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PROPOSAL FOR GAMIFICATION TO STRENGTHEN COMMUNICATION SKILLS IN ENGLISH IN THE FIELD OF ENGINEERING

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Abstract: This article addresses the implementation of gamification as a pedagogical strategy to strengthen English communication skills in the field of engineering. It is based on the premise that, in a globalized and digitized context, proficiency in English is essential for professional performance, particularly in technical areas where effective communication is key. In Mexico, the low proportion of the population that is proficient in English reflects the need to explore innovative teaching alternatives, including the use of active methodologies supported by Information and Communication Technologies (ICT). The research was carried out with a group of engineers from the company TEC Engineering in Mexico, who took an intermediate-level English program. The strategy consisted of integrating gamified dynamics through a system of points and digital badges, supported by platforms such as Educaplay, Kahoot, Wordwall, and Google Forms. Over the course of twelve weeks, weekly activities were implemented that allowed students to accumulate scores and obtain digital recognition, encouraging motivation and commitment to the course. The results show a progressive increase in student performance and participation, reflected in the higher number of badges obtained in the middle and final blocks of the course. Likewise, the survey conducted at the end of the experience showed a high level of satisfaction and positive perception of the strategy used, highlighting the role of gamification in promoting intrinsic motivation and autonomous learning. In conclusion, this proposal shows that gamification not only contributes to strengthening communication skills in English, but also presents itself as an effective methodology for improving the performance and motivation of engineering students, generating a model that can be replicated in other educational and professional contexts.

Keywords: Gamification; English communication skills; Engineering; Information and Communication Technologies (ICT); Student motivation; Active methodologies.

INTRODUCTION

In today's digitalized and globalized world, communication skills are a topic of interest for international organizations such as the OECD, which has announced that it will continue to work in support of international trade and the importance of dialogue, as well as ensuring that students develop the skills necessary to thrive (OECD, 2025). Similarly, UNESCO, in its work "Education and Global Competencies," highlights intercultural communication skills as essential for international cooperation and negotiation (UNESCO, 2015). Various international initiatives incorporate elements of gamification into their educational sections to strengthen these skills. One example is the TILA/TECOLA Telecollaboration Project for Intercultural Language Learning, promoted by the European Commission (IULMA, 2025).

In Latin America, the SUMMA educational research and innovation laboratory has a platform called "Mapa de Innovaciones" (Map of Innovations) for sharing successful experiences and programs such as "Dialogic Classroom," where gamification is a strategy for strengthening collaborative dialogue in teaching-learning processes (SUMMA, 2017).

In Mexico, only 5% of the population is fluent in English and only 3% of graduates have formal training in English, ac-

cording to data from the Mexican Institute for Competitiveness (IMCO, 2023), which shows that the traditional teaching system has not made significant progress.

The use of Information and Communication Technologies (ICT) has become an indispensable tool for teaching foreign languages, as it allows for the creation of interactive learning environments that promote motivation and active participation, as well as the development of meaningful skills. According to Cabero and Llorente (2020), autonomous and collaborative learning is enhanced by the pedagogical implementation of ICT and increases the quality of skill development training processes in specific educational contexts.

The objective of this research project is to analyze the results obtained after the implementation of gamification teaching strategies to strengthen English communication skills by engineers at TEC Engineering in Mexico, who are studying English with external trainers.

The content of this work is structured into different sections. First, the current landscape of learning English as a second language. Next, the theoretical framework on learning strategies and gamification, followed by an analysis of the results after applying gamification. Finally, the conclusions drawn from this experience and the bibliographic sources consulted.

THEORETICAL FRAMEWORK

21st-century educational competencies refer to the set of skills, knowledge, attitudes, and values that students need to function in a globalized world, where communication skills are fundamental tools.

