

Models of Instructional Design in Gamification: A Systematic Review of the Literature

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Abstract: Gamification allows for the implementation of experiences that simulate the design of (video) games, giving individuals the opportunity to be the protagonists in them. Its inclusion in the educational environment responds to the need to adapt teaching–learning processes to the characteristics of homo videoludens, placing value once again on the role of playful action in the personal development of individuals. The interest that has arisen in studying the implications of gamification processes in the different educational stages, in order to determine their impact and suitability, has led to an increase in scientific publications. With the intention of studying the presence and implications of gamification in teacher training as a methodological principle implemented in the teaching–learning process, both in its initial and permanent stages, this systematic review of the literature identifies those instructional design models applied in the field of gamification, as well as its educational significance. Thus, the need to introduce gamified practices in the field of teacher training is observed, providing an experiential learning that allows teachers to apply this methodology in a relevant way in their professional development, based on their own experience.

Keywords: gamification; teacher training; gamification design frameworks; systematic review



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1. Introduction

The proliferation of educational experiences that propose the implementation of active methodologies in teaching–learning processes has provoked the academic interest of the research community. In relation to gamification, there are numerous practices that introduce, in one way or another, elements of (video) games in educational contexts to increase student motivation and involvement. The interest in studying the implications of gamification processes in the different educational stages, in order to determine their impact and suitability, has led to an increase in scientific publications in recent years. As such, the difficulties that at present still persist in clearly defining what gamification is, a term that is often confused with (video) game-based learning, when associated with its root game or with the concept of fun learning, has promoted a massification of studies in this field.

Thus, knowing the state of the literature in relation to gamification becomes a complicated task, a challenge that requires a major investment of time that, on many occasions, is not productive. Therefore, it is necessary to resort to research methodologies that allow the collection of relevant evidence in relation to a specific topic.

To this end, prior to conducting a systematic review of the literature (SRL or SR), it is necessary to determine those scientific productions that implement this methodology as a means of synthesizing the available evidence on the area of interest covered by this article, serving as a precedent for conducting a new SR that updates the results found or delves into other areas of interest related to gamification and its instructional design.

After a thorough reading of 20 systematic reviews, the areas of knowledge for the selected SLRs relate to teaching in the fields of health, science, and English as a second language; at the level of higher education and primary education; with other educational models such as e-learning; and with other methodologies such as flipped learning or peer assessment activities.

In an initial study, Alomari et al. [1] analyzed 40 publications related to the promotion of learning in university students after the implementation of gamification techniques between 2016 and 2018. The presence of a series of common strategies is determined and grouped under the acronym PBL (points, badges, and leaderboards) with a presence of 75%, 65%, and 63%, respectively. As evidenced by the authors, these gamification elements allow for the emergence of a controlled competitive environment that leads to an increase in student motivation and participation.

Along the same lines, Rauschenberger et al. [2] developed a systematic review of the term gamification in the field of learning environments, extracting the relationship between dynamics present in the 10 studies analyzed: emotions and progress (relationships, narrative, choices, and restrictions); mechanics: rewards, (opportunities, resource acquisition, and victory states), feedback, and challenges (cooperation, competition, and transactions); and gamification components: badges, avatars, points, rewards, missions, etc.

Elsewhere, Bozkurt and Durak [3] performed a meta-analysis of 208 studies on gamification published between 2008 and 2016. Through it, they highlight those methodologies most commonly used in gamification research. They also perform a lexical analysis to determine the relationship and reiteration of words in the titles and abstracts of the articles that make up the sample. Gamification is the most used term, related to education, learning, students, training, etc. In a second cluster, the terms game, engagement, social, elements, motivation, experience, behavior, effectiveness, etc., appear. Finally, gamification is related to words such as design, technology, software, online, tools, etc. The study by Zainuddin et al. [4] also addresses issues related to platforms and apps found in the scientific literature on gamification (ClassDojo, ClassBadges, Kahoot!, Duolingo, etc.).

Of interest is the review conducted by Cordero-Brito and Mena [5], representing the evolution of gamification and its influence in the social domain. For this purpose, they analyze a total of 136 articles published between the years 2011 and 2016. The authors establish the temporal trend in publications on gamification, with a considerable increase in recent years. They also identify the most representative model of instructional design, called MDA: mechanics, dynamics, and aesthetics. Finally, the authors establish a list of gamification components and tools and their impact on the motivation of individuals.

Similarly, Mora et al. [6] analyze gamification design frameworks through their background and scope of application (education, business, and healthcare), the suitability of such models for student engagement in the university environment, as well as the elements included in the design process. To this end, they review a sample of 40 studies published between 2011 and 2015, highlighting the need to turn design into an iterative, user-centered process with a technological presence. They also point out that the studies analyzed include the 6D model, MDA, as well as Werbach's or DMC. Based on the results, they propose three differentiated design approaches for gamification systems: user-centered, game-centered, and technology-centered.

Other selected systematic reviews restrict the area of analysis to studies related to gamification and English as a second language acquisition [7], health care and medical studies [8,9], education and science [10], as well as experiences related to virtual education [11], flipped classroom [12], and peer assessment activities [13]. It is necessary to highlight the deep analysis performed by Kalogiannakis et al. [10], pointing out educational level, contents related to science curriculum, educational context, underlying learning models or theories, methods, results, gamification elements, and assessment tools of each of the analyzed articles.

Regarding the different educational stages, systematic reviews such as that of Fadhli et al. [14] are proposed. Such reviews analyze studies published between 2014 and 2018

on the effectiveness of gamification in the acquisition of conceptual, procedural, and attitudinal content in students aged 6 to 10 years, corresponding to primary education. Meanwhile, Pegalajar Palomino [15] identifies the main findings in the scientific literature, from 20 studies published between 2010 and 2019, on the perception of university students towards the implementation of gamification strategies in their teaching–learning processes. Subhash and Cudney [16] also focus their review on the university setting, attending to the areas of knowledge (computer science, business, science, pedagogy, etc.), the countries of production (Spain in first place, followed by the United States and Germany), the gamification elements employed (badges, feedback, collaboration, levels, narrative, etc.), and the benefits of gamification (motivation, attitude, engagement, enjoyment, etc.) found in 41 articles between 2012 and 2017.

