

Serious Games and Gamification in Foreign Language Learning: Trends and Challenges (2015-2024) Analyzed Through Text Analysis Techniques

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Abstract

Digital games and related technologies are increasingly transcending their traditional boundaries, as evidenced by the expanding field of serious and pervasive games. The concept of "gamification" represents the latest phase in this evolution, referring to the integration of game-like elements into non-game contexts to enhance user experience and increase engagement. The growing popularity of gamification can be attributed to its recognized potential to motivate individuals, encourage behavioral change, and foster both friendly competition and collaboration across diverse domains. In education, the widespread availability of digital technologies has facilitated the incorporation of gamified teaching practices, thus promoting a more dynamic and engaging learning environment. This study investigates the specific challenges and affordances associated with the use of serious games and gamification in foreign language learning. A systematic review was conducted using text analysis techniques and tools, covering research published between 2015 and 2024. The analysis of 569 studies reveals key trends in the topics and languages explored within this body of research. Text analysis tools were used to identify trends related to linguistic communicative activities, as well as motivation and feedback. The findings provide practitioners and educational leaders with valuable insights into current trends and offer practical guidance for the future implementation of serious games and gamification in foreign language learning contexts.

Keywords: serious games, gamification, foreign language, motivation, communicative competencies

Introduction

Over the past two decades, the integration of technology into language education has become a prominent topic of academic discussion and research.

Digital devices have transformed language learning by introducing innovative tools such as voice recording, material storage, automated speech recognition, and grammar checking (Luo, 2023; Rego, 2015). These advancements have significantly enhanced both the efficiency and effectiveness of language acquisition while presenting materials in engaging and interactive formats (Zhou, 2017).

The rising demand for foreign language proficiency is closely intertwined with technological advancements, which have broken down geographical barriers and facilitated access to information and global communication. This demand reflects the increasing recognition of language proficiency as a critical skill in today's interconnected world. Proficiency in foreign languages is widely acknowledged to provide cognitive benefits, foster intercultural communication, and create diverse career opportunities (Alomair & Hammami, 2024).

Additionally, the integration of technology into education aligns with the expectations of modern learners, who increasingly rely on digital tools as essential components of their educational experiences. Digital education has thus become an indispensable element of contemporary pedagogy, offering learners more personalized, flexible, and interactive opportunities for language acquisition (Szabó & Kopinska, 2023).

In the evolving landscape of language education, game-based learning, including serious games and gamification, represents a pivotal innovation in language education. These methods have gained prominence due to their ability to align with the preferences and needs of technology-oriented learners, thus enhancing engagement and promoting effective language acquisition (Krystalli, 2024). The widespread availability of digital technologies has facilitated the integration of gamified teaching practices, creating more dynamic and interactive learning environments.

This study conducted a systematic review of research published between 2015 and 2024, utilizing text analysis techniques. The review covered 569 studies, uncovering key trends related to the types of research conducted and the years of publication. Text analysis tools were employed to identify emerging trends in the use of serious games and gamification, specifically in relation to the development of communicative language activities, the enhancement of communicative competencies, the improvement of motivation, and the provision of feedback in language learning.

The findings offer valuable insights for educators and practitioners, providing a comprehensive understanding of current trends and offering practical guidance for the future implementation of game-based approaches in foreign language learning contexts. In a world where young people are deeply engaged with diverse digital platforms, educators and trainers are compelled to integrate them meaningfully into their teaching strategies. This approach fosters the development of learners' multifaceted digital competencies.

Serious Games in Foreign Language Learning

In recent years, there has been a growing interest in serious games within commercial, public, and academic domains. These games, broadly defined as video games developed primarily for educational purposes, include foreign language games as a specialized subset aimed at supporting language teaching and acquisition (Frederik et al., 2010). Within this framework, digital game-based language learning (DGBLL) has emerged as a key trend in computer-assisted language learning (CALL), leveraging the rich linguistic and cultural content of serious games alongside their engaging audiovisual components. This approach has attracted significant attention from learners, educators, and educational institutions (Alyaz et al., 2017).

