

Navigating Gamification in Open and Distance Learning: A Comprehensive Analysis

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ABSTRACT

Gamification has proven to enhance learner motivation and engagement through the integration of game design elements in physical classroom contexts, particularly. The inherent nature of virtual environments affects the success of gamification strategies in open and distance learning (ODL). This study presents a literature review of 37 empirical research papers on gamification in ODL published between 2019- 2024. The review addresses five key research questions: the annual distribution of publications, commonly used game elements (e.g., points, badges, storytelling), characteristics of learner populations, prevalent research methodologies, and the primary findings reported. By synthesizing trends and empirical outcomes, the paper highlights how gamification fosters learner motivation, interactivity, and improved outcomes in digital learning environments. The five year trend analysis of gamification in ODL presents evidence-based insights for educators and instructional designers to enhance learner engagement through gamified strategies in open and distance education settings.

Keywords: Gamification, Game Elements, Learner Engagement, Learner Motivation, Open and Distance Learning.

INTRODUCTION

In recent years, the educational landscape has undergone a profound transformation, driven primarily by the extensive integration of digital technologies (Adams & Dormans, 2012). In this evolving landscape, open and distance learning (ODL) is an alternative for learners, providing accessibility, affordability and flexibility (Hamari et al., 2014). Despite its potential benefits, ODL encounters several challenges that may hinder its effectiveness. A primary concern in open and distance education is learner distraction, which often arises due to the absence of a structured learning environment. In the absence of face to face interaction with teachers and peers, learners find it difficult to be attentive and motivated (Kapp, 2012). This challenge is often multiplied by the typical asynchronous nature of remote learning environments, which can leave the learners feel isolated and disconnected from the learning process (Pivec et al., 2004). Traditional distance education models often rely on passive communication channels, such as recorded lectures or text-based materials, which fail to foster active participation and collaboration (Deterding et al., 2011). Consequently, many students become disengaged from their coursework, resulting in lower retention rates and learning outcomes (Kapp, 2012). Without regular opportunities for discussion, feedback, and collaboration, students may struggle to clarify concepts, seek assistance, or engage in meaningful academic discourse (Hamari et al., 2014). This isolation can impede cognitive development and socio-emotional growth, compromising the overall quality of the learning experience (Adams & Dormans, 2012). Furthermore, the absence of a tangible learning environment can exacerbate disorientation and detachment among learners. Unlike traditional classrooms, where physical cues and social interactions foster a sense of belonging, distance learning environments may feel impersonal and transient (Pivec et al., 2004). This lack of a supportive community can lead to decreased motivation, higher attrition rates, and diminished academic performance (Deterding et al., 2011).

One promising solution to address these challenges is the integration of gamification principles into ODL environments (Deterding et al., 2011). Gamification in the educational scenario involves introducing game design elements and mechanics that offer a novel way to enhance motivation, engagement, and learning outcomes among distance learners (Pivec et al., 2004). It involves incorporating elements of gamification, namely digital content, points, leaderboards, rewards, and badges into the academic curriculum to create an interactive learning experience that increases overall engagement of students (Deterding et al., 2011). Gamification fosters the right social ecosystem for students to learn by incentivizing learning, a key aspect of the learning process, targeting students' motivation to learn (Plass et al., 2015). Prior research has demonstrated that gamification significantly enhanced learning outcomes, particularly during the COVID-19 pandemic, when in-person teaching and learning was disrupted and students engaged in learning within isolated environments. During this period, gamified approaches played a key role in boosting learner motivation and engagement. Empirical studies reported a positive impact of gamification on students' long-term retention and sustained motivation, establishing it as one of the most effective strategies for supporting online and distance learning (Antonaci et al., 2019).

Further, gamification has shown encouraging results in promoting collaboration and social learning. Integrating game elements into the existing curriculum can promote healthy competition and cooperation among the students. Gamification significantly enhanced students' perceptions of inclusion and prosocial behavior, fostering a sense of belonging and improving social relationships among learners. This underscores gamification's role in promoting collaboration and empathy in educational environments (Scala and Tafuri, 2025; Hamari, 2014). Researchers have found a positive impact on growth mindset in students, which the authors believed helped improve intelligence and ability through effort and perseverance (Dichev et al., 2015). Persistent challenges particularly student engagement, motivation, isolation, and high dropout rate, have been reported in open and distance learning. This study undertakes a focused review of empirical literature from 2019 to 2024 to evaluate the effectiveness of gamification as a pedagogical strategy. By examining how specific game elements (e.g., badges, leaderboards, narratives, and challenges) have been applied across diverse learner groups and educational settings, the study aims to identify trends, assess learner responses, and understand the contexts in which gamification is most impactful. This five-year span allows for a comparative analysis across pre-COVID, pandemic, and post-pandemic educational landscapes, offering a timely and evidence-based understanding of gamification's evolving role in enhancing learning outcomes in ODL environments. The findings aim to support instructional designers, educators, and policymakers in making informed decisions about integrating gamified strategies into remote and digital learning ecosystems.