Finally, Navarro-Mateos et al. [17] propose a review of the term gamification in Spanish education. This would allow for knowledge regarding the impact of gamification in the different educational stages through the analysis of 15 studies published until 2020. In addition, it is pointed out that, in general, the main objective of these interventions is to influence student motivation, as well as to improve the learning experience and academic performance.

Based on the study of these previous systematic reviews, it has become necessary to propose an integrative perspective that encompasses the most relevant approaches to the aspects analyzed above. Therefore, based on the proposals made by Zainuddin et al. [4], Kalogiannakis et al. [10], and Navarro-Mateos et al. [17], who study, among other aspects, instructional design models, (video) game mechanics involved in gamification systems, digital resources related to this methodology, and potential effects on the teaching–learning process, this SLR aims to analyze the situation of gamification in the field of teacher training, both in its initial or university stage and in continuing education.

2. Materials and Methods

Systematic reviews, according to Manterola et al. [18], “are studies whose population comes from already published case articles; that is, they are studies of studies” (p. 150). Thus, SLR makes it possible to concentrate knowledge of a specific area, giving it meaning through the results obtained in different studies, in order to identify prospective research priorities. According to Ferreria González et al. [19], “they constitute an essential tool for synthesizing the available scientific information, increasing the validity of the conclusions of individual studies and identifying areas of uncertainty where research is needed” (p. 688).

Conducting an SLR involves the specification of a series of research steps to guide the review process towards a specific area of study. To this end, it is necessary to establish, as a starting point, a series of issues or research questions that determine the object of interest or focal element of the review.

Using the aforementioned systematic reviews as references, the need arises to update the data provided in these publications, as well as to specify and orient the scope of the SLR study in order to approach other research priorities that have not yet been addressed. To this end, a structured process is followed through a pre-established design, which provides validity, quality, and rigor. With the intention of providing objective criteria for the publication of systematic reviews, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement, published in 2009 (recently updated in 2020), presents a series of recommendations and guidelines for their preparation. Through a checklist of 27 items [20], it establishes an optimal planning process that simplifies the researcher’s task in conducting an SLR. Thus, the systematic review process applied in this study consists of different phases [21]:

- Phase 1: Research questions (RQ). They are organized around three areas: (a) conceptual framework, to analyze the relationships between the keywords identified in the literature (RQ1); (b) documentary characteristics, to identify geographical location and research methodologies used (RQ2,RQ3); and (c) pedagogical dimension (RQ4,RQ5), to recognize the methodological strategies for the inclusion of gamified practices in

- the field of teacher training and their relationship with other active methodologies, as well as instructional design models applied in the studies analyzed (Table 1).
- Phase 2: Eligibility criteria and sources of information. Articles published in scientific journals without time delimitation were included, containing in their titles, abstracts, or keywords the terms “gamification,” “teacher training,” “teacher education,” or “teacher professional development”, in English, Portuguese, or Spanish. Empirical studies with quantitative or qualitative methods were included. The exclusion criteria applied were for articles that did not develop educational research related to gamification. Articles that presented, in isolation, the use of applications such as Kahoot!, Socrative, or Quizizz were also excluded.
 - Phase 3: Search strategies. The databases Web of Science (Wos), Scopus, and Dialnet were used for the selection of articles. In each of the databases, the keywords “gamification,” “teacher training,” “teacher education,” and “teacher professional development” were used, with no time limitation. The search includes results published up to August 2021. The search syntaxes are included in the coding sheet in Supplementary Material (<https://bit.ly/3q9whrL>).
 - Phase 4: Study selection process. The initial search resulted in 109 articles, of which 40 were duplicates. All the authors analyzed the 69 articles on the basis of the title and abstract, according to the inclusion–exclusion criteria. After agreeing on the results, 37 articles were excluded. The remaining 32 were analyzed in full text in a second selection process independently by the investigators, resulting in the exclusion, by agreement, of 11 articles. The “snowball” method [22] was applied to the citations included in the 21 selected articles, and 7 articles were added to complete the final sample of documents for the systematic review ($n = 28$), as can be seen in Figure 1.
 - Phase 5: Data coding and synthesis. The Zotero bibliographic manager was used to collect data from potentially valid studies. The synthesis of the information was performed using a coding sheet with 26 fields. VOSViewer and NVivo 12 were used for the conceptual network analysis. The three investigators, first independently and then by consensus, acted in the different phases of selection according to criteria for prior inclusion and definitive inclusion in the revision.