The main objective of the International Society for Technology in Education (ISTE) is to guide educators in integrating computational thinking across all disciplines to develop powerful problem-solving skills for students. ISTE has developed several key initiatives that provide educators with tools and strategies to integrate technology and revolutionize learning, including exploring Artificial Intelligence, the four pillars of Computational Thinking, Digital Citizenship addressing ethical issues, Evaluation and selection of educational technology with high-quality edtech products, Long-term Global Collaborations, Open Educational Resources, i.e., high-quality open-licensed materials, STEAM in education for hands-on learning, and Teacher Preparation to integrate abundant technology in the classroom. Likewise, ISTE has standards focused on pedagogy, not just on computer tools. These standards are a framework that guides students, educators, leaders, and coaches in the use of technology to create high-impact, sustainable, scalable, and equitable learning experiences. According to ISTE (2025), the standards for coaches are intended to support teachers in developing digital competencies for the pedagogical integration of technology, in which gamification plays an important role.

According to Martin and Molina (2021), teaching strategies based on active methodologies encourage students to become protagonists of their own learning. Examples of this are gamification and project-based learning (PBL), which promote teamwork and increase motivation through playful dynamics, as well as strengthening motivation through active participation.

Recent authors, such as Chacón (2021), point out that English language teaching should focus on integrated communication skills, where, rather than just learning basic grammar, students can develop oral production and listening comprehension, and where reading and writing are articulated in a contextualized way and can be applied to real-life situations.

For their part, Al-Azawi, Al-Faliti, and Al-Blushi (2020) suggest the use of gamification as a learning strategy, with points and rewards that enhance intrinsic motivation by generating meaningful and challenging experiences.

On the other hand, Kim, Rothrock, and Freivalds (2020) emphasize that engineering students, when working on gamified tasks with challenges, point systems, and rewards, become committed and experience self-determination in completing their courses as satisfactorily as possible.

MATERIALS AND METHODS

For this gamification proposal, a group of intermediate-level English language students from the TEC Engineering company in Mexico was chosen, with the aim of acquiring communication skills focused on engineering. This group provides an excellent testing ground for this proposal, as there is a wide range of pedagogical activities for the development of these skills based on the use of ICT.

This study began with the implementation of a system of points and badges that students earn through gamification activities focused on developing the topics covered in the textbook Cambridge English for Engineering (Ibbotson, 2008).

At the end of each week of the course, an assessment activity was carried out, allowing between one and three points to be awarded based on the student's performance. Once ten points had been accumulated, the participant received a digital badge in recognition of their progress. At the end of the twelve-week course, overall performance was measured based on the total number of badges obtained, which provided a quantitative indicator of the impact of the gamified strategy on the development of English communication skills.

The teaching resources used to implement gamification were Educaplay, Kahoot, Wordwall, and Google Forms, where activities were designed to assess the knowledge

	Week 1	Week 2	Week 3	Week 4	Total Badges
Points	1 - 3	1 - 3	1 - 3	1 - 3	
	Week 5	Week 6	Week 7	Week 8	Total Badges
Points	1 - 3	1 - 3	1 - 3	1 - 3	
	Week 9	Week 10	Week 11	Week 12	Total Badges
Points	1 - 3	1 - 3	1 - 3	1 - 3	

Table 1. Scoring and badge design (own creation).

acquired on the subject of study, grammar, vocabulary applied to engineering, and communication skills.

Some of the advantages offered by these resources are the ability to measure scores in real time, obtain immediate feedback, and repeat the activity as a reinforcement method.

Table 1 shows the plan for recording the scores obtained per week for each of the educational activities designed with technological resources.

Figures 1, 2, 3, and 4 show examples of the design of teaching activities with technological resources to evaluate the content of study units. At the end of the evaluations, students can discuss the topics and obtain their scores in real time.

Finally, a survey was conducted using Google Forms with a five-point Likert scale to assess the motivational impact on students at the end of the course, once they had obtained their total badges. The instrument allowed us to collect information on the participants' perception and level of satisfaction with the results achieved through the implementation of gamification.