THEORETICAL FRAMEWORK

Theories on social constructivism and connectivism provide a theoretical foundation for why gamification can be helpful in improving engagement and collaboration, underlining collaboration and social learning as the key to successful outcomes. Social constructivism, rooted in Vygotsky's theory, posits that learning is a social process. It is constructed through interaction with others, context, and tools. Learners build knowledge collaboratively, supported by dialogue, shared tasks, and social negotiation (Vygotsky, 1978). Game elements such as team quests, discussion-based leaderboards, and collaborative achievements mirror the interactive scaffolding central to social constructivism. Gamification encourages peer-to-peer learning, problem-solving in groups, and communication, which are critical for meaning-making in online learning. Rocca (2025) notes that gamified platforms, when aligned with constructivist pedagogy, create active participation loops that increase engagement through challenge, cooperation, and contextualized feedback. Connectivism, proposed by Siemens (2005), argues that knowledge exists within networks, and learning is the ability to navigate and grow those networks, particularly in digital contexts. Gamification provides a structured digital ecosystem in which learners engage with diverse content, peers, and platforms. Through digital badges, interactive leaderboards, and real-time feedback, learners participate in a networked learning environment, ideal for the distributed nature of knowledge in online education. Studies support the synergy between connectivism and gamification, highlighting how networked game mechanics enhance peer-driven exploration, distributed collaboration, and socially-mediated learning gains (Rocca, 2025).

Self-Determination Theory (SDT) by Deci & Ryan (2013) explains intrinsic motivation as stemming from three psychological needs: Autonomy, Mastery (Competence) and Purpose (Relatedness). Gamification leverages autonomy through learner choice (such as choosing tasks, setting pace and challenges in games), mastery through challenge progression (such as levels, scores, and feedback track progress), and purpose via social interaction (collaboration, story telling and community challenges), directly aligning with SDT principles. Additionally, Gamification promotes the feeling of teamwork and communication among students, a key component of 21st-century skills required at the workplace. Thus, by leveraging intrinsic motivators such as autonomy, mastery, and purpose, gamification can enhance learners' engagement (Bagheri & Shahsavan Markadeh, 2022).

In this regard, the paper aims to review existing literature on gamification to establish its potential role in open and distance learning challenges and identify the game elements that can be utilized in distance education. Drawing upon the findings of existing studies with a focus on empirical findings, we examine the benefits of gamification in addressing the challenges in distance and open education. We aim to identify and highlight how gamified elements (leaderboards, points, badges, quests and story telling, etc) can foster motivation in learners, promote active engagement, and facilitate meaningful interactions within the virtual learning environment.

This review paper offers an overview of the studies conducted at the intersection of gamification and open and distance learning. Furthermore, this comprehensive examination seeks to provide educators, instructional designers, and policymakers valuable insights into the possibilities of gamification as a transformative tool in open and distance learning. By understanding how gamification can mitigate the shortcomings of traditional distance education models, stakeholders can make informed decisions for the inclusion of gamified elements into their instructional designs, thereby enriching the learning experiences of remote learners worldwide.

The literature review is limited to studies published between 2019 and 2024 which is intentional and grounded in the transformative global impact of the COVID-19 pandemic on education systems, particularly in the domain of open and distance learning (ODL). This period covers the three critical phases of educational transformation: pre-pandemic, pandemic response, and post-pandemic recovery, each marked by distinct trends in the implementation and perception of gamification strategies.

- Pre-COVID (2019- Early 2020): This phase represents a baseline for understanding how gamification was employed in ODL before the global shift to emergency remote teaching. Studies from this period provide early insights into how gamified platforms influenced motivation, learner interaction, and engagement in distance settings under normal circumstances.
- During COVID (2020- 2021): The sudden shift to fully online instruction during the pandemic led to a surge in interest in gamification as a solution to urgent pedagogical challenges, such as learner disengagement, digital fatigue, and skyrocketing dropout rates. Gamified learning environments were rapidly implemented to re-establish learner presence, provide structure, and simulate classroom interaction in fully virtual spaces. Research from this period offers valuable empirical evidence on how gamification strategies such as points, badges, levels, and storytelling were leveraged to retain attention, foster motivation, and maintain continuity of learning in crisis- driven digital classrooms.
- Post-COVID (2022–2024): As educational institutions transitioned to more stable hybrid or online-first models, researchers began evaluating the long-term efficacy and sustainability of gamification in ODL. This period shows a shift from emergency application to more theory-driven design, with attention given to factors like learner personality types, pedagogical alignment, and measurable learning outcomes. Additionally, critical reviews emerged on the limitations of gamification, such as overuse, superficial engagement, and lack of contextual relevance, which resulted in a more nuanced understanding of its role in education.

This study aims to address the following research questions:

- (1) What is the distribution of published studies on gamification in open and distance learning by year, country of origin, and publication source?
- (2) Which game elements are used in open and distance learning?
- (3) What are the characteristics of the study participants in gamification research within open and distance learning, including their educational level, professional background, and participant numbers?

- (4) What are the predominant research methods employed in studies on gamification in open and distance learning?
- (5) What are the major empirical findings reported in gamification studies within the context of open and distance learning, particularly in terms of learner engagement, motivation, and learning outcomes?