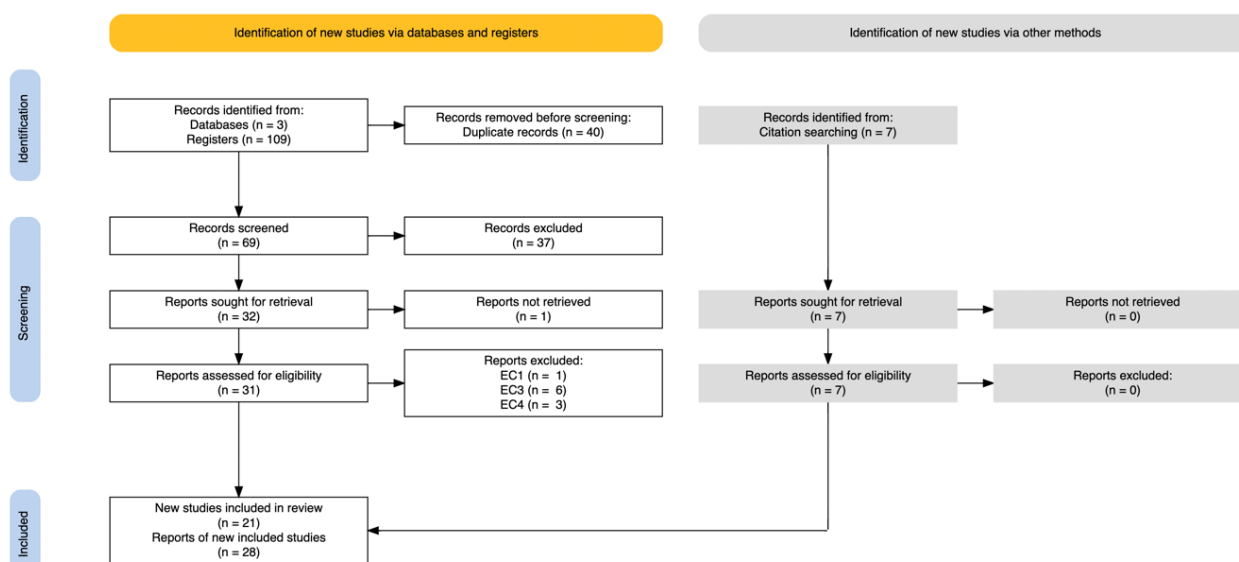


Figure 1. Literature selection process flowchart.

Table 1. Areas, questions, and initial coding criteria.

Areas	Research Questions	Coding Criteria
Conceptual Framework	RQ1. What is the conceptual relationship surrounding the term gamification?	Word frequency and co-occurrence of keywords. Co-citation
Documentary Characteristics	RQ2. What is the geographical distribution of the publications?	Country and language
Pedagogical Dimension	RQ3. What research methodologies are applied in the selected studies and what is the size of their samples?	Approaches, methodologies, and sample size
	RQ4. What are the instructional design models applied to gamification systems?	Instructional design models
	RQ5. What are the effects of gamified practices in teaching–learning processes?	Implications or empirical evidence

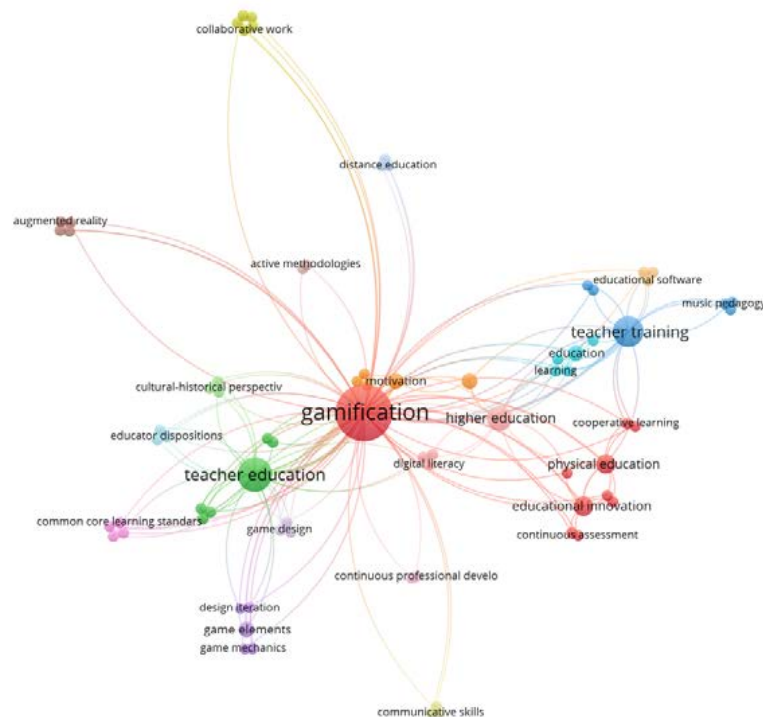
3. Results

Based on the sample obtained as a result of the methodological process established for this SLR, we outline details of the aspects related to the analysis of the information obtained from the 28 scientific publications related to the implementation of gamified practices in the field of teacher training.

To this end, the aim is to answer the research questions (RQ1–RQ5) posed above and thus to obtain an accurate picture of the state of the situation in relation to scientific production on gamification.

3.1. What Is the Conceptual Relationship Surrounding the Term Gamification?

In order to analyze the network of concepts as an answer to question 1, it has been necessary to highlight the terminological relationships existing among the publications that make up the review sample. In this way, it was possible to identify a series of clusters or categories generated by the co-occurrence of the key words in the studies, as can be seen in Figure 2.

**Figure 2.** Co-occurrence map by keywords (frequency = 1).

Through VOSviewer, a series of clusters have been identified that make it possible to highlight those areas of interest in the studies reviewed. Obtained from the co-occurrence of keywords established by the authors of the publications, four different and interconnected main categories can be observed. The red cluster encompasses aspects related to teaching–learning processes, such as “continuous assessment,” “educational innovation,” “digital competence,” or “cooperative learning”.

Similarly, the blue cluster, from a more generic perspective, connects elements linked to teacher training. The purple cluster is related to the design process of gamification systems through (video) game elements and mechanics. Finally, the green cluster identifies, in a more segregated way, methodological aspects related to “distance education,” “active methodologies,” or “motivation”.

Likewise, through the LitMaps tool, a relationship is established between the articles that make up the review sample that present DOIs, as well as their temporal distribution, as shown in Figure 3. Thus, connections can be observed between Villalustre Martínez and del Moral Pérez [23] and Castañeda Vázquez et al. [24], as well as between Kopcha et al. [25] and Falcó Boudet and Huertas Talón [26]. It also allows the identification of the most cited reference authors in the field of gamification [27–32].