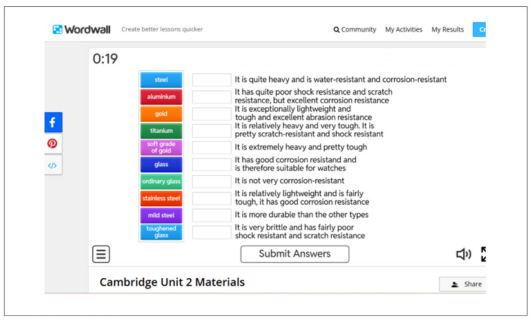

Figure 1. Design of a teaching activity using technological resources (www.wordwall.com).

Figure 2. Design of teaching activity with technological resources (www.kahoot.com).

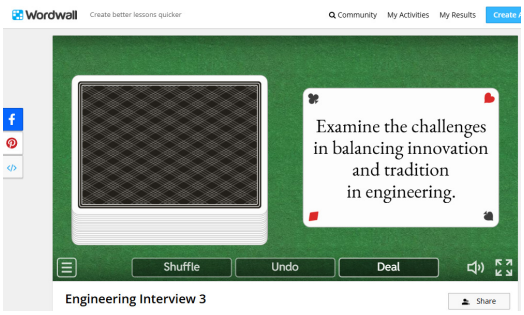

Figure 3. Design of teaching activity with technological resources (www.wordwall.com).

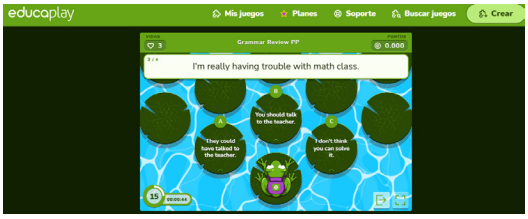

Figure 4. Design of teaching activity with technological resources (www.educaplay.com).

RESULTS AND DISCUSSION

The main contribution of this research work demonstrates that the use of gamification in the field of engineering strengthens the communication skills of intermediate-level students, who currently work as project engineers at TEC Engineering in Mexico.

As a starting point, an introductory session was developed in which the contents of the "Cambridge English for Engineering" course were presented and the assessment scheme was explained to the students, based on a scoreboard and badges that they would obtain through a weekly activity, designed in a didactic manner with gamification applications measured by ICT.

Tables 2, 3, and 4 show the progress of their scores and badges in each of the blocks, which comprise a total of four weeks each, as they became familiar with the system and their motivation increased.

In the first block, two badges were obtained, as shown in Table 1, representing 12% of the total badges obtained in the course.

Table 2 shows how the score increased in the second block and, therefore, the number of badges earned, with a total of seven badges earned, representing 41% of the total. Thus, by the end of Block 2, there was a 29% increase in badges compared to those earned during the first block.

Finally, we conclude with Table 3, which shows that during Block 3, 8 more badges were obtained, representing 47% of the total badges, an increase of 6% compared to the second block and 35% compared to the first.

Figure 5 shows a significant increase in the number of badges earned throughout the blocks of the course. While in the first block students achieved only 12% of the total badges, in the second block there was a considerable increase to 41%, reflecting remarkable progress in performance. Finally, in the third block, 47% of the badges were consolidated, demonstrating a consistently high level of participation and achievement. These results confirm that the implementation of gamification promoted a continuous learning process, increasing students' motivation and perseverance in developing their English communication skills in the field of engineering.

Table 5 shows the group score obtained in each of the activities applied per week, where it is clear to see an improvement in performance as the course progressed, starting with 10 points and doubling the result at the end of the course, reflecting a sustained increase in performance of 100% compared to the results at the beginning, thus consolidating a positive trend in academic achievement.

