

Shifting Perspectives in Gamification Research

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Abstract

Gamification has become an important topic in research on digital media, information systems, behavioral design, and public communication. This article uses a bibliometric-informed narrative review to examine highly cited English-language studies, systematic reviews of gamification for sustainability, and Chinese research on gamified ecological science communication. It synthesizes the field's knowledge structure and theoretical development. The review identifies ten interrelated shifts. At the conceptual level, research has moved from game elements to gameful experience. At the mechanistic level, it has moved from extrinsic rewards to psychological need satisfaction and motivational affordances. At the functional level, it has moved from single outcome measures to a multilayered analysis of engagement, motivation, social interaction, experience, and awareness. Applications have also expanded across sustainability, education, health, marketing and services, organizational management, public governance, and participatory culture. Together, these shifts show that gamification research is moving beyond the question of whether particular elements work and toward an explanation of how gamification organizes motivation, interaction, emotion, identity, and social meaning in specific platform contexts. Future research should examine long-term effects and contextual variation while giving greater attention to user types, ethical risks, and computational communication methods.

Keywords

Gamification; Sustainability; Public Governance; Participatory Culture

1. Introduction

Gamification is commonly defined as the use of game design elements in non-game contexts to increase engagement, motivation, and behavioral change. Since Deterding et al. proposed their influential definition, gamification has spread from human-computer interaction and information systems to education, health, marketing, organizational management, urban governance, and sustainability. Points, badges, leaderboards, tasks, levels, feedback, challenges, virtual rewards, narratives, and social interaction have become widely used mechanisms through which digital platforms organize user action.

The rapid expansion of gamification research has also produced theoretical

fragmentation. A substantial body of empirical work has examined its effects on engagement, satisfaction, learning performance, health behavior, purchase intention, and pro-environmental action. At the same time, a growing literature shows that these effects depend heavily on context, user type, task characteristics, and platform rules. The same leaderboard may motivate some users through competition while placing others under pressure. Similarly, a badge system may strengthen a sense of achievement but may also replace the intrinsic value of an activity with an external reward. Gamification should therefore not be reduced to the question of whether adding game elements works. It is better understood as a broader problem involving motivation, experience, relationships, power, and meaning making.

This article does not attempt an exhaustive inventory of all gamification studies. Instead, it uses a bibliometric-informed review to identify the field's major shifts. These shifts are not mutually exclusive branches of research; they are recurring problem orientations that have developed across periods and application settings. Organizing the literature in this way avoids a simple catalogue of domains and clarifies the evolution of knowledge in the field: from conceptual definition to mechanism, from behavioral incentives to platform contexts, from short-term effects to sustained participation, and from individual responses to the production of social meaning.

2. A Bibliometric Informed Narrative Review

This article adopts a narrative review informed by bibliometric analysis. The search terms include gamification, gamified, gameful, and gameful design. The review focuses on highly cited English-language publications, core publication venues, and thematic distributions, supplemented by a second-stage screening of studies on gamification, gamification for sustainability, and gamified ecological science communication collected in a curated Zotero library. The bibliometric component maps the research landscape rather than replacing conceptual analysis; the narrative component then develops a theoretical synthesis of the core literature.

Three types of studies receive priority. The first comprises foundational work, including Deterding et al.'s conceptual definition, Seaborn and Fels's early review, Huotari and Hamari's service-marketing definition, Koivisto and Hamari's review of motivational information systems, and empirical research by Sailer et al. and Xi and Hamari on psychological needs and motivation. The second includes influential studies in education, health, marketing, organizational research, and sustainability. The third comprises work that supports a communication-based interpretation, including systematic reviews of gamification for sustainability, studies of public engagement, and research on ecological science communication and participatory culture.

This approach has two advantages. First, it combines an overview of the field's scale with theoretical depth, allowing the review to describe growth without stopping at

bibliometric indicators. Second, it reveals conceptual migration across domains. Learning design in education, long-term adherence in health, value co-creation in marketing, sustainable behavior in environmental research, and citizen participation in public governance all contribute to a broader movement from instrumental accounts of gamification toward contextual explanation.