MATERIALS AND METHODS

The researchers have thoroughly examined the literature encompassing research papers published between 2019 and 2024. The researchers have adopted the following screening criteria for selecting the papers for the literature review:

- Description of research questions
- Searching for suitable published research
- Screening of the research
- Coding of the data
- Analyzing and mapping the data

The researchers have thoroughly examined the literature encompassing research papers published between 2019 and 2024. As shown in Table 1, the researchers have adopted the following screening criteria for selecting the papers for the literature review:

Table 1. Screening Criteria for Selecting Relevant Studies

Serial No.	Included	Excluded
1	Papers published between 2019-2024	Before 2019 and after 2024
2	Academic discipline – education	Other discipline
3	Paper available on Google Scholar	Other platforms
4	Definition of gamification in the context of education	Definition of gamification in some other contexts
5	In the area of Open and Distance Education and Online Courses such as MOOCs	Physical Classroom
6	Free Access	Paid

The above screening criteria resulted in 37 research papers. To address the research questions, we adopted additional categorization criteria as given below. Those criteria include:

- Distribution of studies (Year, country, and source-wise)
- Game elements covered
- Educational level/ profession and number of participants
- Method of the research
- Key findings of the research

RESULTS

This section presents the study findings. First, we outline the annual distribution of studies according to the specified mapping criteria. The criteria are: distribution of studies (Year, country, and source), game elements used, participant characteristics (educational level/profession and number of participants), the research method, and the key findings of the studies.

Distribution of studies: This review analyzes the distribution of gamification research in open and distance learning based on year of publication, country of origin, and source of publication. The findings offer insight into temporal trends, geographical focus areas, and the academic platforms most commonly used to disseminate research in this domain.

Publication Year of the Study: There are many studies published on gamification in open and distance learning (Table 2). The analysis of literature published between 2019 and 2024 reveals several key patterns in the application of gamification within open and distance learning (ODL). A total of 37 empirical studies were reviewed, with the highest number of publications in 2021 ($n = 10$). This was followed by 2024 ($n = 8$) and 2022 ($n = 6$), indicating a sustained interest in gamification research, particularly in the wake of the COVID-19 pandemic when remote learning surged globally.

Table 2. Position of the Studies concerning the Year of Publication

Publication Year	2019	2020	2021	2022	2023	2024
Number of Studies Published	4	4	10	6	5	8

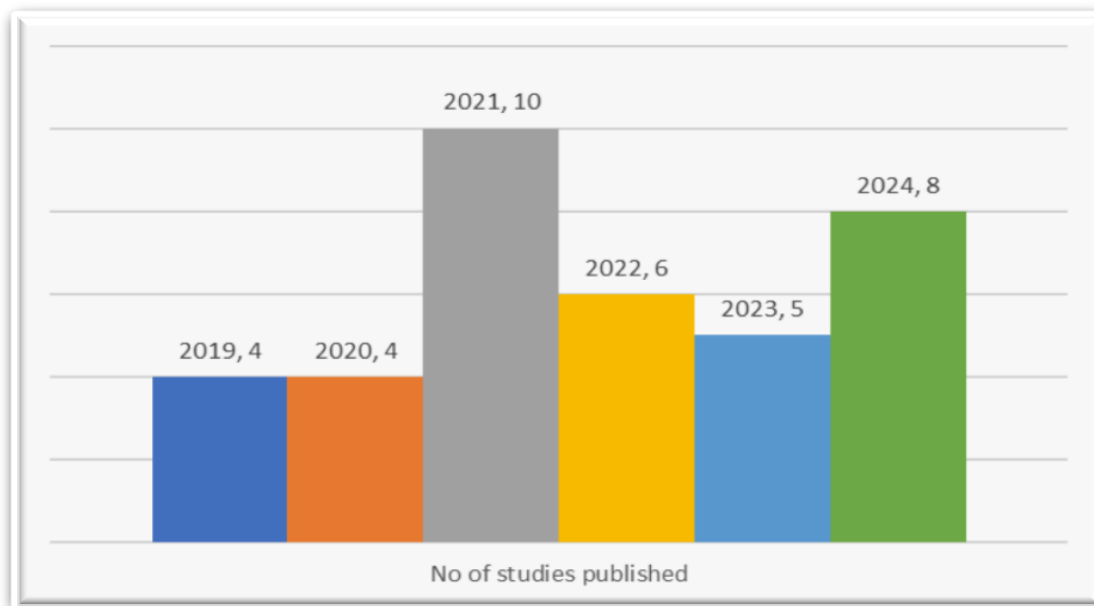


Figure 1. Year-wise publication of studies

- **Country-wise Article Publication:** The Table 3 describes that from 2019 to 2024, the maximum researches related to gamification were written in Turkey, after that Spain, UK and USA are leading countries.

Table 3. Country-wise representation of article publication

Country	Turkey	Spain	USA	Mexico	UK	Ukraine	India	Hong Kong	Others
No. of Articles	7	5	2	3	4	2	2	2	1 Each

- **Source-wise Article Publication:** Table 4 shows the association of articles with the source in which 'Education and Information Technologies' is the leading source. Other leading sources are 'Australasian Journal

of Educational Technology’ and Proceedings of the 4th International Conference on Culture, Design and Social Development (CDSO 2024).