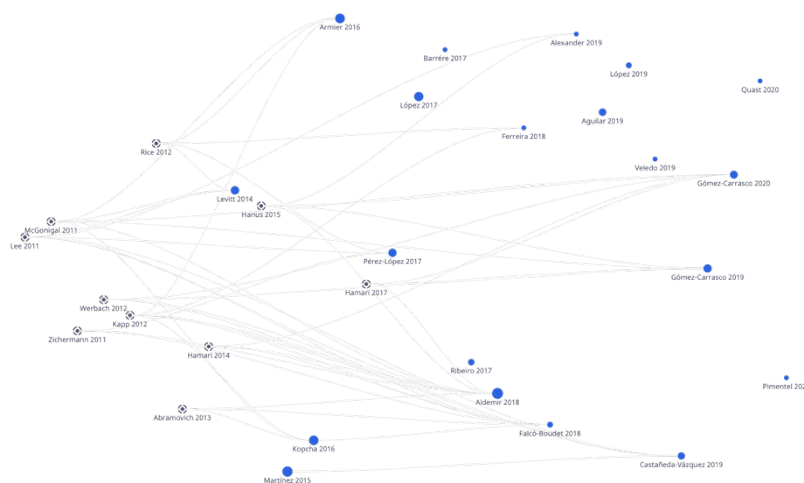


Figure 3. List of authors and citations between articles.

3.2. What Is the Geographical Distribution of the Publications?

The selection of countries in the publications that make up the established sample are specified according to the nationality of the reference author of each article. Thus, from RQ2, it is possible to determine the geographical distribution of those studies related to gamified experiences in the field of teacher training, allowing us to observe the interest aroused by this topic from a global perspective.

Spain is the country with the highest number of scientific productions related to gamification and teacher training, both in its initial and permanent stages, with 16 articles out of the 28 that make up the sample. Next, 5 publications each are attributed to the United States and Brazil. Finally, Italy and Turkey complete the geographical distribution with 1 article in each country.

In relation to the language of the scientific productions, Spanish is the language most used in the selected sample, with a total of 14 articles (50%). English is the second most common language, with 11 publications (39.29%). Finally, in coherence with the geographical distribution detailed above and with the search process carried out in the three databases consulted, Portuguese is another of the languages present in the articles reviewed, specifically in 3 (10.71%).

3.3. What Research Methodologies Are Used in the Selected Studies and What Is the Sample Size?

Through RQ4, which refers to the research methodologies used in the selected studies, as well as the sample size of the publications, it is possible to determine the most relevant methodological strategies in research processes in the field of gamification.

Thus, it is possible to observe that the qualitative approach is the most frequent among studies related to gamified educational practices (53.57%). In second place, the quantitative approach (39.29%), followed finally by mixed research (7.14%).

Likewise, it is possible to establish a relationship between the methodological approaches identified and the research methods applied in the articles that make up the review sample. In relation to qualitative techniques, in Figure 4 can be observed that 12 of the publications use the case study; in 1 publication, formative research [33]; in another, the phenomenological study [34]; and finally, in 1 of the publications narrative research is applied [35]. Regarding quantitative techniques, 4 articles are identified that implement questionnaires as a research instrument, 2 that apply program evaluation, 2 of a quasi-experimental type, 1 study of a descriptive nature [36], 1 descriptive–interpretative [37], and 1 case study [23]. Finally, in relation to mixed techniques, 1 case study [38] and 1 design-based research [39] were identified.

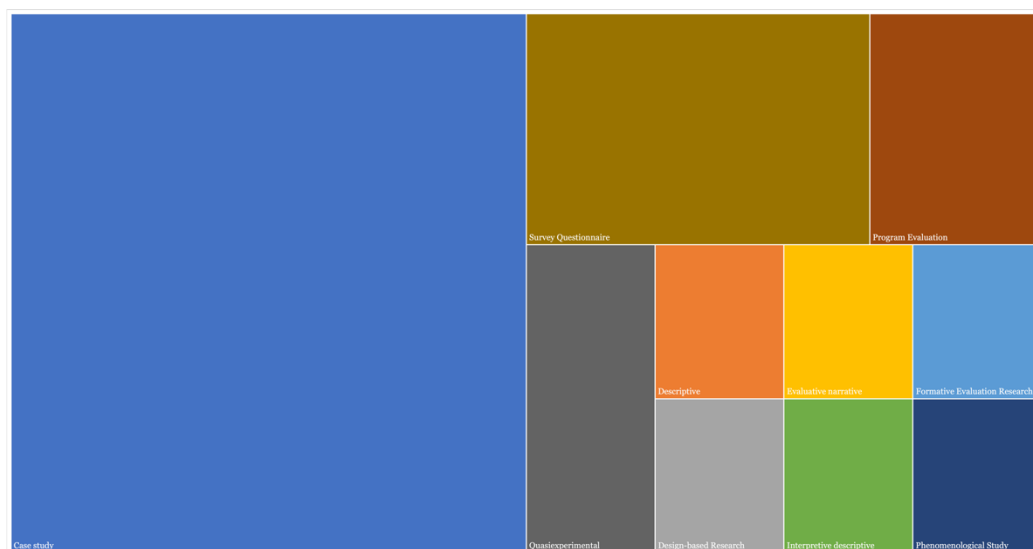


Figure 4. Research methods identified in the studies.

In summary, the most frequent research method in the publications that make up the sample is the case study (50%). In second place, we see research based on questionnaires (14.29%). With the same percentage (7.14%) are quasi-experimental studies and program evaluation. Finally, methodologies such as formative research, descriptive studies, descriptive–interpretative, design-based research, phenomenological studies, and narrative research appear with the same level of presence (3.57%).

3.4. What Instructional Design Models Applied to Gamification Systems?

The specification of the elements, strategies, and resources that make up the gamification systems implemented in the experiences analyzed responds to a series of instructional design criteria established by the various models or frameworks that allow for the development of gamified educational interventions. Based on RQ4, a series of instructional design models have been identified among the publications that make up the review sample, which in turn, make it possible to determine the level of depth or insertion of the approach taken.

As can be seen, the instructional design model with the greatest relevance among the publications reviewed is the PBL or points, badges, and leaderboards strategy with 35.71%, including variants such as PBL+K and PL. In second place, we see the MDA or

mechanics, dynamics & aesthetics architecture, with 28.57% presence. This is followed by Pyramid DMC or dynamics, mechanics and components with 14.28%. With the same percentages (7.14%) are the 6D approach and Learning Tangram. Finally, the Bonk and Dennen model, as well as the social gamification approach, also with the same proportion (3.57%). It should also be noted that the PBL and MDA instructional design models are present in more than 50% of the sample (Figure 5).

