



GAMIFICATION AS A TOOL FOR MULTICULTURAL COMPETENCE DEVELOPMENT FOR SUSTAINABLE EDUCATIONAL INNOVATION

LA GAMIFICACIÓN COMO HERRAMIENTA PARA EL DESARROLLO DE COMPETENCIAS MULTICULTURALES PARA LA INNOVACIÓN EDUCATIVA

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ABSTRACT

The aim of the study was to identify how gamification elements correlate with the components of multicultural competence and to propose a model that integrates both. The main methods was mixed-methods design. Quantitative data were obtained through pre- and post-course diagnostics adapted from Deardorff's multicultural competence framework. Qualitative analysis was based on reflective journals and forum discussions. The course was developed using a structured design methodology, combining the principles of backward design and gamified instructional architecture. The research resulted in two core outcomes: (1) a conceptual model linking gamification mechanics (challenge, simulation, feedback, narrative) to multicultural competence components (knowledge, attitudes, interpretation, interaction, critical awareness); (2) the design and piloting of the online course "Diversity through Games," which showed measurable improvements in students' intercultural empathy, reflective awareness, and communicative adaptability. The study confirms that gamification, when purposefully integrated with intercultural learning goals, can serve as an effective strategy for developing multicultural competence. The model proposed

in this article can serve as a framework for similar course design in linguistic and pedagogical education.

Keywords:

Multicultural competence, gamification, instructional design, intercultural education, digital pedagogy, linguistic students

RESUMEN

El objetivo del estudio fue identificar la correlación entre los elementos de gamificación y los componentes de la competencia multicultural, y proponer un modelo que los integre. Se empleó un diseño de métodos mixtos. Los datos cuantitativos se obtuvieron mediante diagnósticos previos y posteriores al curso, adaptados del marco de competencia multicultural de Deardorff. El análisis cualitativo se basó en diarios reflexivos y debates en foros. El curso se desarrolló utilizando una metodología de diseño estructurado, que combinó los principios del diseño inverso y la arquitectura instruccional gamificada. La investigación arrojó dos resultados principales: (1) un modelo conceptual que vincula las mecánicas de la gamificación (desafío, simulación, retroalimentación, narrativa) con los



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componentes de la competencia multicultural (conocimiento, actitudes, interpretación, interacción, conciencia crítica); (2) el diseño y la implementación piloto del curso en línea «Diversidad a través de los juegos», que mostró mejoras cuantificables en la empatía intercultural, la conciencia reflexiva y la adaptabilidad comunicativa de los estudiantes. El estudio confirma que la gamificación, cuando se integra de forma intencional con los objetivos de aprendizaje intercultural, puede ser una estrategia eficaz para el desarrollo de la competencia multicultural. El modelo propuesto en este artículo puede servir como marco para el diseño de cursos similares en la formación lingüística y pedagógica.

Palabras clave:

Competencia multicultural, gamificación, diseño instruccional, educación intercultural, pedagogía digital, estudiantes de lingüística.

INTRODUCTION

The growing cultural heterogeneity of modern society has significantly changed the goals and content of higher education. In addition to subject-matter expertise, today's graduates are expected to demonstrate intercultural competence - especially those studying linguistics, where language proficiency must be supported by the ability to act effectively in intercultural environments.

At the same time, traditional approaches in education often fail to engage modern students - digital natives who are used to interaction, feedback, and personalization in learning environments. The application of gamification, understood as the use of game elements in non-game contexts, offers a way to respond to these new educational challenges. When aligned with pedagogical objectives, gamification can enhance student motivation, foster participation, and build complex cognitive and communicative skills (Casimiro et al., 2025).

The present study focuses on the development and testing of the gamified course "Diversity through Games," created for first-year linguistic students at NUST MISIS. This course integrates culturally meaningful game mechanics and is designed to promote key components of multicultural competence: intercultural knowledge, empathy, tolerance, reflection, and communicative adaptability.

