A Systematic Literature Review of Gamification in/for Cultural Heritage: Leveling up, Going Beyond

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Abstract: Because of the possibilities that it opens for a variety of fields and practices, gamification has increasingly garnered significant attention. This has put it at the forefront of many significant debates around its applicability and implications. In the case of its application to cultural heritage, although there is much trailblazing to do, the body of work has been growing and the field is gaining its maturity. As such, this paper aims to take stock of the directions the field has been moving towards— to provide orientation for future work and projects that are yet to be developed. To do this, the paper aims to map out the publications in the field of gamified cultural heritage, by conducting a broader and systematic literature review. The study has found that, with regards to who the main actors with publications in the field are, a prominence of European institutions and networks, namely from Italy, Greece and the United Kingdom, can be observed. Regarding what heritage is being gamified and for what purpose, the study found a prominence of focus on historical, architectural and archeological heritage values and a very significant focus on gamification being used for motivation/engagement and for creativity enhancement. When looking at the gamification design dimensions that are given prevalence, intrinsic motivation seems to be prioritized, and, with regards to the observed target publics, tourists and visitors and seem to prevail in gamified heritage projects, with children as a specific group coming in second. Regarding technologies and tools being used, Mobile Applications, Augmented Reality (AR) and Virtual Reality (VR) are particularly prevalent. Regarding mentioned future orientations, the study found that a vast majority of papers are self-contained, both in scope of work and discussion, with most of those that do mention future directions indicating continuation and/or expansion of their specific project.

Keywords: gameful design; safeguard; museum; tourism; gamification; cultural heritage

1. Introduction

Gamification techniques and strategies have garnered significant attention in recent years, from education and pedagogical debates [1], to business and organizational management contexts [2], to finance [3], to civic engagement initiatives [4] and even as a response to the challenges brough about by the COVID-19 pandemic [5]. Even within the heritage field, gamification has been a go-to toolset for varying purposes, from marketing applied to tourist destination [6] to the safeguard of intangible and digital heritage assets [7] and even to instances where participatory methods are employed to engage with dissonant or challenging aspects of heritage [8].

A generally accepted definition was laid out by Deterding, Dixon, Khaled and Nacke: gamification is "the use of game design elements in non-game contexts" [9] (p. 9). The authors purposefully proposed a broad definition that can encompass a variety of purposes and contexts. Chiefly, gamification does not necessarily imply the creation of games (even though they can be a part of it), but it refers to the utilization of playfulness and playful strategies to create engaging experiences as a means to reach a specific goal [9].

Despite the growing interest, most studies are focused on a particular case or context, and studies based on the literature reviews have mostly focused on its benefits and potential for cultural heritage. This narrower focus is an expected feature of gamification strategies as an object of inquiry, since gamified solutions are by necessity context-specific, even if based on overarching rules and techniques [9]. Nonetheless, there is a significant need for studies that take a broader perspective of the field, taking stock of how gamification has been discussed, how it has been applied to cultural heritage, what directions have been explored, and, consequently, what paths and debates are ripe for discussion.

Much like the examples previously discussed, debate regarding gamification in other fields has already taken up this task. An example in the field of education is the broad mapping study with a systematic literature review conducted by Dicheva, Dichev, Agre and Angelova [10]. Similar systematic literature review studies have been conducted regarding gamification for knowledge management [11] and civic participation [12], among others. Still, this effort broad scope effort to systematically map out gamification research for cultural heritage has yet to take place. The closest that can be pointed out is the analysis conducted by Imran Khan, Ana Melro, Ana Carla Amaro and Lídia Oliveira [13], entitled Systematic Review on Gamification and Cultural Heritage Dissemination. Despite being a comprehensive study and opening significant doors for inquiry, its focus is still solely on heritage dissemination, thus not encompassing other aspects of heritage work.

Building on the work of these and other authors, this study aimed to go further. To more broadly map out the field of gamification in/for cultural heritage practices, a systematic literature review was conducted, and, due to the large scope of the analysis, some of the initial findings were disseminated in a prior publication [14]. These already published initial findings presented key insights into the work being conducted within the field. Looking at institutional affiliation of the authors of the papers, the study found that a significant portion, 80 out of 113 (70.45%), originated in European institutions, particularly from countries such as Italy, Greece, United Kingdom, Portugal and Bulgaria, with the vast majority being public higher education institutions [14]. It also found, however, that "only a few of those have more than 1 publication" [14], which can indicate that gamification in cultural heritage may remain the subject of one-time publications, and not yet of more systematic broader research projects. Regarding the heritage assets that were being gamified, the study found a prevalence of heritage institutions, as well as a tendency to refer to heritage assets in general or unspecified terms [14], an inquiry which was expanded upon in this publication. Finally, these initial findings also found that most of the considered gamification projects were being created to motivate and/or engage audiences and to enhance creativity in heritage experiences [14].

Following the publication of these initial findings, the authors identified key points of necessary debate and expansion within the study and within the field. As such, the authors proposed the expansion of 1 of the research questions and the addition of 5 new inquiries, which are presented in this publication. Following this introduction, the paper presents a section discussing the methodological approach, detailing the process of data collection and selection of the set of publications for analysis, as well as the characterization of the analyzed sample and laying out the research questions for this systematic literature review. Following this, the paper presents the results and discussion of the six research questions sequentially, laying out the importance of each inquiry, their working categories and discussing the implications of the findings being presented. The paper concludes with critical reflections on the findings, synthetizing and aiming to set directions for future inquiry within the field.