In recent decades, various definitions of serious games have emerged, reflecting their increasing significance across multiple domains. For instance, Abaza and Steyn (2008, as cited in Sauvé et al., 2010) describe serious games as "digital games with significant computer components, incorporating challenges and objectives, while providing entertainment, a scoring system, and fostering the development of competencies, knowledge, and attitudinal changes." Similarly, Zyda (2005) defines serious games as "mental contests played on a computer, adhering to specific rules that leverage entertainment to achieve goals in government or corporate training, education, health, public policy, and strategic communication." These definitions highlight that serious games are designed to transcend mere entertainment by aiming for broader impacts, particularly within educational contexts. Designed to be both engaging and instructional, serious games combine the appeal of commercial video games with clearly defined learning objectives (Bellotti et al., 2013).

In essence, serious games serve as immersive and dynamic learning environments that facilitate personalized learning experiences. They provide opportunities for feedback and assessment while actively engaging learners. By promoting critical thinking and encouraging both individual and collaborative activities, serious games foster deeper cognitive involvement (Gee, 2007). Through the presentation of challenges and the provision of structured support, these games effectively motivate learners, thereby enriching their educational journey (Frederik et al., 2010).

Gamification in Foreign Language Learning

The increasing popularity of gamification stems from its recognized potential to enhance motivation, drive behavioral change, and foster both friendly competition and collaboration across various contexts. As an emerging technology, it has been implemented in diverse fields such as marketing, healthcare, human resources, education, environmental protection, and well-being (Dichev & Dicheva, 2017).

First introduced in 2008 within the field of the digital economy, "gamification," originates from a blog post by Bret Terrill, written during the Social Gaming Summit—a conference dedicated to exploring the intersection of video games and social networks. Terrill (2008) describes *gamification* as the application of game mechanics

to web practices to enhance user engagement (Sanchez & Romero, 2020). Since then, the concept has gained increasing recognition within academic society.

Definitions of gamification vary widely, ranging from "the use of game elements in non-game contexts" (Deterding et al., 2011) to "the creation of playful experiences" (Hamari et al., 2014) and "a process aimed at making activities more playful" (Werbach, 2014).

Gamification in education, often referred to as gamified learning or the use of gamification strategies for educational purposes, involves integrating game elements and playful experiences into teaching and learning processes. This approach aims to enhance knowledge acquisition, motivation, and problem-solving (Kapp, 2012; Dichev & Dicheva, 2017). It supports methodologies such as active participation, collaboration, autonomous learning, and task completion, while also simplifying and enhancing the effectiveness of assessments and feedback. Additionally, gamification encourages exploration, fosters creativity, and improves retention among learners (Caponetto, Earp & Ott, 2014). By incorporating game-like features into educational activities, it can create immersive experiences akin to those found in games, leading to a richer and more engaging learning process (Codish & Ravid, 2015).

Gamification has become a significant trend in foreign language learning, with the goal of enhancing engagement and improving learning outcomes. Language acquisition often necessitates sustained commitment and active participation, involving tasks that can be repetitive and memory drills that may lack intrinsic appeal. Consequently, gamification presents a promising approach to make these learning processes more engaging and effective (Purgina, Motzgovoy & Blake, 2020, Krystalli, 2024).

Serious Games and Gamification in Foreign Language Learning: Motivation and Feedback Dynamics

Enhanced motivation activates learners' personal, cognitive, emotional, and behavioral resources, leading to significant improvements in learning outcomes. As a driving force behind sustained effort and progress, motivation is indispensable in the successful acquisition of a language. Indeed, engagement and motivation are widely acknowledged as critical factors in the learning process, particularly in language acquisition (Dörnyei & Skehan, 2003; Dörnyei, 2003).

The significance of motivation in language learning has prompted extensive research into its nature and function (Dörnyei, 1994). Moreover, motivation is closely linked to learner autonomy, with both elements playing a crucial role in promoting engagement and active participation (Benson, 2007; Deci & Ryan, 2000). In fact, autonomous learning environments—where teacher intervention is minimized—foster intrinsic motivation and are aligned with constructivist principles, which emphasize deeper learning (Deci & Ryan, 2008; Do & Freiermuth, 2019). In this context, technology-enhanced learning environments, such as serious games and

gamified platforms, further amplify these benefits by increasing motivation, engagement, and productivity (Prensky, 2007; Roblyer & Doering, 2010).