The aim of the study is to identify how gamification elements (such as challenge, narrative, simulation, feedback) can support the formation of multicultural competence. The article also proposes a conceptual model connecting these two domains.

The development of multicultural competence is widely recognized as a central and urgent objective of contemporary education, particularly against the backdrop of rapid globalization, increased international mobility, and

multicultural transformations of society. As social, economic, and cultural borders continue to blur, the need for individuals capable of effective and respectful interaction across cultural boundaries grows stronger. According to Byram (1997), multicultural competence encompasses not merely linguistic proficiency, but a broader set of dispositions and skills: openness to cultural diversity, curiosity about other cultures, respect for differences, and the ability to interpret, relate, and critically evaluate cultural phenomena within various contexts.

Deardorff (2006) conceptualizes multicultural competence as a dynamic, developmental process rather than a static achievement. It involves continuous cycles of internal reflection, adaptation to intercultural situations, and practical behavioral changes based on gained experience. Thus, developing such competence requires educational interventions that foster self-awareness, critical thinking, empathy, and behavioral flexibility.

Chen & Starosta (2000) emphasized the holistic nature of intercultural competence by identifying its cognitive, affective, and behavioral dimensions. Cognitive aspects involve knowledge of cultural similarities and differences; affective aspects encompass attitudes such as openness and empathy; behavioral aspects reflect the ability to communicate and act effectively in intercultural contexts. Fantini (2009) further argued that intercultural competence should not only be assessed through communication efficiency but also through an individual's ability to build sustainable and meaningful relationships across cultural boundaries.

In response to these theoretical insights, modern educational institutions are increasingly incorporating multicultural learning outcomes across disciplines. Language programs, international studies, business education, and the humanities recognize the cultivation of intercultural communicative competence as a vital goal. Curricula are being redesigned to integrate intercultural modules, multicultural simulations, study-abroad programs, and collaborative international projects, all aimed at preparing students to work and thrive in culturally diverse environments. The findings align with Vygotsky's (1978) sociocultural theory, highlighting the role of mediated learning and social interaction in developing complex competencies, including multicultural skills.

Recent scholars also highlight the importance of integrating digital technologies and innovative pedagogical strategies to make intercultural competence development more accessible and effective in modern education systems (Mirjahan, 2025). These innovations further underscore the urgent need to transform traditional educational paradigms to meet the demands of a globalized, interconnected world. Based on the reviewed literature, the components most critical for practical course implementation include empathy (as an affective foundation for respectful

communication), tolerance of ambiguity (as a key skill for intercultural adaptation), reflective thinking (as a tool for developing cultural awareness), and communicative flexibility (as an applied behavioral outcome).

These components were selected as target outcomes for the gamified learning model described in this study and served as criteria for both instructional design and assessment.

Gamification refers to the structured application of game design elements such as points, badges, leaderboards, narratives, and quests in non-game contexts to stimulate participation, strengthen engagement, and promote sustained learning motivation. Kapp (2012) emphasizes that gamification does not imply converting educational content into entertainment but rather using motivational techniques derived from games to create interactive, dynamic, and student-centered educational environments. As Nicholson (2015) emphasizes, meaningful gamification connects game elements with intrinsic motivation, which is crucial for achieving sustainable educational effects in multicultural contexts.

According to Deterding et al. (2011), effective gamification addresses the three fundamental psychological needs outlined in Self-Determination Theory: autonomy (the feeling of volition and personal agency in learning), competence (the experience of success and mastery through progressive challenges), and relatedness (the connection with peers and teachers through collaborative activities). By addressing these needs, gamified environments encourage learners to persist, explore, and invest more cognitive and emotional resources into their studies.

Research by Hamari et al. (2014) confirms that properly designed gamification strategies generally result in improved learner engagement, greater motivation, and more effective learning outcomes. However, their review also warns that superficial gamification focused solely on extrinsic rewards without intrinsic meaning can lead to quick disengagement. Thoughtful integration of meaningful challenges, narrative context, and authentic feedback mechanisms is therefore crucial.

