improvement in student performance over time. Initially, 59.09% of students were rated as 'excellent', while 22.72% did not meet the criteria. However, by the third term, 63.64% reached the 'excellent' level, with only 9.09% not meeting the standards. In contrast, scenario 2 exhibited more fluctuations in performance. In the first evaluation, a significant portion of students (40.91%) was rated as 'excellent' and 36.36% as 'very good'. In the second evaluation, performance improved, and no students fell into the lowest category. Instead, in the third evaluation, there was a slight decline in the number of 'excellent' ratings, and an increase in the 'did not meet criteria' category to 31.82%. This suggests that, while some students initially performed well, others struggled to maintain their progress.

Figure 3

Learning analytics: instructions followed



Under this virtual pedagogical model, the ability to refer to and consult multiple sources of information fosters investigative and co-investigative skills, which could be defined as an advantage of the method. In agreement with some previous studies, students became more analytical and sought out information, incorporating the practice of refining knowledge during their learning process (Rieh *et al.*, 2016; Presnukhina *et al.*, 2020).

Therefore, by researching additional resources, students expanded their vocabulary range, diversified their input, and encountered more complex material. This allowed them to delve more deeply into the use and practice of the language, without limiting themselves to the sources they initially had. Their performance reflected their ability to receive, process, reformulate, manipulate, transform, and reproduce information according to the procedure followed and the interactions resulting from that process.

Therefore, the problem-based learning approach not only fosters linguistic development but also enhances a more critical, autonomous learner that is capable of engaging with knowledge from multiple perspectives and applying it meaningfully in real world contexts.

Effective task design: integrating language skills, critical thinking, and contextual learning for meaningful student engagement

The use of material resources, the selection of content, and the planning and design of tasks—some more complex and extensive than others—had a positive impact on this virtual learning environment.

When students were asked about their preference between long or short input activities (questions 8 and 6 from survey 2), 50% expressed indifference towards the length of the input activities. Instead, their priorities were weighed toward factors such as the relevance of the content and the alignment with their proficiency levels. A participant claimed: "I don't prefer either. I think the activities should be intermediate; not too short, because they don't challenge me, but not too long either, because they can become tiring" [Survey excerpt, Q. 9].

> BV: When the product of the task involves a skill, I don't manage well, it challenges me and makes me study more. It's not about whether the output is short or long, but about the skill being developed according to the task. [Int. excerpt, Q. 6]

The development of thinking around content, argumentation, and deep analytical reflection processes was stimulated. On the other hand, the structure of the tasks—in terms of both input and output—contributed to the development of language skills. Since the tasks were content-based, these skills played a fundamental role.

Regarding the design of input activities for learning (question 12 from survey 2), students recognized the significance of the activities on the virtual platform, with 71.4% expressing total agreement and 28.6% a strong agreement. Indeed, one participant asserted: "Everything is important when you're learning, and the interesting thing about this class is that it's not the typical one where they tell us about a decontextualized world—a bit from here, a bit from there—, but rather something that feels linear and logical" [Survey excerpt, Q. 12].

Additionally, it is worth noting that the inputs were diversified with regard to English accents and cultures, which had an even greater impact on the students by broadening their horizons, thus preventing them from being exposed to a single source.