3. Conceptual Shift From Games to Gamification

The first shift is from game elements to gameful experience. Early studies typically defined gamification as the introduction of recognizable elements such as points, badges, and leaderboards into non-game settings. This definition helped distinguish gamification from full games and serious games. Later research revised this element-centered view. From a service-marketing perspective, Huotari and Hamari argue that gamification matters because gameful experiences facilitate value creation, not merely because game components are transferred into non-game systems. Seaborn and Fels likewise show that gamification is theoretically and practically complex and that its effectiveness depends on the fit among system design, user motivation, and application context. Nacke and Deterding further argue that a maturing field must move beyond novelty effects and surface features toward cumulative theory.

The central implication of this conceptual shift is that gamification is not decorative design but a way of organizing experience. Through rules, goals, feedback, challenges, and social evaluation, it encourages users to perceive non-game tasks in gameful terms. The object of explanation is therefore not an isolated element but the way in which a configuration of elements changes how users understand action. A badge does not create meaning by itself. Meaning emerges through the combined effects of tasks, rewards, evaluation by others, and self-narration, which can make an ordinary activity appear progressive, visible, comparable, or shareable.

4. Mechanistic Shift From Extrinsic Rewards to Motivational Affordances

The second shift concerns mechanism: research has moved from models of extrinsic reward toward motivational affordances and psychological need satisfaction. Early applications often relied on points, levels, and prizes to reinforce behavior. A large body of research, however, shows that external rewards do not necessarily strengthen intrinsic motivation and may, in some contexts, weaken interest in the activity itself.

Self-determination theory provides an important explanatory framework. Sailer et al. show that different game elements can affect motivation by supporting competence, autonomy, and relatedness. Badges, progress bars, and performance graphs may strengthen competence; team tasks, cooperation, and social feedback may enhance relatedness; and meaningful choices or personalized goals may

support autonomy. Xi and Hamari similarly examine the relationship between gamification features and intrinsic need satisfaction. Their findings suggest that psychological mechanisms mediate the relationship between design elements and outcomes rather than operating as a direct linear effect.

Goal-setting theory, social comparison theory, and user-type research provide complementary explanations. Clear goals can reduce uncertainty, while social comparison can stimulate competition or belonging. User characteristics shape how particular mechanisms are received. Tondello et al.'s user-type scale likewise indicates that users are not a homogeneous population that responds uniformly to incentives. Achievement-oriented users may prefer levels and accomplishments, socially oriented users may value interaction and cooperation, exploratory users may focus on discovery and unlocking content, and users attracted to competition may respond more strongly to leaderboards.

This mechanistic shift moves the field from inventories of elements to analyses of causal pathways. The primary question is no longer which game elements are present, but how those elements operate through psychological needs, social relations, and contextual cues. This vocabulary also provides a common theoretical basis for research across application domains.

5. Sustainability Shift Toward Climate Action and Pro Environmental Behavior

Research on sustainability, climate action, and pro-environmental behavior is among the fastest-growing and most theoretically promising areas of gamification research. Environmental communication has long faced a knowledge-action gap: people may understand the severity of climate change, resource depletion, and ecological crisis but still find it difficult to convert abstract knowledge into sustained action. By structuring tasks, visualizing consequences, providing immediate feedback, and enabling social interaction, gamification offers a mediated response to this problem.

Mabalay's systematic review of gamification for sustainability shows that the literature addresses several United Nations Sustainable Development Goals, particularly quality education, clean energy, sustainable cities, responsible consumption, and climate action. The review is also methodologically instructive because it combines a bibliometric overview with content analysis of application domains and functional mechanisms. It classifies the functions of sustainability-oriented gamification into five categories: engagement, motivation, social interaction, gameful experience, and sustainability awareness. This framework helps organize an otherwise dispersed literature.