Pereira (2020) highlights that gamification is especially effective among Generation Z students, who are accustomed to multitasking, immediate feedback, and digitally mediated communication. Gamified learning formats align with their expectations by offering personalized trajectories, creative exploration opportunities, and social collaboration.

In the field of language education, gamification has proven its effectiveness in vocabulary acquisition, grammar practice, and real-world communication simulations. Reinhardt & Sykes (2014) argue that digital games and gamified scenarios create authentic environments where

learners can practice language skills in meaningful intercultural settings.

Beyond language education, gamification supports the development of transversal competencies crucial for 21st-century careers: strategic thinking, adaptability, cultural empathy, and resilience. The application of game-based methodologies fosters environments where failure is seen not as a setback but as an opportunity for growth and learning. (Lee & Hammer; 2011; Zhou & Wei, 2024; Zichermann & Cunningham, 2011) and further support the idea that gamification, when properly implemented, transforms passive learning into an active and empowering experience.

Thus, gamification is emerging not merely as a trend but as a sustainable pedagogical innovation capable of responding to the challenges of modern multicultural, digital, and rapidly changing educational landscapes.

Based on the literature, the following components of gamification were selected for integration into the course model: challenge (motivating, curiosity-driven tasks), simulation (role-play, real-life intercultural scenarios), narrative (thematic storyline guiding engagement), feedback (immediate and cumulative performance cues), reward and recognition (badges, leaderboards).

These components were deliberately mapped to the learning outcomes of multicultural competence and serve as the foundation for the instructional model applied in this study.

While gamification is widely used in language teaching and general education, its potential in developing multicultural competence remains underexplored but highly promising. Solovyeva et al. (2015) demonstrated that using game-based activities fosters deeper understanding of intercultural differences and encourages empathetic engagement. As noted by Dicheva & Dichev (2017), gamification can effectively enhance learning motivation and engagement when properly aligned with educational goals, which highlights its potential for further integration into multicultural education frameworks. As also noted by Prensky (2001), students of the digital generation learn most effectively in interactive, participatory, and technology-rich environments, which underlines the relevance of applying gamified learning models for the development of multicultural competence.

Fantini (2009) supports the view that intercultural simulations and role-playing games help participants develop cultural sensitivity by providing safe spaces for experimentation and critical reflection. Suh & Wagner (2017) demonstrate that gamified collaboration platforms stimulate knowledge sharing, enhancing the formation of intercultural dialogue skills. As Landers (2015) points out,

gamification strategies based on serious games frameworks allow for the structured development of higher-order learning outcomes, which includes intercultural competence.

Gamified scenarios that simulate multicultural interactions such as negotiating across cultural norms, resolving misunderstandings, and exploring worldviews - enable students to practice essential intercultural skills in a risk-free, supportive environment (Zichermann & Cunningham, 2011; Zichermann & Linder, 2013).