A widely accepted perspective is that serious games and gamification enhance effective learning by motivating students through active, critical engagement. These digital tools offer learners opportunities to explore, practice, and express ideas within a problem-based, situated, and low-risk context, which ultimately improves both learning outcomes and the overall learning experience (Oblinger, 2004; Gee, 2007; Boudadi, Gutiérrez-Colón, 2020, Krystalli, 2024). Many gamification systems incorporate reinforcement game mechanisms, such as points, levels, badges, and leaderboards, to encourage user engagement and motivation (Subhash & Cudney, 2018; Dicheva et al., 2015).

As Kapp (2012) suggests, gamifying activities integrates motivating, game-based learning strategies into the classroom, offering learners a sense of engagement, immediate feedback, and accomplishment by overcoming challenges. Feedback, in particular, plays a critical role in both formative assessment and self-assessment, being most effective when it is timely, specific, and includes suggestions for improving future performance (Hattie & Timperley, 2007). Furthermore, feedback becomes even more impactful when linked to well-defined learning objectives, encouraging learners to adopt effective learning strategies that contribute to achieving the goals of the activity (Gikandi, Morrow & Davis, 2011). Additionally, feedback based on explicit criteria enhances transparency in the learning process, making expectations clearer and guiding learners towards improvement (Krystalli & Arvanitis, 2018). When performance feedback is clear, frequent, constructive, and encouraging, it serves as a continuous challenge that sustains motivation, ultimately fostering a deeper commitment to learning (Malone & Lepper, 1987).

Methodology

This chapter outlines the methodology employed to analyze scholarly publications on the integration of serious games, gamification, and related concepts in language teaching and learning. The study focused on publications from 2015 to 2024, specifically targeting key terms such as “serious games,” “gamification,” “digital games,” “feedback,” “motivation,” “language teaching,” and “language learning.”

To gather relevant data, the terms were systematically combined to create search pairs and patterns. The following pairs were used for searching:

- serious games and language teaching
- serious games and language learning
- gamification and language teaching
- gamification and language learning
- gamification and foreign language learning
- digital games in language teaching
- digital games in language learning

- gamification, feedback and language learning
- gamification, feedback and language teaching
- gamify foreign language classroom
- gamification, motivation and language teaching
- gamification, motivation and language learning

These search terms were applied across several academic platforms, including:

Google Scholar (<https://scholar.google.com/>),

Crossref database (<https://www.crossref.org/>)

Semantic Scholar database (<https://www.semanticscholar.org/>)

Additionally, the Publish or Perish software tool (<https://harzing.com/>) was utilized to retrieve and analyze academic citations.

During the search process, some platforms did not support combinatorial queries using AND and OR operators. Consequently, the terms were searched in individual pairs. By the end of the search, approximately 3,970 academic works were collected. Duplicates, incorrect entries, and irrelevant standalone citations were removed, resulting in a refined dataset of 1,980 works.

Further filtering was done to exclude articles unrelated to the focus of the study. Many of the collected works were found to be associated with terms like "gamification," "serious games," and "motivation" but in contexts unrelated to language teaching, such as "STEM," "sign language," "management education," and "software engineering." These were excluded from the final dataset, leaving 569 titles directly aligned with the study's intended focus.

The remaining articles were then classified into five thematic topics based on their titles and content:

Topic 1: Serious games and language teaching or learning

Topic 2: Gamification and language teaching or learning

Topic 3: Digital games and language teaching or learning

Topic 4: Gamification, feedback, and language teaching or learning

Topic 5: Gamification, motivation, and language teaching or learning

This classification provided a clear structure for analyzing the role of serious games, gamification, feedback, and motivation in the context of foreign language education.

Findings and Analysis

The classification of academic works was based on the taxonomy provided by the Publish or Perish software (<https://harzing.info>) which organizes entries into distinct

categories, including book, book chapter, journal article, proceedings article, and posted content. For works that could not be clearly categorized within these predefined groups, the label "other" was assigned. This approach ensured a systematic and consistent categorization process, which in turn facilitated accurate analysis and reporting. The software provides a range of citation metrics, including the h-index, g-index, and citations per year. However, these metrics were considered outside the scope of the study's objectives and were therefore omitted from the analysis.