Table 4. No. of Articles Concerned with the Source

Source	Education and Information Technologies	Australasian Journal of Educational Technology	Proceedings of the 4th International Conference on Culture, Design and Social Development (CDSO 2024)	Interactive Learning Environments	All other sources
Articles	4	2	2	2	1 Each

Game Elements in the Studies: As shown in Table 5, Badges (n=14) is the most popular gamification element used in the studies, followed by Points (n= 13), Leaderboard (n=13), Challenges (n=12), Feedback (n= 8) and level (n= 8).

Table 5. Distribution of Game Elements in the Studies

Game Elements Used	Study Conducted By	Frequency of Game Elements
Points	Aziz et al., 2021; Mese & Dursun, 2019; Şenocak et al., 2021; Pakinee & Puritat, 2021; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Reyes-Cabrera, 2022; Aksoy & Usta, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024; Piernas et al., 2024	13
Badges	Huang et al., 2019; Aparicio et al., 2019; Mese & Dursun, 2019; Rodriguez et al., 2019; Şenocak et al., 2021; Flores & Guevara, 2021; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Reyes-Cabrera, 2022; Leung, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024	14
Leaderboard	Huang et al., 2019; Mese & Dursun, 2019; Rodriguez et al., 2019; Şenocak et al., 2021; Flores & Guevara, 2021; Bouchrika et al., 2021; Park & Kim, 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Moldez et al., 2024	13
Narratives	Rodriguez et al., 2019; Reyes-Cabrera, 2022; Lopes et al., 2024	3
Progress Bar	Mese & Dursun, 2019; Pakinee & Puritat, 2021; Hassan et al., 2021; Moldez et al., 2024	4
Goal	Huang et al., 2019; Aparicio et al., 2019; Peña et al., 2021; Konstantynova et al., 2024	4
Challenge	Huang et al., 2019; Rodriguez et al., 2019; Flores et al., 2020; Peña et al., 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Hassan et al., 2021; Reyes-Cabrera, 2022; Kaya & Ercag, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024; Piernas et al., 2024	12
Collaboration	Huang et al., 2019; Veteška & Kursch, 2020; Lopes et al., 2024; Piernas et al., 2024	4

Access	Huang et at., 2019; Konstantynova et al., 2024	2
Feedback	Huang et at., 2019; Mese & Dursun, 2019; Peña et al., 2021; Aparicio et al., 2019; Fontana, 2020; Hussin et al., 2021; Moldez et al., 2024; Piernas et al., 2024	8
Time Constraints	Aparicio et al., 2019; Fontana, 2020; Hussin et al., 2021	3
Experience Points	Mese & Dursun, 2019; Lopes et al., 2024; Moldez et al., 2024	3
Face- to face Reward	Mese & Dursun, 2019	1
Virtual Reward	Kalashnikova et al., 2022	1
Simulation	Rodriguez et al., 2019	1
Story Telling	Rodriguez et al., 2019; Fontana, 2020; Veteška & Kursch, 2020; Piernas, 2024	4
Humor	Fontana, 2020	1
Mission	Jedel, 2021; Lopes et al., 2024; Piernas et al., 2024	3
Accomplishment	Jedel, 2021, Piernas et al., 2024	2
Level	Mese & Dursun, 2019; Hussin et al., 2021; Park & Kim, 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Hassan et al., 2021; Sümer & Aydın, 2022; Piernas et al., 2024	8
Avatar	Flores & Guevara, 2021; Pakinee & Puritat, 2021	2
Status	Aparicio et al., 2019; Kalashnikova et al., 2022; lopes et al., 2024	3
Bonus	Huang et at., 2019; Aparicio et al., 2019; Kalashnikova et al., 2022	3
Digital Crest	Aksoy & Usta, 2023	1
Activity Completion	Moldez et al., 2024	1

Badges emerged as the most popular game element, appearing in 14 of the reviewed studies across multiple years, as shown in Table 6. Their widespread use can be attributed to their simplicity and effectiveness in representing achievement and motivation, especially in self-paced ODL contexts. A few novel game elements appeared primarily in 2023–2024, suggesting an expanding conceptual scope of gamification: Digital Crest (Aksoy & Usta, 2023); Activity Completion Tracker (Moldez et al., 2024); Virtual Reward (Kalashnikova et al.,

2022); Mission & Accomplishment Elements gained renewed attention in 2024 (Lopes et al.,2024; Piernas et al., 2024). These reflect efforts to personalize recognition and enhance learner autonomy through non-conventional forms of game design. Some game elements showed limited or declining use, indicating possible obsolescence or reduced effectiveness in online settings: Face-to-Face Reward was used only in 2019 (Mese & Dursun, 2019)- now largely irrelevant in remote contexts. Simulation, one of the emerging popular elements, might not have found relevance in remote settings, thus only one study mentioned it (Rodriguez et al., 2019). Humor and avatars were among the least frequently used game elements, possibly due to platform constraints or their limited perceived impact on learning outcomes. These elements may not align well with the practicalities or priorities of ODL, which favors scalable and performance-oriented tools.

Table 6. Year-wise Usage of Badges in Reviewed Studies (2019–2024)

Year	Number of Studies	Authors
2019	4	Huang et al.; Aparicio at al.; Mese & Dursun; Rodriguez et al.
2021	4	Şenocak et al.; Flores & Guevara; Handayani et al.; Hassan et al.
2022	2	Sümer & Aydın; Reyes-Cabrera
2023	1	Leung et al.
2024	3	Konstantynova et al.; Lopes et al.; Moldez et al.