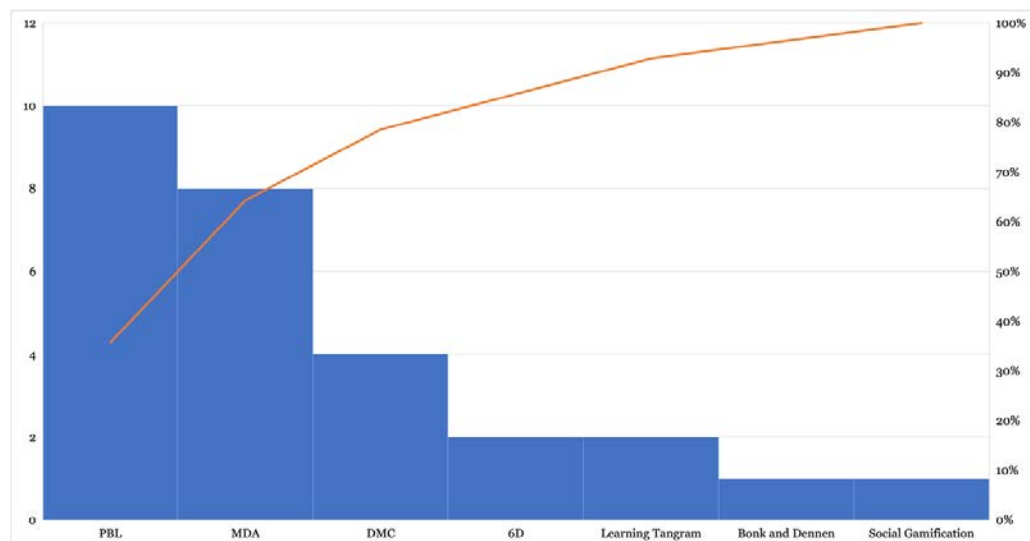


Figure 5. List of instructional design models identified in the sample.

From the descriptions of the gamification systems implemented in the various educational practices analyzed, the depth of the designs carried out can also be evidenced. For this purpose, the elements that make up the gamifications proposed in the publications that make up the sample have been recorded, as well as their pretensions and their temporality, in order to determine their penetration capacity.

From this analysis, it is observed that 53.57% of the gamification systems present a superficial configuration or thin layer level gamification. 46.43% correspond to deep level gamification designs. In relation to the identified models, it is possible to evidence the relevance of elements that make up the gamified experience, being determinant to assess its effectiveness in relation to design. The PBL strategy is the most representative among surface gamification systems, while the DMA and DMC models are more related to deep gamification designs (Figure 6).

3.5. What Are the Effects of Gamified Practices in the Teaching–learning Process?

To determine the impact of gamified educational interventions detailed in publications that make up the review sample, we begin with RQ5 to identify those results most highlighted by their authors. To this end, it was necessary to establish a series of categories that would allow grouping such evidence, presenting a direct relationship between (1) student motivation, mainly related to intrinsic motivation; (2) educational commitment, related to engagement and involvement with respect to the educational intervention; (3) student participation in activities related to the educational process; (4) attitudes towards their own learning; (5) communication; (6) perception of knowledge acquired and competencies developed; (7) academic results; and finally, (8) updating of knowledge, in relation to continuing teacher training. Similarly, seven of the studies included in the sample present results regarding the perceptions or opinions of the participating students themselves, so they have not been taken into account in the previous categorization.

As can be seen in Figure 7, engagement or educational commitment is one of the main implications of gamification in educational practice identified in the sample, with 29.41%. Next, the impact of gamification processes on student motivation is evident

(26.47%) through an increase in motivation. Based on the practice of Pérez-López et al. [40], gamification, as a methodological strategy, creates an improvement in student motivation and an increase in their involvement. With the same percentage (11.77%), there are results related to student participation and attitudes, as a consequence of the previous elements. Likewise, an improvement in the students' perception of the knowledge acquired has been identified (8.82%) [41], followed by aspects related to the updating of pedagogical, technological, and conceptual knowledge, as a consequence of ongoing teacher training (5.88%) [42]. Finally, with the same percentage (2.94%), results related to the improvement of communication and academic results of participating students were observed.

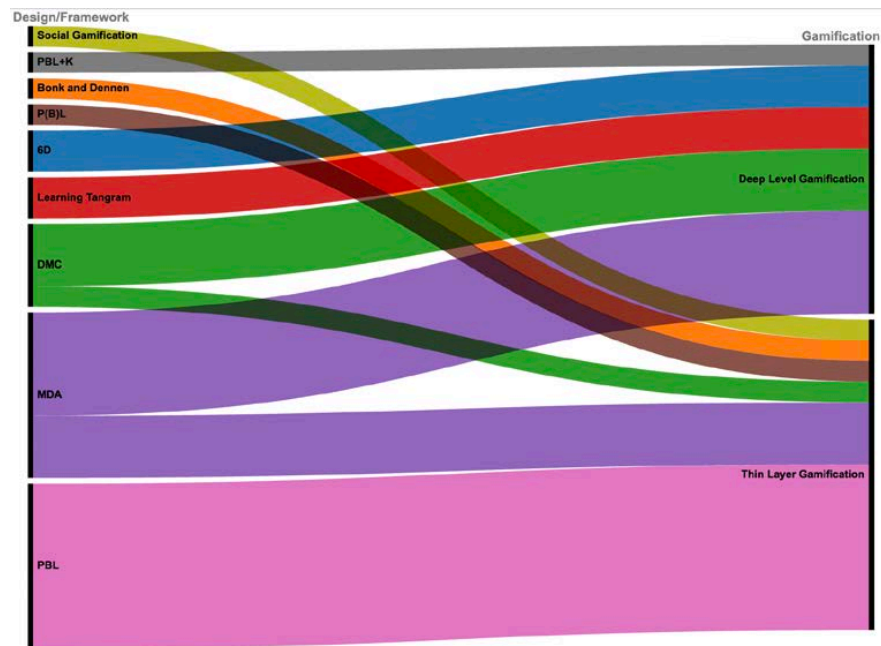


Figure 6. Instructional design models and their relationship with gamification type.