Figures 6 and 7 present examples of immediate performance reports through which students receive their scores in a clear and timely manner, allowing them to carry out peer or group feedback. Likewise, these digital activities offer them the possibility of perfecting their performance, as students can repeat them one or two more times in order to improve their scores. This feature encourages self-regulated learning ( ), allowing each participant to reflect on their mistakes, adjust their strategies, and make continuous progress through practice.

Finally, it can be concluded that the results of the survey conducted at the end of the course reflect a largely positive assessment of the gamification proposal in the teaching-learning process. As shown in Figure 8, 78% of participants strongly agreed with its effectiveness, while 18% partially agreed. Only 4% were indifferent, and there were no responses indicating disagreement. These findings show that the vast majority of students recognize the favorable impact of gamified digital activities and support their continued use as a teaching strategy in subsequent courses.

LEADERBOARD - GAMIFICATION FOR ENGLISH FOR ENGINEERING INTERMEDIATE LEVEL - CAMBRIDGE FOR ENGINEERING														
STUDENT'S NAME	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Total Points	Badges & Points
	BLOCK1				BLOCK2				BLOCK3					
BUENO DELGADILLO EDUARDO	1	2	1	2									6	6
JUAREZ MORGUECHO CLAUDIA NOEMI	2	3	3	3									11	★+1
LOPEZ RUBALCAVA MARIANA	1	1	2	2									6	6
MARTELL RODRIGUEZ CARLOS ALBERTO	2	2	3	2									9	9
MIRELES ROSALES JOSE FRANCISCO	1	1	2	2									6	6
PADILLA VELAZQUEZ LUIS HUMBERTO	1	1	1	2									5	5
ROMO PEREZ FRANCISCO JAVIER	2	2	3	3									10	★

Table 2. Score obtained in Block 1 (Own elaboration).

LEADERBOARD - GAMIFICATION FOR ENGLISH FOR ENGINEERING INTERMEDIATE LEVEL - CAMBRIDGE FOR ENGINEERING														
STUDENT'S NAME	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Total Points	Badges & Points
	BLOCK1				BLOCK2				BLOCK3					
BUENO DELGADILLO EDUARDO	1	2	1	2	2	2	2	3					15	★+5
JUAREZ MORGUECHO CLAUDIA NOEMI	2	3	3	3	3	3	3	3					23	★★+3
LOPEZ RUBALCAVA MARIANA	1	1	2	2	2	1	3	2					14	★+4
MARTELL RODRIGUEZ CARLOS ALBERTO	2	2	3	2	2	3	2	3					19	★+9
MIRELES ROSALES JOSE FRANCISCO	1	1	2	2	1	2	2	2					13	★+3
PADILLA VELAZQUEZ LUIS HUMBERTO	1	1	1	2	2	1	2	2					12	★+2
ROMO PEREZ FRANCISCO JAVIER	2	2	3	3	2	3	3	3					21	★★+1

Table 3. Scores obtained in Blocks 1 and 2 (Own elaboration).

LEADERBOARD - GAMIFICATION FOR ENGLISH FOR ENGINEERING INTERMEDIATE LEVEL - CAMBRIDGE FOR ENGINEERING														
STUDENT'S NAME	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Total Points	Badges & Points
	BLOCK1				BLOCK2				BLOCK3					
BUENO DELGADILLO EDUARDO	1	2	1	2	2	2	2	3	3	3	3	3	27	★★+7
JUAREZ MORGUECHO CLAUDIA NOEMI	2	3	3	3	3	3	3	3	3	3	3	3	35	★★★+5
LOPEZ RUBALCAVA MARIANA	1	1	2	2	2	1	3	2	2	2	3	3	24	★★+4
MARTELL RODRIGUEZ CARLOS ALBERTO	2	2	3	2	2	3	2	3	2	3	3	3	30	★★★
MIRELES ROSALES JOSE FRANCISCO	1	1	2	2	1	2	2	2	2	2	2	3	22	★★+2
PADILLA VELAZQUEZ LUIS HUMBERTO	1	1	1	2	2	1	2	2	2	2	2	2	20	★★
ROMO PEREZ FRANCISCO JAVIER	2	2	3	3	2	3	3	3	3	3	3	3	33	★★★+3

Table 4. Scores obtained during Blocks 1, 2, and 3 (Own elaboration).