Participant Characteristics: As shown in Table 7, higher education emerged as the most commonly studied educational context in gamification research related to open and distance learning (ODL). Out of the 37 studies reviewed, 34 explicitly reported participant characteristics such as educational level and sample size. The analysis revealed that twenty- four studies focused on higher education learners; four studies investigated school-level students; two studies each included in-service teachers and lifelong learners, and 2 studies examined participants from multiple educational and professional backgrounds. The participant pool across studies was highly diverse, with sample sizes ranging from 16 to 6,246 learners and participant ages ranging from middle school students to adults up to 45 years old.

Table 7. Distribution of Course Level in the Studies

Educational Level/ Profession Studied	Number of Studies Published
School Education	4
Higher Education	24
Teachers	2
Life- long Learners	2
Multiple Courses and Professions	2

In terms of disciplines, the studies covered a wide academic spectrum, including Management, Information Technology, Education, Agriculture, Energy Sciences, Chemistry, and Languages. This diversity indicates a broad applicability of gamification strategies across both academic and professional training environments, reinforcing its value beyond any single educational context.

Research methods employed in studies on gamification in open and distance learning: As summarized in Table 8, a variety of methodological approaches have been employed to investigate gamification in open and distance learning environments. Among the 37 studies reviewed, the experimental method emerged as the most frequently used approach (n = 14), particularly in studies involving higher education learners, where controlled environments allow for pre- and post-intervention comparisons. These studies often featured moderate-to-large sample sizes and aimed to assess the direct impact of specific gamification elements on learner engagement and

performance. Four studies out of fourteen studies adopting experimental or quasi-experimental designs focused on school education, likely due to the need for measurable, short-term impacts in controlled settings such as classrooms or virtual K-12 environments. These studies typically involved smaller sample sizes, often ranging from 30 to 150 participants, and focused on engagement, motivation, and knowledge retention in core subjects like science, math, or language learning.

Survey-based studies ($n = 11$) were commonly used in contexts with larger and more diverse participant pools, such as adult learners or professionals, to gather perceptions, attitudes, and self-reported behavioural changes. Mixed-method designs ($n = 10$) integrated both quantitative and qualitative data to provide a more comprehensive understanding of learner experience, often employed in studies with varied participant demographics, including lifelong learners and in-service teachers. Case studies ($n = 3$), though less common, provided in-depth insights into specific institutional or programmatic implementations of gamification, often focusing on smaller, specialized groups such as language learners or vocational training participants.

Table 8. Research Method used in the Studies

Research Method	Number of Studies Published
Experiment	14
Survey	11
Case Study	3
Mixed Method	10

Major empirical findings reported in gamification studies within the context of open and distance learning, particularly in terms of learner engagement, motivation, and learning outcomes: This review synthesizes key empirical findings from gamification research in open and distance learning (ODL) conducted between 2019 and 2024. The selected studies reveal substantial evidence that gamification has a multifaceted impact as follows: Learner Motivation, Engagement and Dropout Mitigation: Gamification consistently enhances learners' motivation, peer interaction, and feedback practices. For example, Huang et al. (2019), Mese and Dursun (2019), and Rodriguez et al. (2019) reported that the integration of game elements such as leaderboards, points, and badges encouraged learners to interact more

frequently, offer constructive peer feedback, and remain more engaged in digital learning environments. Several studies emphasized gamification's potential to address one of ODL's most persistent challenges that is high dropout rates. Flores and Guevara (2021) demonstrated that leaderboard-based rewards in secondary education reduced absenteeism and increased course completion. Moldez et al. (2024), in a large-scale MOOC-based study, showed that integrating quests, levels, and tracking tools significantly boosted learner commitment and improved completion rates. He evaluated a MOOC offered by the University of the Philippines Open University. The gamified course achieved a 28.86% completion rate which is significantly higher than the global average for MOOCs. Learners cited increased satisfaction and motivation, demonstrating that well-integrated gamification can enhance participation and success in large-scale online learning environments. Several researchers have developed gamification-based instructional platforms to enhance engagement in open and distance learning. These include SoruKüp (Şenocak et al., 2021), FunLinguistic (Hussin et al., 2021), and a "science level-up" platform promoting SDG 4 goals. Zainuddin (2024) further validated gamification's pedagogical value for adult learners through scale development analysis.

- Gamification as a Response to the COVID-19 Crisis: In response to remote learning needs during COVID-19, numerous studies proposed gamified interventions. Flores and Guevara (2021) introduced a gamification model featuring avatars, badges, and leaderboards to sustain motivation and engagement in remote classrooms. Antonopoulou et al. (2022) observed that gamified tools improved learning outcomes for elementary students and facilitated the development of interpersonal skills such as communication, social competence, and leadership.
- Gamification and Learner Personality Types: Recent studies explored how personality traits influence engagement within gamified environments. Şenocak et al. (2021) identified "philanthropists" as the most active gamification users, while Kırmacı and Çakmak (2024) highlighted "socializers" as the most interactive group. Pakinee and Puritat (2021) recommended aligning game elements with learner personality

profiles to optimize engagement, suggesting that tailoring gamification design enhances relevance and motivation.