Following this, the distribution of academic works by year is presented, highlighting the evolving focus on serious games and gamification in foreign language learning over time.

The data in figure 1 highlights the increasing academic interest in the application of serious games and gamification in foreign language learning over the past decade. Starting with modest numbers in 2015 and 2016, there is a significant rise in publications from 2020 onwards, with a marked peak in 2022 (124 works). This upward trend indicates a growing focus on these innovative teaching methods, reflecting their expanding role in foreign language education. The sustained high number of publications through 2023 and 2024 suggests that serious games and gamification continue to be central topics of research, addressing emerging trends and challenges in the field.

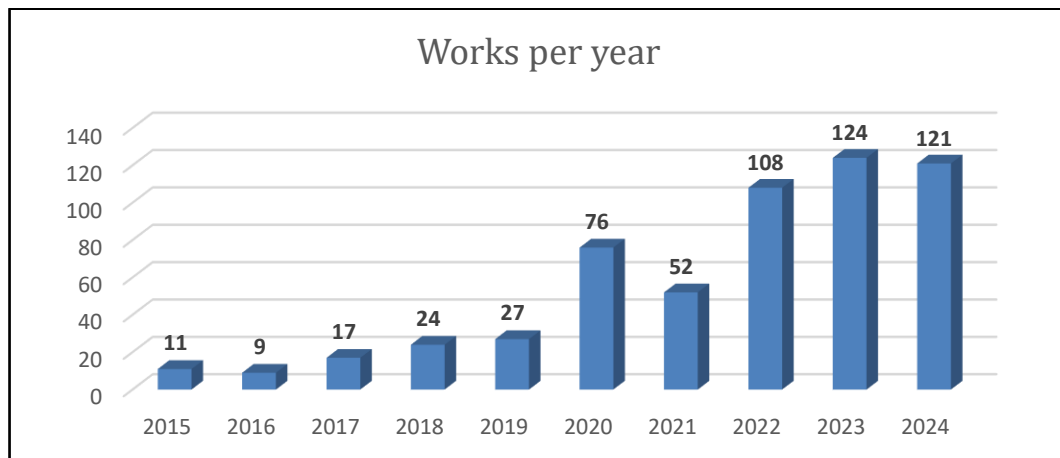


Figure 1

Annual Distribution of Academic Works on Serious Games and Gamification in Foreign Language Learning (2015-2024)

The following figures present the categorization of the collected academic works, emphasizing the distribution between those concentrating on specific linguistic activities and those addressing other types of activities or linguistic competencies.

Figure 2 illustrates the number of academic works focusing on specific languages, with a clear predominance of English. As shown, the majority of works (408) concentrate on English, far surpassing those focused on other languages. Spanish ranks second with 12 works, followed by Chinese with 10.

Other languages such as German, French, and Arabic have minimal representation, with only 5, 1, and 3 works, respectively. Several languages, including Vietnamese, Turkish, Russian, and Romanian, each have only one work dedicated to them. Additionally, a substantial portion of works (122) is categorized under "No Language," indicating that these works do not focus on a particular language, which could reflect interdisciplinary research or studies that apply to multiple languages. This distribution highlights the prominence of English in language-focused academic research related to serious games and gamification, while other languages are less represented.