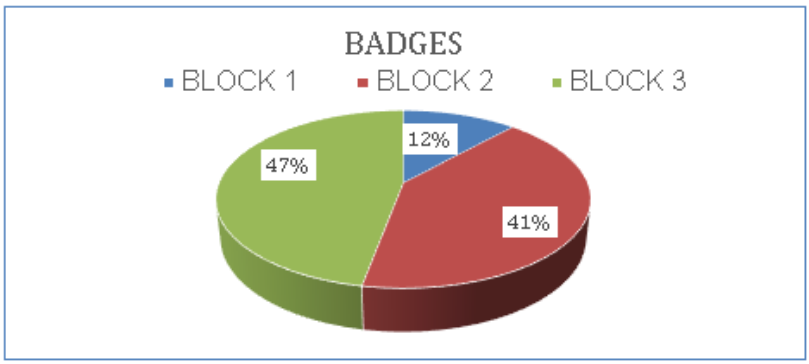

Figure 5. Comparison of badges obtained in Blocks 1, 2, and 3 (own design).

CONTENT CHART			
Week	Activity	Resources	Total Points by Group
1	Phrasal Verbs 1	https://wordwall.net/resource/92900423	10
2	Concepts	https://wordwall.net/resource/90801392	12
3	Phrasal Verbs 2	https://wordwall.net/resource/92900871	15
4	Modals in present	https://www.educaplay.com/learning-resources/21931616-grammar_review_pp.html	16
5	Collocations	https://www.educaplay.com/learning-resources/18038304-collocations_adv_adj.html	14
6	Questions with prepositons	https://kahoot.it/solo/?quizId=6745909d-9de3-4e24-8fc6-61dbda63adcd	15
7	Interview Basic Tenses	https://wordwall.net/resource/27423194	17
8	Expressions with get	https://kahoot.it/solo/?quizId=83188631-d9ff-4951-9add-33f727c96ac5	18
9	Adjective word order	https://www.educaplay.com/learning-resources/10766178-adjective_word_order.html	17
10	Second Conditional	https://kahoot.it/solo/?quizId=82fad313-4eda-4ae8-82a8-dd164e0869dd	18
11	Conversation questions	https://wordwall.net/resource/72631395	19
12	Conversation questions 2	https://wordwall.net/resource/72631620	20

Table 5. Progress of group results in gamified activities (Own elaboration).

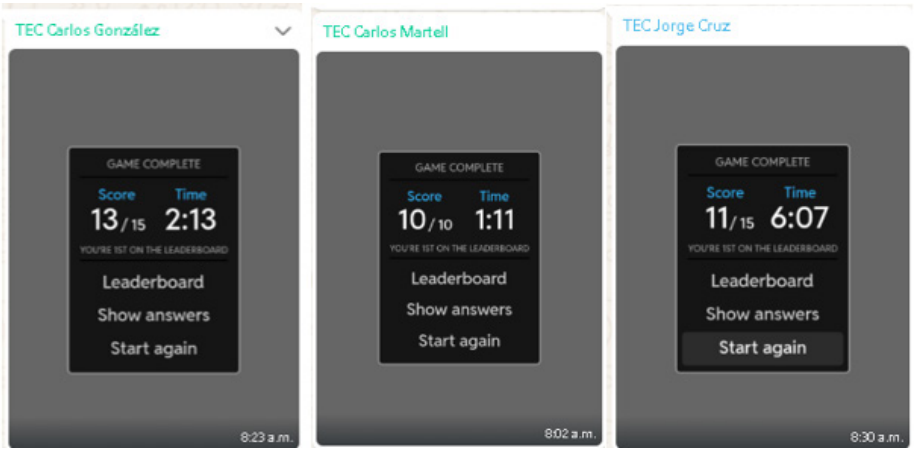

Figure 6. www.wordwall.com.