- **Empirical Comparisons of Gamified and Traditional Instruction:** In a controlled experiment, Konstantynova et al. (2024) compared gamified and traditional distance learning. The gamified group showed higher motivation and test scores, confirming the benefits of using elements like points, badges, and levels. However, the study also warned that poorly designed gamification could lead to distraction or unfairness. A balance between challenge and learner support was emphasized as essential.
- **Limitations of Gamification in Practice:** Contrary to many positive findings, Lopes et al. (2024) found that using gamified elements during emergency remote teaching did not significantly improve engagement or reduce dropout rates. Despite employing the Octalysis framework, both the gamified and control groups had very low completion rates. The authors concluded that gamification alone is insufficient; structural challenges such as limited teacher support and lack of interaction must also be addressed.

DISCUSSION

This review provides a comprehensive overview of research on gamification in Open and Distance Learning (ODL) and highlights its growing importance in addressing common challenges such as low learner motivation, disengagement, and high dropout rates. The findings show that research on gamification in ODL has grown considerably over the past five years. A sharp rise in publications began in 2020 and reached its peak in 2021, reflecting the global shift to online learning during the COVID-19 pandemic. As educational institutions struggled to keep learners engaged in virtual classrooms, gamification gained attention as an effective way to make online learning more interactive and motivating. The increase in research during this period shows that educators and researchers actively explored the use of game elements to overcome the limitations of distance education.

The geographical distribution of the studies indicates that interest in gamification is spread across different parts of the world, with some regions contributing more than others. Turkey emerged as one of the leading contributors, possibly due to national efforts and funding to promote digital learning during the pandemic. Countries such as India, Ukraine, Mexico, and Hong Kong also made important contributions, showing that improving learner engagement in ODL has become a global priority.

The variety of journals and publication sources included in the review further demonstrates the growing recognition of gamification as an important area of research. The studies were published not only in educational technology journals but also in journals related to instructional design, psychology, and digital learning, reflecting the multidisciplinary nature of gamification research.

Collectively, these patterns highlight a shift from experimental application to more structured and theory-informed implementations of gamification in ODL. The continued growth of studies after the COVID-19 pandemic, particularly in 2024, suggests that gamification is no longer seen as just a temporary solution for online learning. Instead, it is increasingly being recognised as a long-term approach to improving learner engagement and enhancing teaching and learning in digital environments. This maturation of the field signals new opportunities for longitudinal studies, comparative research across educational systems, and the development of gamified frameworks tailored to specific learner profiles and disciplines.

Further, the analysis of game elements used across the reviewed studies highlights both the popularity of traditional gamification tools and the emergence of new strategies tailored to open and distance learning (ODL). The review shows that game elements such as badges, points, and leaderboards continue to be the most commonly used features in gamified ODL environments. Their popularity is likely because they are easy to implement, can be used with large numbers of learners, and help keep students motivated by recognising their progress and achievements. Their frequent use across different years and educational settings suggests that they have become core components of gamified learning in ODL.

The review also found that recent studies (2023–2024) have started using newer game elements, such as digital crests, virtual rewards, and activity completion tracking. This indicates a shift towards more personalised

learning experiences, where learners receive meaningful recognition and are encouraged to monitor their own progress. Overall, the findings suggest that gamification in ODL mainly relies on game elements that are simple to implement, easy to measure, and closely linked to learner progress.

The analysis of participant characteristics shows that most gamification studies in ODL have been conducted with higher education students. This may be because university students generally have better digital skills and are more comfortable with independent, self-paced learning. In comparison, only a few studies focused on school students. This suggests that although gamification has the potential to benefit younger learners, its use in school settings may be limited by factors such as inadequate technological infrastructure and the greater need for teacher guidance. Similarly, only two studies focused on teachers and two on lifelong learners, pointing to an emerging but still underexplored area in professional and adult learning. Participant demographics and disciplines across studies were notably diverse. This diversity underscores that gamified approaches in ODL are not confined to a single field or learner type, supporting their potential to enhance learning outcomes across a broad range of educational and vocational contexts. The analysis of research methodologies employed in gamification studies within open and distance learning (ODL) environments reveals a dominant preference for quantitative approaches, particularly experimental designs. This trend reflects the research community's focus on establishing causal relationships between specific gamification elements and measurable learner outcomes such as motivation, engagement, and performance. Mixed methods and qualitative studies have also been reported. Overall, the methodological diversity observed across the studies reflects the complexity of evaluating gamification in ODL settings, with researchers tailoring their designs to fit the participant profiles, educational levels, and learning environments involved. Aligning between method selection and participant profile demonstrates that research design in gamification studies is often shaped by the educational level, sample size, and disciplinary context of the learners involved.