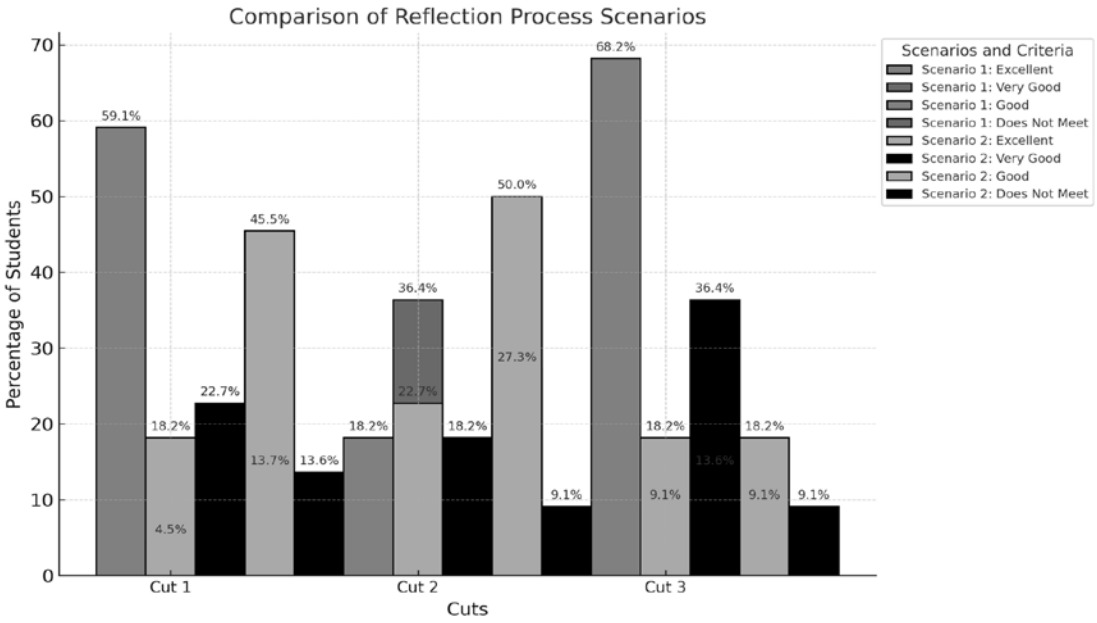
By the same token, when the participants were asked if the complex activities challenged their English language skills (question 7, survey 2), 66.7% of the students agreed that input tasks integrating two or more skills challenge them to improve their language level. Likewise, a total of 28.6% completely agreed with this statement, while the remaining 4.8% disagreed.

Figure 4 presents the development of students' critical thinking and reflection skills in two scenarios involving written forums and oral presentations across three evaluation periods. In scenario 1, where students engaged in a written forum-based reflection process focused on content and critical thinking, notable improvements were observed. The percentage of students achieving 'excellent' performance increased from 59.09% in the first assessment to 68.18% in the third. Conversely, scenario 2, which involved oral presentations, demonstrated a more modest progress. The percentage of students who reached the 'excellent' category remained stable between 18 and 22%, while the 'very good' category increased from 22.73% to 36.36%, reflecting improved oral reflection skills.

In this sense, task design should strike a balance: it should not be too short because this would limit students' opportunities to practice and make good use of resources, nor too long, as this could cause them to lose focus and complete the task merely for the sake of compliance (Tomlinson, 2008, 2023; Rao, 2019).

Figure 4

Learning analytics: reflection process



The materials encouraged the constant use of English, which positively impacted the students' performance throughout the course. Furthermore, it should be highlighted that, through the way the activities were presented (via the platform and the TEACH model), the participants had the opportunity to work on and develop their information, media, and ICT literacy, which are integral components of the 21st-century skills (Dede, 2010; Binkley *et al.*, 2012; Hilton and Pellegrino, 2012; Lamb *et al.*, 2017).

Conclusions and implications

The TEACH virtual pedagogical model enhanced English learning by enabling the early establishment of learning objectives. Content-based lessons fostered critical thinking, analytical reasoning, and reflective practices while promoting effective communication. By emphasizing non-linguistic skills, the model helped students overcome communication barriers and improve interaction.

The key to the success of this pedagogical model is the symbiotic relationship between its five dimensions, which need to be mutually reinforced in terms of coherence and cohesiveness. To be effective, the TEACH model requires a structured system of interaction between students, peers, teacher, content, and resources, all aligned with the objectives of the learning and communication process. These interactions enable language development through real use and the improvement of 21st-century skills.

Note that the TEACH model fostered the development of investigative and co-investigative skills, allowing students to engage in deeper procedural learning and effectively interpret linguistic input. Simultaneously,

students also exhibited linguistic improvements through implicit learning, driven by consistent and rigorous target language use, even when linguistic development was not the model's main goal.

Natural and authentic language use encouraged spontaneous communication, avoiding the rigid constraints of traditional instruction. Integrating language use within a culture course enhanced students' comprehension and application of content, shifting the focus from the formal mechanics of language to meaning-driven communication.

For further research, one recommendation is to integrate a competency-based assessment system that evaluates both content and language, as students expressed a clear need for linguistic feedback. Furthermore, working groups should be limited to three members and remain dynamic to ensure effective communication. Strong commitment from both students and teachers is essential. Future adaptations should incorporate scaffolding strategies to support motivation and participation throughout the process.

This model can be adapted to teach any language, as it integrates content and language effectively. Adjusting task design and assessment strategies to different contexts may enhance its adaptability and scalability.

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