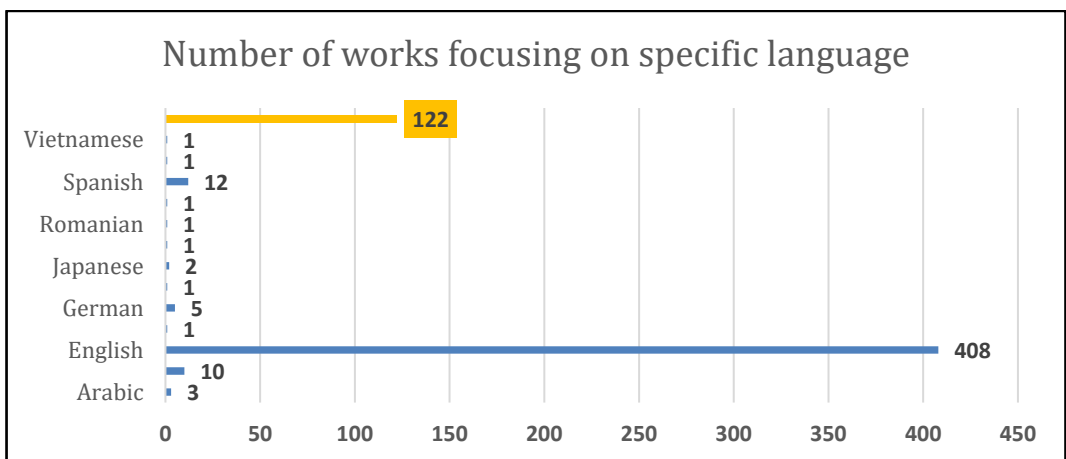


Figure 2

Distribution of Academic Works by Language Focus

Figure 3 highlights the distribution of academic works focusing on specific language activities, revealing an emphasis on speaking skills (18 works), followed by reading (8 works), writing (6 works), and listening (5 works). Despite the importance of each skill in language learning, the relatively low total number (37 out of 569) suggests that research on individual language activities may be underrepresented in the overall academic output. This disparity could indicate a need for further exploration of these core competencies, particularly listening and writing, which are often critical for comprehensive language acquisition.

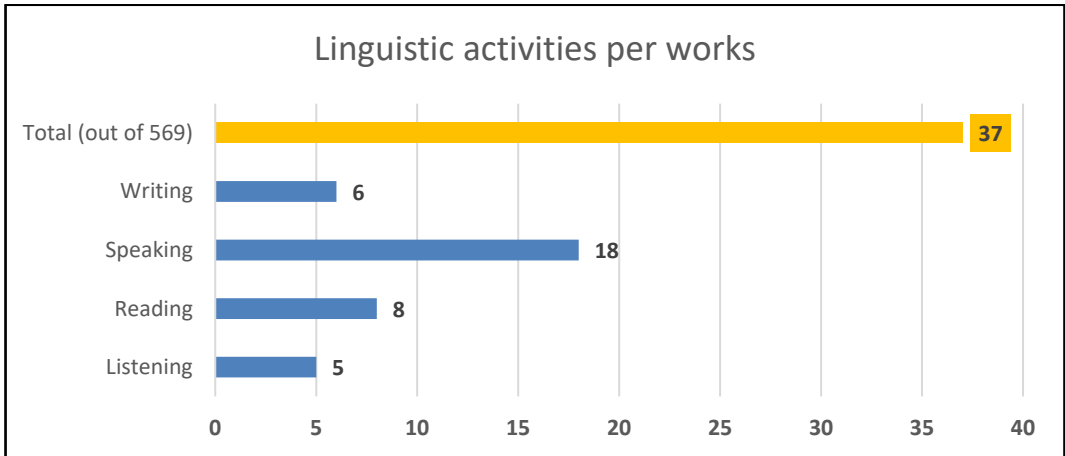


Figure 3

Distribution of Academic Works by Language Activity Focus

Figure 4 illustrates the distribution of academic works across linguistic competence areas, with a notable emphasis on vocabulary (58 works) and grammar (11 works). However, areas such as semantics, orthography, and phonetics are not explicitly represented, which may result in gaps in the exploration of these important linguistic dimensions. Additionally, the categories of language learning (94 works) and language teaching (28 works) are broad and may include various subfields that are not clearly defined. This lack of precise categorization makes it difficult to identify the specific research focus within the overall body of work.