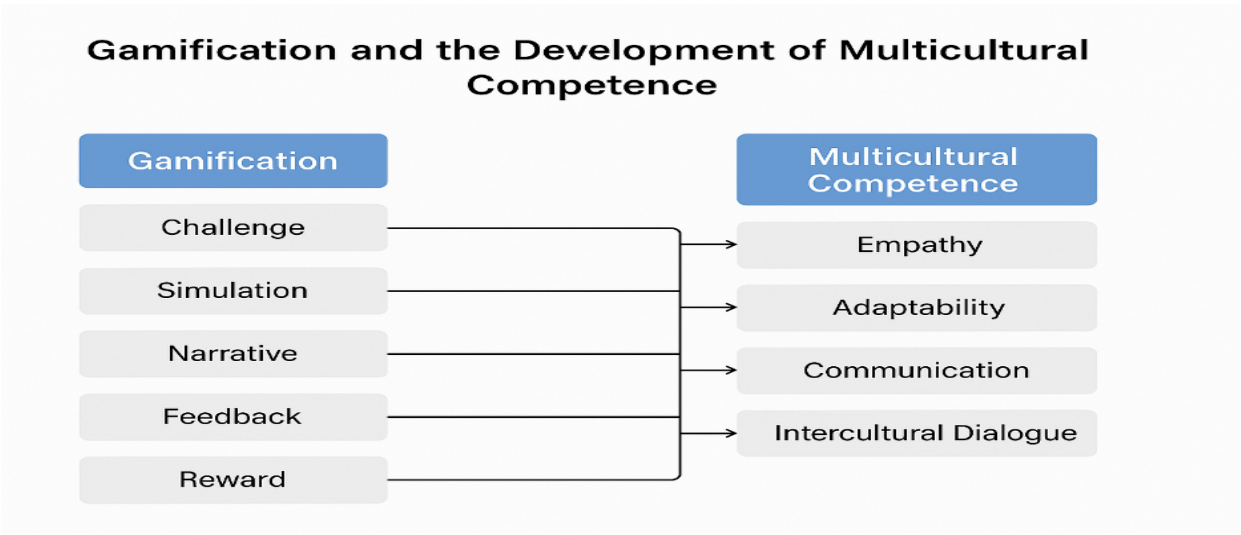
In addition, Mirjahan (2025) notes that gamification fosters the development of soft skills essential for multicultural environments, such as tolerance for ambiguity, flexibility in thinking, and emotional resilience.

Thus, combining gamification with multicultural education methodologies offers innovative opportunities to enhance the formation of intercultural competence among linguistic students. By creating engaging, experiential, and reflective learning environments, educators can equip students with the skills necessary to navigate cultural complexity in academic, social, and professional settings.

Recent studies also stress the need to design culturally responsive gamified experiences that reflect diverse narratives, values, and interaction styles (Lee & Hammer, 2011; Mirjahan, 2025), ensuring that educational gamification promotes genuine intercultural dialogue rather than reinforcing stereotypes.

Overall, the integration of gamification into the development of multicultural competence represents a promising direction for future pedagogical innovation, requiring thoughtful design and continuous empirical evaluation. Figure 1 shows the connection between the components of gamification with the components of multicultural competence.

Fig. 1. The connection between the components of gamification with the components of multicultural competence



Source: Authors' own elaboration

MATERIALS AND METHODS

To comprehensively investigate the research aim, a mixed-methods approach was used, integrating both quantitative and qualitative techniques. The study was conducted during the 2024–2025 academic year at the National University of Science and Technology MISIS and consisted of the following key stages:

Theoretical framework

The intercultural competence framework was grounded in the models of (Byram, 1997; Deardorff, 2006). Byram's five-factor model includes attitudes (curiosity and openness), knowledge (of social groups), and skills of interpretation, interaction, and critical cultural awareness. These components were linked with selected game mechanics. Deardorff's model was used as the basis for assessment.

Course design methodology

The course "Diversity through Games" was developed using the backward design model. This model involves identifying desired learning outcomes first (multicultural competence components), then determining acceptable evidence

of achievement (assessment instruments), and finally designing learning experiences and instruction aligned with those goals. Gamified instructional architecture was embedded into the course using the framework of Kapp (2012), which focuses on challenge, immediate feedback, progress tracking, and meaningful rewards. Game mechanics such as role-based quests, scenario-based missions, and digital badges were aligned with multicultural learning goals (e.g., empathy, tolerance, communication).

Data collection and analysis

- Quantitative data: Pre- and post-course surveys were adapted from Deardorff's assessment model and administered to students to measure self-perceived growth in key components of multicultural competence.
- Qualitative data: Open-ended reflection journals, discussion forum transcripts, and final feedback forms were thematically analyzed to explore changes in students' intercultural thinking, awareness, and attitudes.

Digital platform and tools

The course was hosted on the Moodle platform and supplemented by digital tools:

- Google Forms: baseline diagnostics and end-course reflections;
- Canva and Miro: collaborative mapping and group visualization activities;
- Wordwall and LearningApps: interactive quizzes and gamified repetition;
- YouTube: embedded cultural video content;
- Moodle badges and leaderboards: visual progress and motivation boosters.