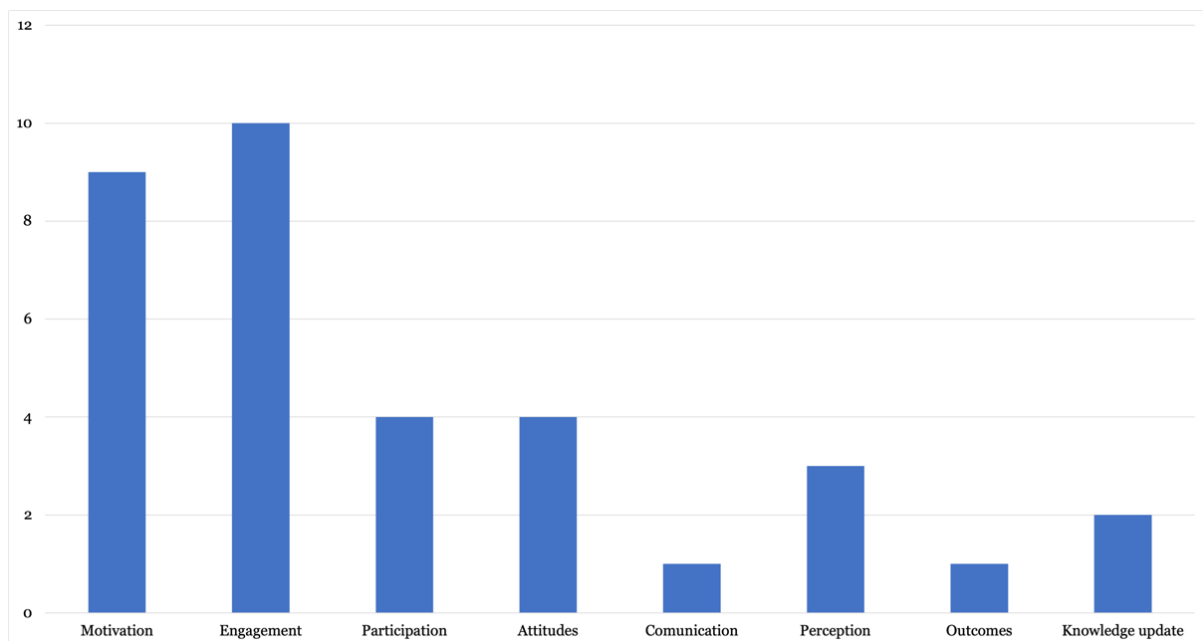


Figure 7. Categories established to analyze the effects of gamified practices.

4. Discussion and Conclusions

Through the systematic review process developed, it has become possible to know the impact of gamified practices in the field of teacher training, both in its initial and permanent stage, through implementation strategies of elements of this methodology in teaching–learning processes. In this way, we have provided answers to five research questions concerning the conceptual framework that has been configured around the concept of gamification; the documentary characteristics of the articles that make up the review sample in relation to gamification practices, the thematic areas from which they are studied, and the research methodologies used; and finally, attending to the pedagogical dimension of the studies, the identification of various instructional design models, and a list of gamification elements and technological resources related to this methodology.

The most relevant results of this systematic review are found, on the one hand, in the identification of the conceptual network that emerges from the analysis of the research that makes up the review sample. The key concepts linked to gamification processes are evidenced, as well as the relationship established between them. Through this representation of the state of knowledge, a terminological framework can be established that allows an in-depth exploration of those unknown areas that require a reflective dissection. In this sense, there is little reference to specific models of instructional design for the configuration of gamification systems, identifying, on the contrary, certain elements typical of this methodology.

Furthermore, this systematic review provides a detailed description of the documentary characteristics of the studies, allowing recognition of research processes related to gamified practices, as well as the instructional design models identified in the review process. Thus, a relationship between qualitative research approaches, mainly through case studies, and the field of gamification applied to teacher training has been evidenced. This is contrary to Zainuddin et al. [4], who observes a greater presence of quantitative studies in practices that implement a gamified methodology; Ekici [12], who identifies a predominance of mixed methods; or Bozkurt and Durak [3], who observe a majority of theoretical or conceptual–descriptive type articles. However, from the present systematic review, other research methods in trend in the field of education and gamification, such as design-based research [39], can also be appreciated.

Finally, this study has made it possible to identify the main instructional design models for gamification systems. For this purpose, it has been necessary to establish a relationship with elements implemented in the practices proposed, since in many cases the model involved in the design of the gamified practice has not been explicitly established. In this sense, coinciding with the study by Navarro-Mateos et al. [17], there is a general lack of knowledge of the process of gamification systems or specific models of instructional design by teachers, causing the introduction of gamification elements without a specific criterion or without a configuration that has a specific purpose.

The systematic review has shown the prevalence of PBL, i.e., gamification practices that introduce, in isolation, three components: points, badges and leaderboards. Although other studies [17] dismissed those gamification proposals based on PBL, considering that gamification “is a more abstract, complex and strategic process that aims to go beyond the use of points, badges and rankings” (p. 512), the reality is that it represents one of the most widely used gamification models in the field of instructional design [1,10,12,43,44]. However, other more complex models have been identified that require a more reflective and elaborate design process, resulting in deep gamification systems, such as the MDA architecture, coinciding with the study conducted by Bozkurt and Durak [3], the Elements Pyramid and the 6D approach.

In relation to the educational implications of gamification in the teaching–learning processes, through the proposals analyzed in the articles that make up the sample, a direct relationship between this methodology and increase in motivation, commitment, participation, and attitudes of the participating students has been evidenced. Conclusions that can also be observed in other studies [5,10,12,17,44], which identify a series of implications of

gamification at all educational levels, are those such as improved academic performance and increased student engagement and motivation. Pegalajar Palomino [15] states that, “at the cognitive level, it is worth noting how the practice of gamified learning experiences allows an improvement in the academic performance of students, helping them to maximize learning” (p. 178).