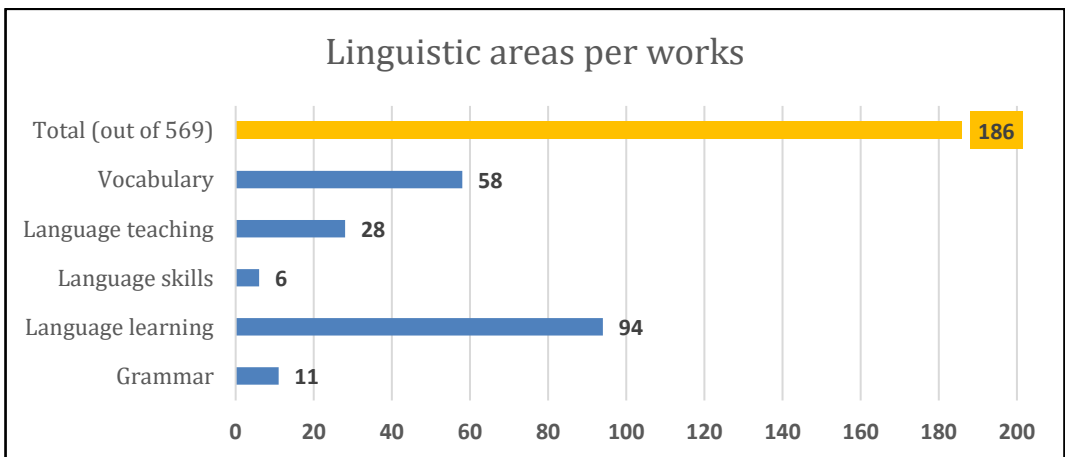


Figure 4

Distribution of Academic Works by Linguistic Competence Areas

In the next stage of the analysis, text analysis tools such as Voyant-Tools and AntConc (<https://www.laurenceanthony.net/software/antconc/>) were employed to examine the most frequent terms, including unigrams, bigrams, trigrams, four-grams, and five-grams, within the academic works in the sample. This analysis focused on both the titles and the abstracts of the research papers, providing valuable insights into the key themes and trends within Digital Game-Based Learning (DGBL) and gamification in foreign language education. As shown in Table 1, which highlights the frequency of terms in the titles, recurring terms such as "motivation," "students," and "learning" underscore the importance of learner engagement and motivation within gamification-based approaches. These terms signal the central role of gamification in addressing motivational challenges in foreign language learning. The dominance of terms like "English language teaching" and "foreign language learning" further reflects the predominance of English in this field of research. The high frequency of these phrases demonstrates the focus on the application of gamification specifically within the context of English language education.

Table 1

Frequency Distribution of N-grams in Research Titles (2015-2024)

N-grams in works' titles frequency analysis									
Unigram	Freq	Bi-grams	Freq	Tri-grams	Freq	Four-grams	Freq	Five-grams	Freq
gamification	452	english language	101	english foreign language	40	gamification english language teaching	13	effect gamification students motivation learning	3
english	309	language learning	100	gamification english language	31	learning english foreign language	8	english language learning using gamification	3
learning	301	foreign language	83	english language learning	29	gamification english language learning	7	iranian pre intermediate efl learners	3
language	298	gamification english	67	english language teaching	24	english foreign language efl	6	learning english foreign language gamification	3
students	134	english foreign	40	foreign language learning	17	foreign language learning gamification	5	motivation learning english foreign language	3
teaching	113	using gamification	35	language learning gamification	15	learning english second language	5		
efl	112	learning english	34	gamification teaching english	11	students motivation learning english	5		
foreign	86	teaching english	33	english second language	10	english foreign language classroom	4		
motivation	82	language teaching	28	game based learning	9	english foreign language learners	4		
using	64	learning gamification	27	gamification language learning	9	english foreign language learning	4		
vocabulary	62	second language	26			games english foreign language	4		
games	59	digital games	25			impact gamification english language	4		
learners	59	gamification teaching	24			language learning using gamification	4		
classroom	55	vocabulary learning	22			motivation english language learning	4		
gamified	55	efl learners	21			teaching english foreign language	4		
digital	51	students motivation	20						
education	50								

Table 2, which presents the frequency distribution of n-grams in the abstracts, reveals additional trends. The unigrams, including "language," "learning," "gamification," and "students," reinforce the central themes identified in the titles. Notably, the term "games" appears 59 times, and "digital games" appears 25 times in the bigrams, highlighting the growing emphasis on game-based learning approaches within the academic discourse. The prominence of terms related to motivation and engagement further indicates that gamification is widely discussed in relation to student motivation and its impact on teaching methodologies.