Thus, the review of gamification studies in open and distance learning (ODL) from 2019 to 2024 highlights its overall positive impact on learner motivation, engagement, and retention. Notable improvements were seen in MOOCs and school-level courses, while platforms like SoruKüp and FunLinguistic showcased gamification's instructional potential. The review suggests that the social aspect of learning which is missing in the distance and open learning environment can be overcome by adding game elements that engage the participants by promoting competition and collaboration. However, some findings, like those of Lopes et al. (2024), have pointed out that gamification alone is insufficient without proper instructional support and interaction. Thus, it is critical to underline that the effectiveness of gamification shall not be taken as a panacea to all the challenges facing distance and open learning. Key consideration needs to be given to the heterogeneous effects, different game elements have depending upon the personality types and specific needs and levels of different learners. Additional special attention needs to be given to the instructional design in gamification implementation which is currently not been covered in the literature. The design and integration of gamified elements must be tailored to the specific learning objectives, content, and learner demographics to maximize their educational benefits. Educators and instructional designers are encouraged to integrate gamified elements into their instructional designs, ensuring alignment with educational objectives and learner expectations.

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Table 1. Screening Criteria for Selecting Relevant Studies

Serial No.	Included	Excluded
1	Papers published between 2019-2024	Before 2019 and after 2024
2	Academic discipline – education	Other discipline
3	Paper available on Google Scholar	Other platforms
4	Definition of gamification in the context of education	Definition of gamification in some other contexts
5	In the area of Open and Distance Education and Online Courses such as MOOCs	Physical Classroom
6	Free Access	Paid

Table 2. Position of the Studies concerning the Year of publication

Publication Year	2019	2020	2021	2022	2023	2024
Number of Studies Published	4	4	10	6	5	8

Table 3. No. of Articles concerned with the Countries

Country	Turkey	Spain	USA	Mexico	UK	Ukraine	India	Hong Kong	Others
No. Articles of	7	5	2	3	4	2	2	2	1 Each

Table 4. No. of Articles Concerned with the Source

Source	Education and Information Technologies	Australasian Journal of Educational Technology	Proceedings of the 4th International Conference on Culture, Design and Social Development (CDSO 2024)	Interactive Learning Environments	All other sources
Articles	4	2	2	2	1 Each

Table 5. Distribution of Game Elements in the Studies

Game Elements Used	Study Conducted By	Frequency of Game Elements
Points	Aziz et al., 2021; Mese & Dursun, 2019; Şenocak et al., 2021; Pakinee & Puritat, 2021; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Reyes-Cabrera, 2022; Aksoy & Usta, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024; Piernas et al., 2024	13
Badges	Huang et al., 2019; Aparicio et al., 2019; Mese & Dursun, 2019; Rodriguez et al., 2019; Şenocak et al., 2021; Flores & Guevara, 2021; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Reyes-Cabrera, 2022; Leung, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024	14
Leaderboard	Huang et al., 2019; Mese & Dursun, 2019; Rodriguez et al., 2019; Şenocak et al., 2021; Flores & Guevara, 2021; Bouchrika et al., 2021; Park & Kim, 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Handayani et al., 2021; Hassan et al., 2021; Sümer & Aydın, 2022; Moldez et al., 2024	13
Narratives	Rodriguez et al., 2019; Reyes-Cabrera, 2022; Lopes et al., 2024	3
Progress Bar	Mese & Dursun, 2019; Pakinee & Puritat, 2021; Hassan et al., 2021; Moldez et al., 2024	4
Goal	Huang et al., 2019; Aparicio et al., 2019; Peña et al., 2021; Konstantynova et al., 2024	4
Challenge	Huang et al., 2019; Rodriguez et al., 2019; Flores et al., 2020; Peña et al., 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Hassan et al., 2021; Reyes-Cabrera, 2022; Kaya & Ercag, 2023; Konstantynova et al., 2024; Lopes et al., 2024; Moldez et al., 2024; Piernas et al., 2024	12
Collaboration	Huang et al., 2019; Veteška & Kursch, 2020; Lopes et al., 2024; Piernas et al., 2024	4
Access	Huang et al., 2019; Konstantynova et al., 2024	2
Feedback	Huang et al., 2019; Mese & Dursun, 2019; Peña et al., 2021; Aparicio et al., 2019; Fontana, 2020; Hussin et al., 2021; Moldez et al., 2024; Piernas et al., 2024	8
Time Constraints	Aparicio et al., 2019; Fontana, 2020; Hussin et al., 2021	3
Experience Points	Mese & Dursun, 2019; Lopes et al., 2024; Moldez et al., 2024	3

Face- to face Reward	Mese & Dursun, 2019	1
Virtual Reward	Kalashnikova et al., 2022	1
Simulation	Rodriguez et al., 2019	1
Story Telling	Rodriguez et al., 2019; Fontana, 2020; Veteška & Kursch, 2020; Piernas, 2024	4
Humor	Fontana, 2020	1
Mission	Jedel, 2021; Lopes et al., 2024; Piernas et al., 2024	3
Accomplishment	Jedel, 2021, Piernas et al., 2024	2
Level	Mese & Dursun, 2019; Hussin et al., 2021; Park & Kim, 2021; Pakinee & Puritat, 2021; Veteška & Kursch, 2020; Hassan et al., 2021; Sümer & Aydın, 2022; Piernas et al., 2024	8
Avatar	Flores & Guevara, 2021; Pakinee & Puritat, 2021	2
Status	Aparicio et al., 2019; Kalashnikova et al., 2022; lopes et al., 2024	3
Bonus	Huang et at., 2019; Aparicio et al., 2019; Kalashnikova et al., 2022	3
Digital Crest	Aksoy & Usta, 2023	1
Activity Completion	Moldez et al., 2024	1

Table 6. Year-wise Usage of Badges in Reviewed Studies (2019–2024)

Year	Number of Studies	Authors
2019	4	Huang et al.; Aparicio at al.; Mese & Dursun; Rodriguez et al.
2021	4	Şenocak et al.; Flores & Guevara; Handayani et al.; Hassan et al.