The results of this systematic review of the literature allow us to conclude that an adequate educational approach to gamification requires a deep knowledge of the implications derived from the implementation of this methodology. To this end, it is necessary to assess the importance of instructional design models that allow an adequate development of gamified practices. The interconnection of elements that make up a system of these characteristics requires a process of reflection, planning, and arrangement of its components, avoiding improvisation and arbitrariness.

Educational implications, which aim to go beyond the improvement of students’ academic performance, pursue an increase in motivation, commitment, and positive attitude towards the teaching–learning process itself, through the entertainment and uniqueness provided by gamified practices. It also becomes necessary to implement experiences in the field of teacher training, both in its initial and permanent stage, providing experiential learning that allows teachers to introduce, in their professional development, this methodology in a relevant way, based on their own experience.

Some limitations apply to this review. This study focused only on experimental academic research regarding gamification experiences in the teacher training field, both in its initial and continuous stage, published in academic journals. Consequently, the number of articles reviewed is limited, evincing the need of developing more gamification experiences in this scope of action. The issues limit the generalizability of the review results. However, this study allows to determine some implications of gamification as an active methodology, bringing together several experiences in the teacher training field, studying the gamification instructional design models and the gamification elements most used.

Supplementary Materials: The following supporting information can be downloaded at: Selection—<https://www.mdpi.com/article/10.3390/educsci12010044/s1>.

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References

1. Alomari, I.; Al-Samarraie, H.; Yousef, R. The Role of Gamification Techniques in Promoting Student Learning: A Review and Synthesis. *J. Inf. Technol. Educ. Res.* **2019**, *18*, 395–417. [[CrossRef](#)]
2. Rauschenberger, M.; Willems, A.; Ternieden, M.; Thomaschewski, J. Towards the Use of Gamification Frameworks in Learning Environments. *J. Interact. Learn. Res.* **2019**, *30*, 147–165.
3. Bozkurt, A.; Durak, G. A Systematic Review of Gamification Research: In Pursuit of Homo Ludens. *Int. J. Game-Based Learn.* **2018**, *8*, 15–33. [[CrossRef](#)]
4. Zainuddin, Z.; Chu, S.K.W.; Shujahat, M.; Perera, C.J. The impact of gamification on learning and instruction: A systematic review of empirical evidence. *Educ. Res. Rev.* **2020**, *30*, 100326. [[CrossRef](#)]

5. Cordero-Brito, S.; Mena, J. Gamification and Its Application in the Social Environment: A Tool for Shaping Behaviour. *J. Inf. Technol. Res.* **2020**, *13*, 58–79. [[CrossRef](#)]
6. Mora, A.; Riera, D.; Gonzalez, C.; Arnedo-Moreno, J. Gamification: A systematic review of design frameworks. *J. Comput. High. Educ.* **2017**, *29*, 516–548. [[CrossRef](#)]
7. Dehghanzadeh, H.; Fardanesh, H.; Hatami, J.; Talae, E.; Noroozi, O. Using gamification to support learning English as a second language: A systematic review. *Comput. Assist. Lang. Learn.* **2019**, *34*, 1–24. [[CrossRef](#)]
8. Muangsrinoon, S.; Boonbrahm, P. Game elements from literature review of gamification in healthcare context. *J. Technol. Sci. Educ.* **2019**, *9*, 20–31. [[CrossRef](#)]
9. Van Gaalen, A.E.J.; Brouwer, J.; Schonrock-Adema, J.; Bouwkamp-Timmer, T.; Jaarsma, A.D.C.; Georgiadis, J.R. Gamification of health professions education: A systematic review. *Adv. Health Sci. Educ.* **2021**, *26*, 683–711. [[CrossRef](#)] [[PubMed](#)]
10. Kalogiannakis, M.; Papadakis, S.; Zourmpakis, A.-I. Gamification in science education. A systematic review of the literature. *Educ. Sci.* **2021**, *11*, 22. [[CrossRef](#)]
11. Saleem, A.N.; Noori, N.M.; Ozdamli, F. Gamification applications in e-learning: A literature review. *Technol. Knowl. Learn.* **2021**, 1–21. [[CrossRef](#)]
12. Ekici, M. A systematic review of the use of gamification in flipped learning. *Educ. Inf. Technol.* **2021**, *26*, 3327–3346. [[CrossRef](#)]
13. Indriasari, T.D.; Luxton-Reilly, A.; Denny, P. Gamification of student peer review in education: A systematic literature review. *Educ. Inf. Technol.* **2020**, *25*, 5205–5234. [[CrossRef](#)]
14. Fadhli, M.; Brick, B.; Setyosari, P.; Ulfa, S.; Kuswandi, D. A meta-analysis of selected studies on the effectiveness of gamification method for children. *Int. J. Instr.* **2020**, *13*, 845–854. [[CrossRef](#)]
15. Pegalajar Palomino, M.C. Implicaciones de la gamificación en Educación Superior: Una revisión sistemática sobre la percepción del estudiante. *Rev. Investig. Educ. RIE* **2021**, *39*, 169–188. [[CrossRef](#)]
16. Subhash, S.; Cudney, E.A. Gamified learning in higher education: A systematic review of the literature. *Comput. Hum. Behav.* **2018**, *87*, 192–206. [[CrossRef](#)]
17. Navarro-Mateos, C.; Pérez-López, I.J.; Marzo, P.F. Gamification in the spanish educational field: A systematic review. *Retos* **2021**, *42*, 507–516. [[CrossRef](#)]
18. Manterola, C.; Astudillo, P.; Arias, E.; Claros, N. Revisión sistemática de la literatura. Qué se debe saber acerca de ellas. *Cir. Esp.* **2013**, *91*, 149–155. [[CrossRef](#)] [[PubMed](#)]
19. Ferreira González, I.; Urrutia, G.; Alonso-Coello, P. Revisión sistemática y metaanálisis: Bases conceptuales e interpretación. *Rev. Esp. Cardiol.* **2011**, *64*, 688–696. [[CrossRef](#)] [[PubMed](#)]
20. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *PLoS Med.* **2021**, *18*, e1003583. [[CrossRef](#)] [[PubMed](#)]
21. Zawacki-Richter, O.; Kerres, M.; Bedenlier, S.; Bond, M.; Buntins, K. (Eds.) *Systematic Reviews in Educational Research: Methodology, Perspectives and Application*; Springer: Berlin/Heidelberg, Germany, 2020. [[CrossRef](#)]
22. Biernacki, P.; Waldorf, D. Snowball Sampling: Problems and Techniques of Chain Referral Sampling. *Sociol. Methods Res.* **1981**, *10*, 141–163. [[CrossRef](#)]
23. Villalustre Martínez, L.; Del Moral Pérez, M.E. Gamification: Strategies to optimize learning process and the acquisition of skills in university contexts [Gamificación: Estrategia para optimizar el proceso de aprendizaje y la adquisición de competencias en contextos universitarios]. *Digit. Educ. Rev.* **2015**, *27*, 13–31.
24. Castañeda Vázquez, C.; Espejo Garcés, T.; Zurita Ortega, F.; Fernández Revelles, A.B. La formación de los futuros docentes a través de la gamificación, TIC y evaluación continua. *Sport TK Rev. Euroam. Cienc. Deporte* **2019**, *8*, 55–63. [[CrossRef](#)]
25. Kopcha, T.J.; Ding, L.; Neumann, K.L.; Choi, I. Teaching Technology Integration to K-12 Educators: A ‘Gamified’ Approach. *TechTrends* **2016**, *60*, 62–69. [[CrossRef](#)]
26. Falcó Boudet, J.M.; Huertas Talón, J.L. Superpoderes contra el Dr. Discriminador. La mejora de la evaluación continua mediante la ludificación en el Máster en profesorado. *Rev. Interuniv. Investig. En Tecnol. Educ.* **2018**, *4*, 68–81. [[CrossRef](#)]
27. Lee, J.J.; Hammer, J. Gamification in Education: What, How, Why Bother? *Acad. Exch. Q.* **2011**, *15*, 146.
28. McGonigal, J. *Reality is Broken: Why Games Make us Better and How They Can Change the World*; Penguin Press: New York, NY, USA, 2011; p. 388.
29. Zichermann, G.; Cunningham, C. *Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps*; O’Reilly: Sebastopol, CA, USA, 2011.
30. Kapp, K.M. *The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education*; Pfeiffer: San Francisco, CA, USA, 2012.
31. Werbach, K.; Hunter, D. *For the Win: How Game Thinking Can Revolutionize Your Business*; Wharton School Press: Philadelphia, PA, USA, 2012.
32. Hanus, M.D.; Fox, J. Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Comput. Educ.* **2015**, *80*, 152–161. [[CrossRef](#)]
33. Aldemir, T.; Celik, B.; Kaplan, G. A qualitative investigation of student perceptions of game elements in a gamified course. *Comput. Hum. Behav.* **2018**, *78*, 235–254. [[CrossRef](#)]