Table 2

Frequency Distribution of N-grams in Research Abstracts (2015-2024)

N-grams in works' abstracts frequency analysis									
Unigram	Freq	Bi-grams	Freq	Tri-grams	Freq	Four-grams	Freq	Five-grams	Freq
language	791	foreign language	197	english language teaching	60	english foreign language efl	18	blended learning language teaching studying	4
gamification	755	language learning	182	english foreign language	59	gamification english language teach	13	gamified blended learning language teaching	4
learning	683	english language	170	gamification english langua	33	learning english foreign language	10	learning english foreign language gamification	4
students	395	language teaching	163	english language learning	32			learning language teaching studying requirement	4
english	389	digital games	59	foreign language learning	31			based adventure gama gamification class	3
motivation	342	english foreign	59					digital game based language learning	3
teaching	334	learning english	47					english language learning primary school	3
foreign	230	gamification english	46					executive functions older adults cognitive	3
study	203	teaching learning	45					functions older adults cognitive impairment	3
games	186	motivation engagemen	44					gamification used make students motivated	3
research	179	students motivation	44						
game	163	use gamification	44						
gamified	137	learning process	43						
digital	136								
teachers	136								
learners	123								
use	119								
used	119								
based	109								
engagement	105								
vocabulary	96								
education	95								
using	93								
efl	90								
student	83								
results	79								
skills	79								
process	72								
educational	64								
elements	63								
design	62								
data	60								

The analysis of keywords in both the abstracts and titles of the academic works provides further insight into the thematic focus of the research on gamification and foreign language learning. In the abstracts (Table 3), terms such as "language," "gamification," "learning," and "students" appear frequently, reflecting the central themes of the studies, including the emphasis on gamified language learning, student engagement, and the integration of gamification into language education. The prominence of "motivation" (342 occurrences) further highlights the importance of motivational strategies in gamified learning environments.

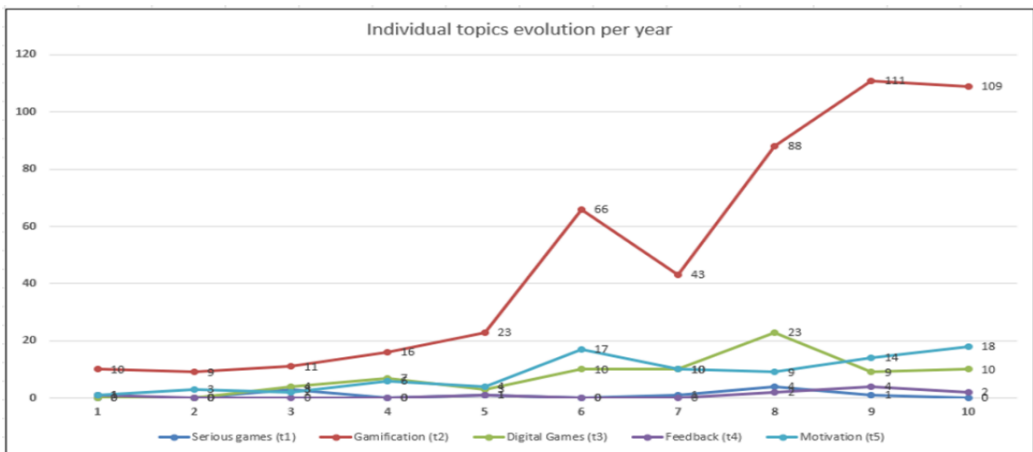
In the titles (Table 4), the focus shifts slightly towards more specific references to gamification and its application. The most frequent keywords include "gamification," "learning," and "students," with a notable emphasis on "english" and "teaching." This aligns with the findings from the previous tables, indicating that the majority of the research targets English language teaching, with an increasing focus on gamification as a pedagogical tool. Additionally, terms like "vocabulary," and "classroom" emphasize the practical applications of gamified methods within language classrooms, underlining the context in which these approaches are implemented.