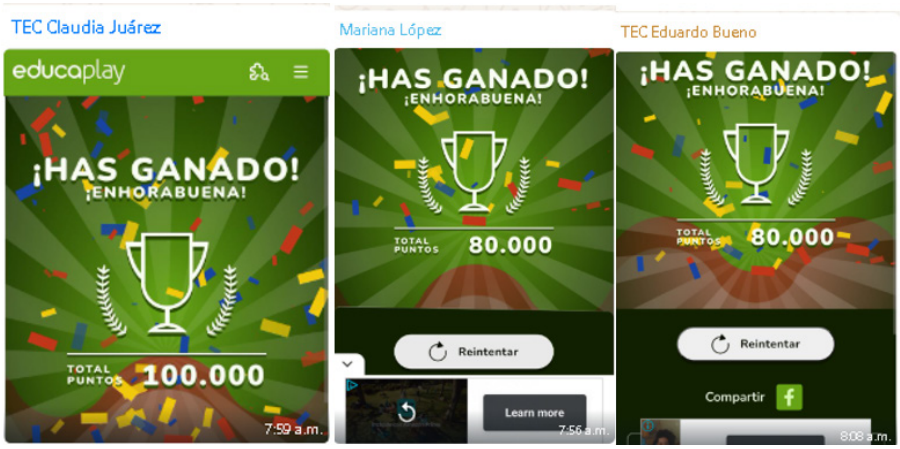

Figure 7. www.educaplay.com.

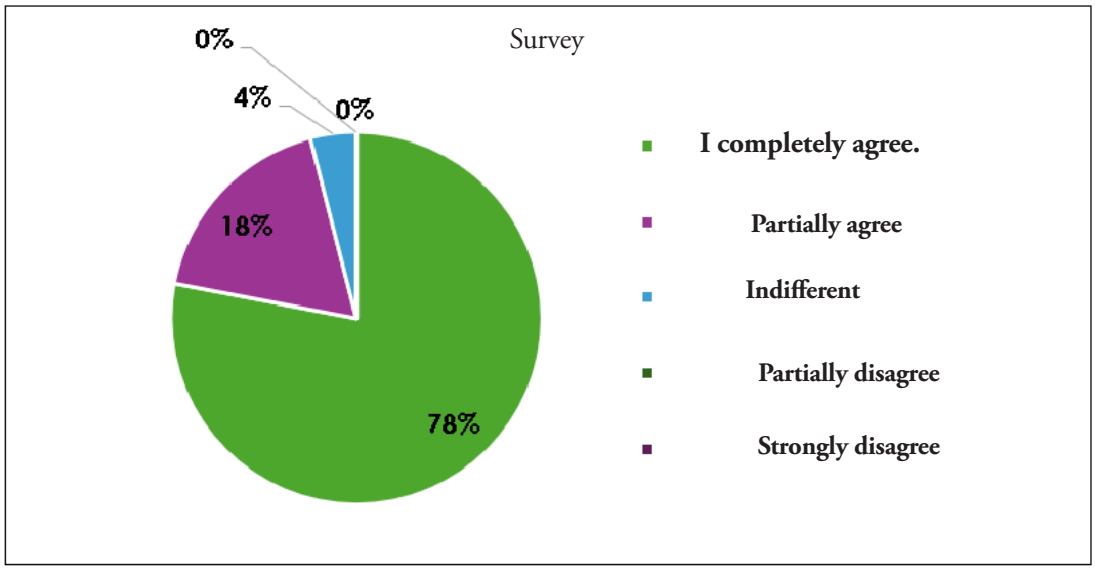

Figure 8. Student assessment of gamification (own design).