This methodology ensured that both the structure of the course and the evaluation instruments were explicitly aligned with the research objectives and the multicultural learning outcomes.

RESULTS AND DISCUSSION

The conducted theoretical analysis confirms the feasibility and necessity of using gamification for the development of multicultural competence among linguistic students. The study of key models of intercultural competence (Byram, 1997; Deardorff, 2006) demonstrated that the formation of intercultural skills is a complex and multilevel process, requiring not only knowledge acquisition but also behavioral, affective, and critical reflective components.

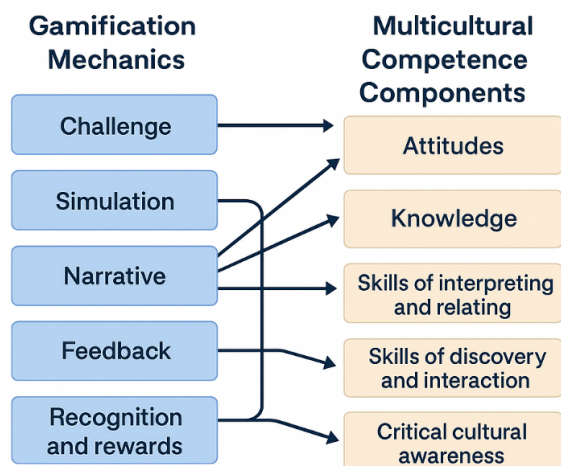
Gamification principles (Deterding et al., 2011) were identified as effective tools for meeting the needs for autonomy, competence, and relatedness that underlie student motivation and active learning. The literature reviews also revealed that incorporating culturally contextualized game scenarios enhances empathy, tolerance, and the ability to navigate intercultural situations (Fantini, 2009; Solovyeva et al., 2015).

Thus, theoretical findings support the hypothesis that a gamified educational model can contribute meaningfully to the formation of multicultural competence in higher education settings.

Theoretical analysis of the literature allowed us to develop a conceptual model (Figure 2) that demonstrates the correlation between gamification mechanics and the key components of multicultural competence. Specifically:

- Challenge was aligned with communicative flexibility, promoting strategic problem-solving in cross-cultural scenarios;
- Simulation mapped to interpretation and interaction, by offering students role-play and scenario-based opportunities to engage with different cultural logics;
- Narrative was used to support attitudinal development, enhancing empathy and curiosity through culturally grounded stories;
- Feedback enabled critical reflection, helping learners identify and evaluate their intercultural communication behaviors;
- Recognition and rewards fostered motivation and engagement, reinforcing positive learning outcomes and perseverance.
- This model guided the structure of the course and served as a framework for analysis and assessment.

Fig. 2. Gamification mechanics and multicultural competence components.



Source: Authors' own elaboration

Practical results: Course «Diversity through Games»

To verify the theoretical assumptions, a practical intervention was designed: the gamified online course «Diversity through Games.» The course was delivered asynchronously over eight weeks through the Moodle platform and consisted of six thematic modules, each targeting a key aspect of multicultural education:

- Cultural values and worldviews
- Non-verbal communication
- Stereotypes and prejudice
- Conflict resolution in multicultural settings
- Hofstede's cultural dimensions
- Practical intercultural dialogue scenarios

Each module was structured to include the following core components: a short video lecture and glossary of culturally relevant terms, interactive mini-games using platforms like Wordwall and LearningApps to reinforce terminology and concepts, scenario-based quests and web simulations simulating real-life intercultural challenges, role-play discussions to encourage practice of empathy and communication flexibility, reflective journal tasks to build critical thinking, peer assessments and discussion forums to promote community-based reflection. Figure 3 shows the interactive map of each module.