Table 3
Keyword Frequency Distribution in Works' Abstracts

Keywords in works' abstracts	Freq
language	791
gamification	755
learning	683
students	395
english	389
motivation	342
teaching	334
foreign	230
study	203
games	186
research	179
game	163
gamified	137
digital	136
teachers	136
learners	123
use	119
used	119
based	109
engagement	105

Table 4
Keyword Frequency Distribution in Works' Titles

Keywords in works' titles	Freq
gamification	452
english	309
learning	301
language	298
students	134
teaching	113
efl	112
foreign	86
motivation	82
using	64
vocabulary	62
learners	59
games	59
classroom	55
gamified	55
digital	51
education	50



In the final phase of the analysis, the specific topics addressed in the academic works were carefully recorded. While many publications focused on a single topic, others explored two or even three topics simultaneously. Based on this data, figures were produced to illustrate the evolution of these topics over time.

Figure 5. Yearly Trends in Individual Topic Exploration

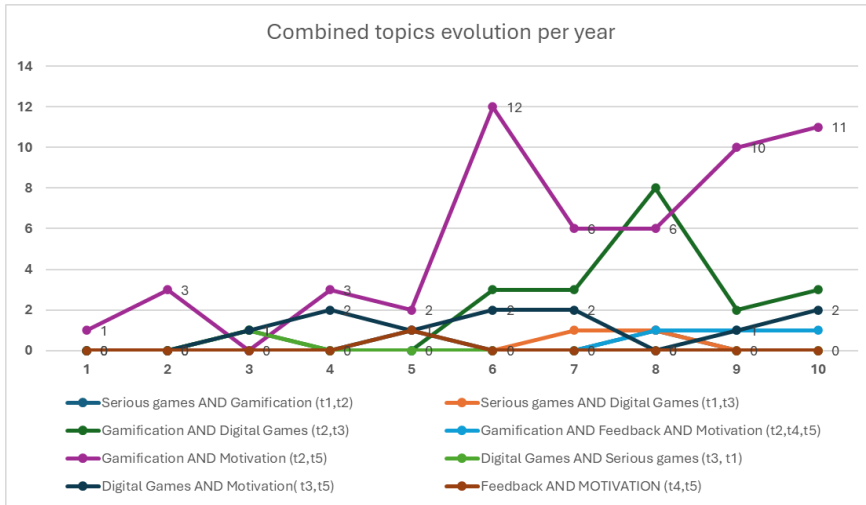


Figure 6. Evolution of Combined Topics Over Time

Figures 5 and 6 highlight the growing prominence of gamification (t2), particularly in connection with motivation (t5), which peaks in 2023-2024. While digital games (t3) and motivation display steady interest, serious games (t1) and feedback (t4) remain underexplored. Emerging intersections, such as gamification, feedback, and motivation (t2, t4, t5), show recent but limited development, reflecting a research focus increasingly centered on gamification and its applications.

Conclusion and Implications for Future Research

The findings of this study underscore the growing significance of gamification as a pivotal strategy for enhancing motivation and engagement in language learning (Deterding et al., 2011; Hamari et al., 2014). However, several gaps in the research warrant further exploration. The underrepresentation of serious games (t1) and feedback (t4) in the analyzed works suggests untapped opportunities for investigating their unique contributions to language acquisition (Connolly et al., 2012). Furthermore, the limited emphasis on listening and writing skills highlights the need for targeted studies to ensure a balanced focus across all language competencies (Reinders & Wattana, 2015).

Future research should address the predominance of English-focused studies, which risks overlooking diverse linguistic and cultural contexts. Expanding the scope to include less commonly studied languages could yield richer insights into the applicability of gamification across various educational settings (Van Eck, 2006).

From a practical perspective, integrating gamification into classrooms requires robust frameworks that address challenges such as sustaining long-term engagement and incorporating effective feedback mechanisms (Ryan & Deci, 2000). Studies that

explore the intersection of gamification, feedback, and motivation (t2, t4, t5) remain in their infancy but point to promising areas for development (Alsawaier, 2018). These frameworks could help educators create evidence-based strategies for gamified learning that align with diverse learner needs.

The evolution of digital tools further presents exciting avenues for innovation. The intersection of gamification with artificial intelligence and adaptive learning systems offers the potential for personalized learning experiences tailored to individual learner profiles, which could enhance both motivation and educational outcomes (Hwang & Wu, 2012; Bakkes et al., 2012).

Overall, this study invites a more inclusive, interdisciplinary, and comprehensive approach to research and practice in gamification for language education, paving the way for more equitable and effective learning environments.

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