A primary function of environmental gamification is to make consequences visible. Energy use, carbon emissions, and resource waste are often delayed or difficult to observe. Scores, visualizations, virtual outcomes, progress feedback, and impact

indicators can help users perceive the consequences of their own actions. Gamification can also lower barriers to participation by dividing complex environmental issues into manageable tasks and embedding sustainable practices in everyday routines. In addition, social comparison, team cooperation, and community challenges can connect individual behavior to broader forms of social interaction.

This shift also exposes a central tension in gamification research. Sustainable action cannot be reduced to task completion, and environmental awareness is not equivalent to accumulating points. If a system produces short-term participation without supporting value internalization, behavioral persistence, or public understanding, it may simply make environmental action more platform-mediated, superficial, and performative. Future research should distinguish among short-term participation, sustained habits, value commitment, and behavioral spillover. It should also evaluate the pressure, fatigue, and erosion of meaning that competition, rankings, and rewards may produce.

6. Educational Shift From Classroom Incentives to Learning Design

Education is one of the most important application domains of gamification. Points, badges, leaderboards, challenges, and immediate feedback have been introduced into classrooms, online courses, massive open online courses, blended learning, and STEM education to improve learning motivation, cognitive engagement, course completion, and performance. Dichev and Dicheva's review of the evidence, Landers's theory of gamified learning, and Buckley and Doyle's study of learner differences and gamification outcomes provide an important foundation for this literature.

The key contribution of this shift is that it forces research to address goal alignment. Effective educational gamification does not merely make a classroom appear more entertaining; gameful mechanisms must serve learning objectives, feedback cycles, progressive difficulty, and knowledge construction. If a leaderboard rewards speed rather than understanding, or if a badge rewards completion rather than mastery, gamification may increase surface participation without improving deeper learning. Educational research has therefore moved from classroom incentives toward learning design. Researchers increasingly examine learner differences, task difficulty, feedback quality, collaborative structures, and long-term learning outcomes. The broader implication is that gamified mechanisms must align with the internal logic of the core activity. Otherwise, game elements become external noise.

7. Marketing and Service Shift From User Retention to Value Co-Creation

Marketing and service research treats gamification as a means of increasing

consumer engagement, brand interaction, and service experience. Hofacker et al. examine gamification and mobile marketing effectiveness, Hamari and Koivisto analyze why users adopt gamified services, and Huotari and Hamari emphasize gameful experience and value creation from a service-marketing perspective. The literature has expanded from the practical question of whether gamification improves retention to broader questions concerning customer experience, brand relationships, technology adoption, and value co-creation. Common methods include surveys, structural equation modeling, and experiments.

Value co-creation is central to this shift. Gamification is not merely a way for firms to apply stimuli to consumers. Through tasks, levels, benefits, communities, and content sharing, firms can incorporate users into service production and the construction of brand meaning. Check-ins, loyalty points, challenges, status markers, and user rankings can all function as gamified mechanisms within service systems.

This shift also raises critical questions. Gamification may improve an experience, but it may also manipulate attention and extend time spent on a platform. It may facilitate participation while encouraging overconsumption or the surrender of personal data. On digital platforms, gamification is often combined with algorithmic recommendation, profiling, and commercial conversion. Future research should therefore examine commercial boundaries, user autonomy, and platform responsibility.

8. Participatory Culture Shift From Behavioral Effects to Meaning-Making

Gamification research in public-interest settings raises questions that extend beyond behavioral mobilization. In sustainability initiatives, citizen science, and public governance, participation must be assessed in relation to public understanding, social inclusion, and collective action. Completing tasks, collecting badges, or sharing results does not necessarily indicate substantive participation. The central question is how gamified systems enable people to understand public issues, interact with others, and attach meaning to their actions.

The participatory-culture perspective provides a communication-based approach to this question. Zhou and Tang's study of gamified ecological science communication examines the United Nations' Playing for the Planet initiative and identifies six modes of participation: strategic, tactical, affective, extended, magic-bullet, and synesthetic. Their analysis connects these modes with green self-efficacy, embodied empathy, and the concretization of knowledge. This framework directs attention to the communicative processes through which environmental issues become understandable, emotionally engaging, and relevant to participants.