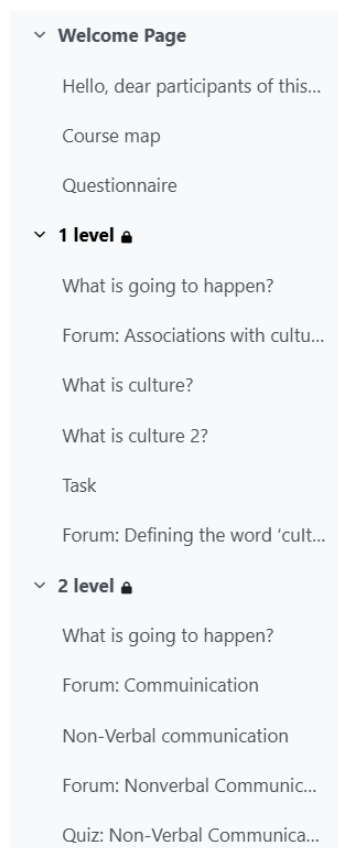
Fig. 3. Interactive course map



Source: Authors' own elaboration

The modules were called as levels and were closed until one module is finished (Figure 4).

Fig. 4. The principle of building modules.



Source: Authors' own elaboration

A gamified system of points, badges, leaderboards, and mission-style progression encouraged consistent engagement. Each component was aligned with specific competencies: for example, scenario quests targeted communicative flexibility, while reflection journals enhanced cultural awareness (Figure 5).

Fig. 5. The task for imaginary situations

To improve your ability to describe behaviors clearly and accurately without adding personal interpretations, assumptions, or editorializing. This skill is crucial for effective communication in multicultural contexts.

Task Instructions:

1. **Behavior Description Practice:**
Imagine you are communicating with an alien who has just arrived on Earth. Your task is to explain how to complete a very simple, everyday task. The key challenge is to ensure that your description is clear, precise, and leaves no room for misinterpretation.

Examples of simple tasks you could describe:

- How to brush your teeth
- How to tie your shoes
- How to make a cup of tea

Write your description of the task (~500 words) as if you were speaking to someone with no prior knowledge of how the task works.

2. **Peer Review and Feedback:**
After submitting your description, review at least two of your classmates' descriptions from the 'alien's perspective.' Leave comments pointing out any gaps or unclear instructions in their descriptions. Remember to be constructive and focus on missing details that could lead to misunderstandings.

3. **Self-Reflection:**
Reflect on the feedback you receive. Were there any assumptions or unclear elements in your description that you missed? Think about how these small gaps in communication could lead to misunderstandings, especially in multicultural contexts where assumptions and cultural norms vary.

Submission:
Submit your task description in the **discussion forum** and participate in peer reviews by commenting on at least two classmates' submissions.

Source: Authors' own elaboration

Participants: 15 first-year students from the Linguistics program at NUST MISIS participated in the pilot. Of these, 7 students completed all course components.

Quantitative results: Analysis of pre- and post-course surveys showed a 30% average increase across indicators of intercultural awareness, empathy, and communication adaptability.

Qualitative findings: Reflective journals and forum responses revealed improved understanding of cultural norms, more nuanced views on stereotypes, and increased readiness for intercultural engagement. Students consistently highlighted the usefulness of interactive simulations and peer role-play, describing them as «immersive,» «practical,» and «emotionally impactful.»

The final reflective survey emphasized that the most influential activities were simulation quests and role-plays, which enabled learners to “step into another culture’s shoes” and practice real-time cultural problem-solving.

To further illustrate these outcomes, Figure 6 presents the quantitative growth across three key indicators: cultural awareness, communication skills, and confidence.

Fig. 6. Descriptive statistics of intercultural competence (pre- and post-test)

Metric	Pre-Test Mean	Post-Test Mean	Increase (%)
Cultural Awareness	45.3	59.5	31.3%
Communication Skills	42.7	56.2	31.6%
Confidence	41.0	53.4	30.2%

Source: Authors’ own elaboration

Based on the conducted study, several key research questions and corresponding challenges can be formulated:

1. How can gamified educational models be adapted to sustain long-term development of multicultural competence, beyond the immediate course outcomes?