CONCLUSIONS

Based on the above, it was determined that the Gamification Proposal for strengthening English communication skills in the context of the group of Project Engineers at TEC Engineering in Mexico who are studying intermediate English has generated highly favorable indicators in the development of this proposal.

The results obtained through gamification show that, as a group, the scores obtained in each activity doubled at the end of the course, demonstrating substantial progress. Likewise, the badges achieved individually evolved from zero or basic levels to satisfactory and excellent categories, reflecting a constant improvement in the learning and motivation of the participants.

Based on the data obtained from the satisfaction surveys administered at the end of the course, it can be concluded that the level of satisfaction with the engineering-focused English course was high, highlighting the acceptance and positive assessment of the gamification methodology implemented.

REFERENCES

Al-Azawi, R., Al-Faliti, F., & Al-Blushi, M. (2020). Educational gamification vs. game-based learning: Comparative study. *International Journal of Innovation, Creativity and Change, 11*(12), 1–14.

Cabero, J., & Llorente, M. C. (2020). COVID-19: transformación radical de la digitalización en las instituciones de educación superior. *Campus Virtuales, 9*(2), 25-34.

Chacón, R. (2021). Developing communicative competence in English as a foreign language: A practical proposal. *Revista Española de Lingüística Aplicada/Spanish Journal of Applied Linguistics, 34*(2), 537–562. https://doi.org/10.1075/resla.20072.cha.

Ibbotson, M. (2008). *Cambridge English for Engineering: Student's Book*. Cambridge University Press.

Instituto Mexicano para la Competitividad (IMCO). (2023, febrero 7). *¿Cuántos mexicanos hablan inglés?* Estudio Inglés Online. Recuperado de https://estudioinglesonline.webnode.mx/l/cuantos-mexicanos-hablan-ingles/.

Instituto Universitario de Lenguas Modernas Aplicadas (IULMA). (2017, 1 de marzo). *The TILA project: Promoting meaningful synchronous peer communication in a transnational setting through telecollaboration*. Recuperado de https://iulma.es/the-tila-project-promoting-meaningful-synchronous-peer-communication-in-a-transnational-setting-through-telecollaboration/.

International Society for Technology in Education. (2025). *ISTE standards for coaches*. ISTE. https://www.iste.org/standards/iste-standards-for-coaches.

Kim, E., Rothrock, L., & Freivalds, A. (2020). The impact of gamification on the motivation and performance of engineering students through the lens of self-determination theory. *International Journal of Engineering Education, 36*(3), 1117–1131.

Martín, M. T., & Molina, E. (2021). Metodologías activas y motivación del alumnado universitario: una experiencia con aprendizaje basado en proyectos. *Revista Electrónica Interuniversitaria de Formación del Profesorado, 24*(1), 57-71. https://doi.org/10.6018/reifop.413611.

Organización para la Cooperación y el Desarrollo Económicos (OCDE). (2025). *Trust in global co-operation: The vision for the OECD for the next decade*. Recuperado de https://www.oecd.org/en/about/legal/trust-in-global-cooperation-the-vision-for-the-oecd-for-the-next-decade.html.

Organización para la Cooperación y el Desarrollo Económicos (OCDE). (2025). *Education at a Glance 2025*. Recuperado de https://www.oecd.org/en/publications/education-at-a-glance-2025_1c0d9c79-en.html.

SUMMA. (2017, 13 de julio). *Mapa de Innovaciones Educativas*. Laboratorio de Innovación en Educación para América Latina y el Caribe (SUMMA). Recuperado de SUMMA website.

UNESCO. (2015). *Global Citizenship Education: Topics and Learning Objectives*. UNESCO. https://doi.org/10.54675/DRHC3544.

Universitat de València. (2019, 13 de febrero). *Telecolaboración y gamificación para la enseñanza intercultural integrada de contenidos y lenguas* [Descripción del proyecto TeCoLa]. Universitat de València.