34. Pérez-López, I.; Rivera-García, E. Formar docentes, formar personas: Análisis de los aprendizajes logrados por estudiantes universitarios desde una experiencia de gamificación. *Signo Pensam.* **2017**, *36*, 98–114. [[CrossRef](#)]
35. Pérez López, I.J.; Rivera García, E.; Trigueros Cervantes, C. “La profecía de los elegidos”: Un ejemplo de gamificación aplicado a la docencia universitaria. *Rev. Int. Med. Cienc. Act. Física Deporte* **2017**, *17*, 243–260.
36. Barrére, E.; Coelho, J.; Camponez, L. Aspectos metodológicos e de gamificação em um MOOC sobre tecnologias digitais para o ensino de Matemática. *Educ. Matemática Debate* **2017**, *1*, 173–196. [[CrossRef](#)]
37. Batlle Rodríguez, J.; Vilagran, M.D.M.S. Secuencias didácticas gamificadas por docentes de LE en formación continua: Puntos, insignias y tablas de clasificación. *E-Aesla* **2019**, *5*, 43–52.
38. Alsina i Tarrés, M.; Farrés Cullell, I. ¿Jugar o aprender? El aprendizaje lúdico en la formación musical del maestro. *Rev. Electrónica Complut. Investig. En Educ. Music.* **2021**, *18*, 83–110. [[CrossRef](#)]
39. Cornellà Canals, P.; Estebanell Minguell, M. GaMoodlification: Moodle al servicio de la gamificación del aprendizaje. *Campus Virtuales* **2018**, *7*, 9–25.
40. Pérez López, I.; Rivera García, E.; Trigueros Cervantes, C. 12 +1. Feelings of physical education college students towards a gamification proposal: “Game of Thrones: The Anger of the Dragons”. *Movimento* **2019**, *25*, e25038. [[CrossRef](#)]
41. Ortega Ruipérez, B.; Alvarado, A.; Chorro, E.; Cuartero, N. Percepción del alumnado sobre la adquisición de la competencia en creación de contenidos digitales con gamificación. *Rev. Educ. Tecnol.* **2021**, *14*, 1–22.
42. Levitt, R.; Piro, J. Game-changer: Operationalizing the common core using webquests and “gamification” in teacher education. *Int. J. Web-Based Learn. Teach. Technol.* **2014**, *9*, 53–71. [[CrossRef](#)]
43. Klock, A.C.T.; Gasparini, I.; Pimenta, M.S.; Hamari, J. Tailored gamification: A review of literature. *Int. J. Hum. Comput. Stud.* **2020**, *144*, 102495. [[CrossRef](#)]
44. Manzano-León, A.; Camacho-Lazarraga, P.; Guerrero, M.; Guerrero-Puerta, L.; Aguilar-Parra, J.; Trigueros, R.; Alias, A. Between level up and game over: A systematic literature review of gamification in education. *Sustain. Switz.* **2021**, *13*, 2247. [[CrossRef](#)]