While short-term gains were observed, ensuring the stability of acquired intercultural skills over time remains an open question. Future models should incorporate longitudinal modules, reinforcement strategies (e.g., spaced learning, repeated intercultural scenarios), and real-world project applications to solidify and extend the achieved competencies.

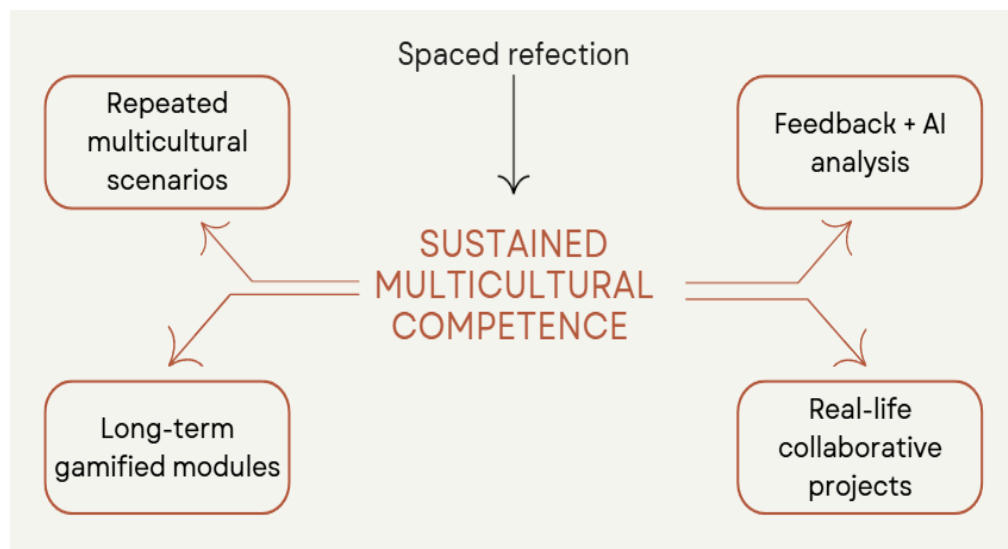
While short-term improvements in awareness and adaptability were demonstrated, sustaining these gains over time requires ongoing reinforcement. We propose a cyclical reinforcement model that integrates recurring exposure to intercultural dilemmas, scaffolded complexity of tasks, and personalized feedback loops. This model enables students to revisit competencies at progressively deeper levels, fostering lasting behavioral change.

Figure 7 presents a strategic model for sustaining multicultural competence beyond short-term outcomes. The central goal — Sustained Multicultural Competence — is supported by five interconnected elements:

- Repeated Intercultural Scenarios: learners return to progressively more complex intercultural tasks;
- Spaced Reflection: reflective activities distributed across the learning cycle to reinforce growth;
- Long-Term Gamified Modules: content designed for extended engagement with cultural topics;
- AI Feedback and Personalization: smart prompts that adapt to learner responses, deepening metacognitive reflection;
- Real-Life Collaborative Projects: cross-cultural group work or simulations that extend beyond the digital environment.

Together, these components form a system that supports continuous, meaningful development of multicultural competence through gamified instruction.

Fig. 7. Sustained multicultural competence.



Source: Authors' own elaboration

2. How can gamification strategies be optimized to promote deeper critical reflection and reduce superficial engagement?

Some students showed a tendency to focus on point accumulation rather than reflective learning. Future course designs should integrate more qualitative success metrics: completion of critical analysis tasks, peer-reviewed cultural case studies, and self-assessment matrices. Despite the overall success of the gamified model, some participants demonstrated a tendency to focus more on point accumulation than on multicultural reflection. To address this, the next iteration of the course will adopt an integrated set of AI-supported strategies designed to foster metacognition, cultural comparison, and personal growth:

- **AI-Prompted Reflective Journals:** Personalized writing prompts adapted to each learner's previous responses, encouraging them to confront cultural assumptions and reframe experiences.
- **Cultural Dialogue Bots:** Scenario-based AI chat agents that simulate intercultural interactions and provide feedback on communication style, empathy, and adaptability.
- **Peer Review Assisted by AI:** Smart moderation of student peer feedback with suggestions for improvement and deeper questioning.
- **Competency Dashboards:** Real-time visualizations of student growth across multicultural dimensions based on qualitative and quantitative input.