2022	2	Sümer & Aydın; Reyes-Cabrera
2023	1	Leung et al.
2024	3	Konstantynova et al.; Lopes et al.; Moldez et al.

Table 7. Distribution of Course Level in the Studies

Educational Level/ Profession Studied	Number of Studies Published
School Education	4
Higher Education	24
Teachers	2
Life- long Learners	2
Multiple Courses and Professions	2

Table 8. Research Method used in the Studies

Research Method	Number of Studies Published
Experiment	14
Survey	11
Case Study	3
Mixed Method	10

Figure 1. Year-wise publication of studies

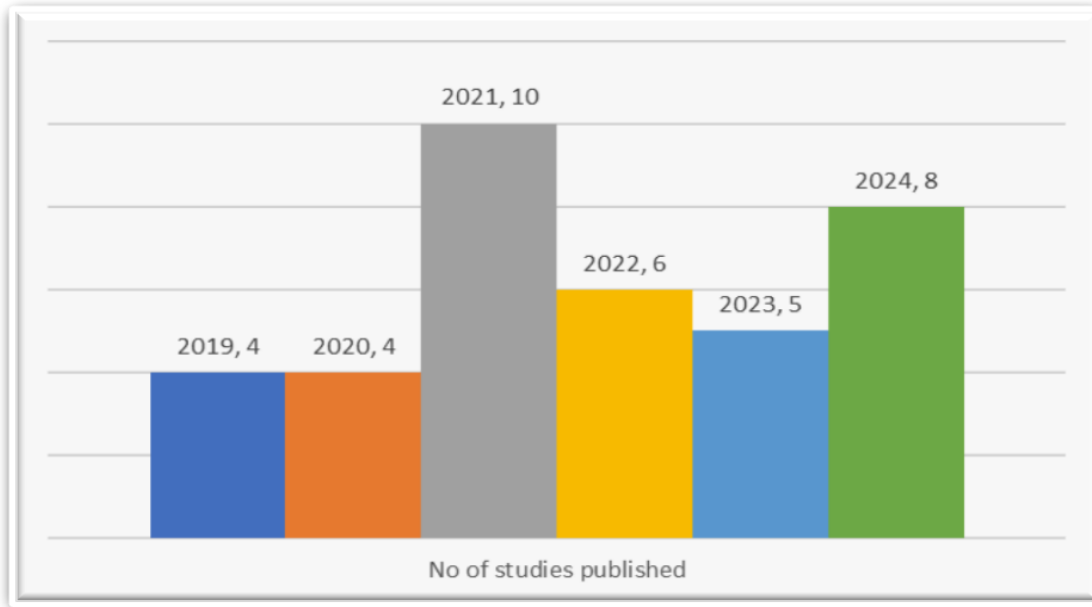


Figure 2. Country-wise representation of article publication

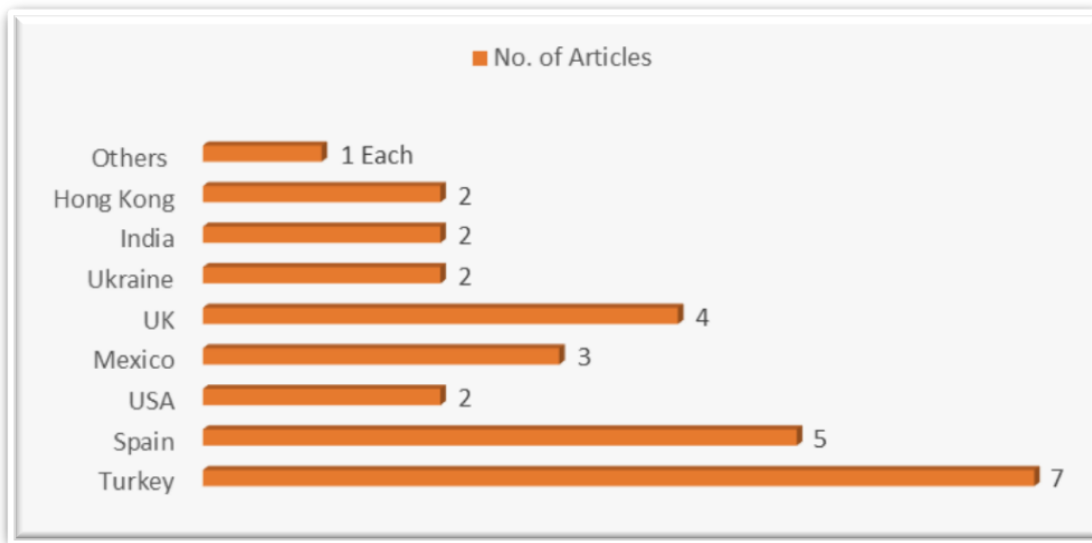


Figure 3. Source-wise representation of article publication