From this perspective, members of the public are communicative subjects who interpret rules, assume roles, create content, and negotiate the significance of participation. Gameful experiences can connect individual action with shared

concerns through emotional involvement, peer interaction, and knowledge formation. Evaluating public value therefore requires attention to whether these experiences support understanding and agency, alongside conventional measures of engagement and behavioral intention. Platform rules and institutional feedback also matter because they shape whose contributions become visible and how participation connects with collective outcomes.

This perspective complements research based on surveys, experiments, and platform behavior data. Such methods can identify relationships among design features, motivation, and outcomes, while discourse analysis and digital ethnography can examine how users interpret, discuss, negotiate, or resist gamified mechanisms in everyday settings. Social-media texts, user-generated content, and affective expression offer evidence of how participation acquires cultural meaning. Connecting these approaches allows communication research to explain how gamification organizes understanding, emotion, identity, and social relationships, while assessing whether participation contributes to public value.

9. Research Gaps in Boundary Conditions, Long-Term Effects, and Ethical Risks

Despite the size of the literature, important limitations remain.

First, evidence for long-term effects is limited. Many studies measure short-term engagement, satisfaction, or behavioral intention but do not follow behavior over months or years. Mabalay's review similarly identifies sustained behavior change as a central gap. Future studies should make greater use of longitudinal designs, quasi-experiments, platform logs, and objective behavioral measures.

Second, outcome measures are inconsistent. Studies variously use click-through rates, completion, satisfaction, learning performance, intention, attitude, and self-reported behavior. This heterogeneity makes comparison difficult and can lead to exaggerated claims. A clearer hierarchy of measures is needed to distinguish engagement, motivation, cognition, emotion, and observable behavior.

Third, contextual variation remains underexplained. Effects depend on cultural background, platform rules, user characteristics, task properties, and social relations. Analysis that removes gamification from these settings risks reducing a complex sociotechnical process to a supposedly universal mechanism. Future research should pay greater attention to local contexts, platform ecosystems, and differences among user groups.

Fourth, negative consequences remain understudied. Competitive pressure, excessive quantification, privacy risk, data surveillance, platform manipulation, emotional exhaustion, and the loss of meaning require closer examination. In health, education, organizational, and public-governance settings, researchers should assess effects on autonomy, dignity, and well-being rather than reporting only increases in participation.

Fifth, discourse and culture require greater attention. Existing work privileges variable-based models and effect evaluation but gives less attention to how users interpret, discuss, negotiate, and resist gamified mechanisms. Social-media text analysis, topic modeling, sentiment analysis, digital ethnography, and computational communication methods could clarify how cultures of participation emerge on real platforms.

10. Conclusion

Gamification research has developed from an emerging concept into an interdisciplinary field. Its development involves more than growth in publication volume. It also reflects a change in the questions being asked: from adding elements to designing gameful experience, from external rewards to motivational affordances, from short-term behavioral stimulation to sustained change, from isolated application effects to multiple domain-specific shifts, and from individual participation to platform contexts and social meaning.

This article has used multiple research shifts to organize the conceptual, mechanistic, and applied development of the field. The sustainability shift shows how abstract public issues can become visible and actionable in everyday life. The educational shift requires gameful mechanisms to serve learning design. The health shift foregrounds persistence and ethical protection. The marketing and service shift reveals the tension between value co-creation and commercial logic. The organizational shift draws attention to power, surveillance, and the quantification of labor. The public-governance shift asks whether gamified participation creates public value, while the participatory-culture shift treats gamification as a communicative process through which subjects act, feel, and make meaning.

Future research with greater explanatory power should move beyond the empirical question of whether game elements work. It should examine how gamification shapes motivation, relationships, emotion, and action within specific platforms, organizations, and social settings. By combining the analysis of mechanisms with contextual differentiation and normative reflection, gamification research can develop from instrumental application toward a mature account of sociotechnical processes.

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