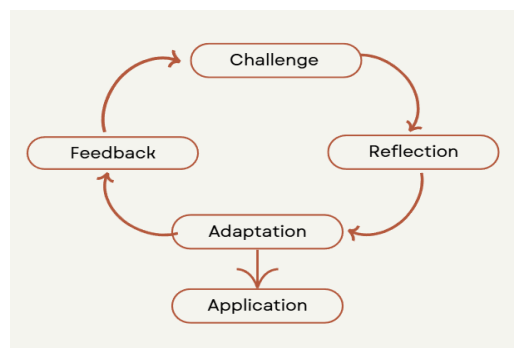
These enhancements aim to shift attention away from superficial rewards toward deeper, sustained critical reflection, allowing students to internalize intercultural lessons and transfer them into future academic and real-world settings.

Proposed Solutions and Models:

- **Reflective Gamification Model:** Combining achievement-based incentives with mandatory reflective checkpoints after each major task, where students must critically analyze their intercultural learning experiences.
- **Progressive Scenario Complexity:** Gradual increase in the complexity of intercultural dilemmas faced by students throughout the course to build deeper cognitive engagement.
- **Peer Collaboration Tiers:** Structured collaborative quests where students from diverse backgrounds must jointly solve intercultural communication challenges, thereby fostering authentic dialogue and mutual learning.

Moreover, technological inequalities and digital fluency gaps identified during the course need to be addressed. Future iterations should incorporate comprehensive onboarding modules, training in digital collaboration tools, and optional synchronous intercultural exchange sessions (Figure 8).

Fig. 8. Cyclic model of competence development.



Source: Authors' own elaboration

Summing everything up, gamification represents a promising strategy for multicultural education, but its success requires careful instructional design emphasizing reflection, collaboration, and long-term integration of intercultural experiences into learners' academic and professional trajectories.

CONCLUSIONS

This study highlights the potential of gamification as an innovative and effective pedagogical strategy for developing multicultural competence among linguistic students. Through theoretical analysis and empirical implementation of the course "Diversity through Games," it has been demonstrated that gamification can significantly enhance students' intercultural empathy, adaptability, and communication skills by creating immersive, reflective, and collaborative learning environments.

The theoretical component of the research substantiated the relevance of integrating game elements to meet key psychological needs — autonomy, competence, and relatedness — thus fostering intrinsic motivation and meaningful engagement with multicultural content. Practical results confirmed that students who participated in the gamified course exhibited improvements in intercultural sensitivity, critical reflection, and communication flexibility.

The course model "Diversity through Games" offers a replicable framework for integrating gamification into multicultural education. Key features such as progressive scenario complexity, reflective checkpoints, and personalized learning paths ensure a balance between engagement and deep learning. These elements can be adapted to various educational programs, disciplines, and institutional contexts to enhance multicultural training.

The findings of the study suggest several avenues for further research and development:

- Conducting longitudinal studies to assess the durability of multicultural skills developed through gamified instruction.

- Expanding the gamified model to interdisciplinary educational programs beyond linguistics.
- Refining digital accessibility tools to bridge technological gaps among diverse student populations.
- Incorporating synchronous intercultural exchanges and multilingual activities to enrich the learning experience.

Overall, the research contributes to the growing body of literature in digital pedagogy and multicultural education. It demonstrates that, when grounded in thoughtful design and pedagogical intention, gamification can serve not only as a tool for enhancing engagement but as a strategic framework for preparing students to navigate the complexities of a globalized and multicultural world.

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