2. Methodological Considerations

To conduct a broad systematic literature review, Scopus and Web of Science were the selected databases, with the search terms being "HERITAGE" and "GAMIFICATION". Even though the purpose of the selection of the databases and the search terms was carried out to find a broad pool of publications, it does present limitations which the study had

to contend with. The selection of the term "HERITAGE", for example, did mean that some papers which discuss cultural heritage or cultural institutions without specifically referring to that term would be excluded. The authors, however, opted to use this term for its umbrella quality, since the broad scope of other more specific terms would have yielded an amount of results to filter through which would have been beyond the capacity of this study. Given this, the first query yielded 131 results in Scopus and 119 in Web of Science.

Secondly, the pool was limited to the following inclusion criterion: (1) only studies published over the prior 5 years, between 2017 and 2021 (the collection stage of the analysis was conducted in 2022); (2) only publications in English language; (3) only journal articles, conference papers and book chapters. This narrowed down the results to 66 in Scopus and 50 in Web of Science, a total of 116 articles. To eliminate any duplicates between the two databases, the publications were cross-referenced, which reduced the sample size to 92 articles.

Since the aim was to gain a comprehensive understanding of the field, the content of the publications was examined to select the publications focused on the application of gamification to the heritage field. Publications that merely mentioned gamification or heritage without addressing their intersection were excluded. As a result, the present sample of publications was narrowed down to 77.

With the guiding goal of broadly mapping out the field, the six research questions were formulated:

1. What heritage is being gamified?
2. Are the gamification projects more institution-oriented or tourist-oriented?
3. What gamification design dimensions are present in the project?
4. What technologies were used in the gamification project?
5. What are the target publics of the gamification project?
6. What future directions do the authors wish to see explored?

Finally, for the definition of research categories, the study relied on the prior research and discussion of authors relevant to each question, be they from heritage studies or gamification practice. In instances when a priori categories could not accurately represent the knowledge and approaches of the papers being analyzed. An example of this are the future orientations in Q6, in which working sets of categories were developed using content analysis [15]. Additionally, because the study was developed with six research questions, the authors also elected to present the working categories for each question on their corresponding sections of the findings and discussion, to better structure the presentation of the results and ease the reading of the text.

3. Findings and Discussion

The authors began with a general characterization of the working sample (*n* = 77). Of all considered publications, there is a clear prevalence of conference papers (Table 1), with 50 (65.0%) of the considered total. Following these, 20 (26.0%) were journal articles and 7 (9.1%) book chapters (Figure 1). Regarding the yearly distribution of publications, there is a modest generally upward trend in number between 2017 and 2021 (Figure 2). There were 13 publications in 2017, followed by a decrease to 9 in 2018. The years 2019 and 2020 saw an increase to 19 each, with only a small decrease in 2021 to 17 publications. While these figures are not conclusive evidence of a definite upward trend, they do suggest a growing interest in the gamified heritage practice, which has been noted by authors within the field [16].

Table 1. Publications by type.

| Type of Publication	Publications
Conference Papers	[17–66].
Journal Articles	[67–85].
Book chapters	[86–92].
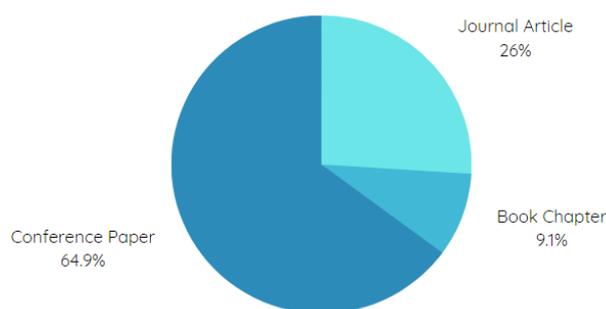
Figure 1. Type of publication.
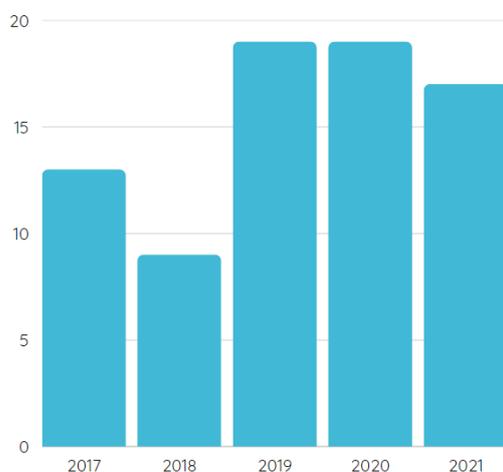
Figure 2. Number of publications per year.

Regarding the publications with the most citations within the dataset (metadata provided by the indexation platforms), Deggim, et al. from 2017 titled "Segeberg 1600-reconstructing a historic town for virtual reality visualization as an immersive experience" [17] is the most cited. The following are Vayanou, et al. from 2019 titled "Designing performative, gamified cultural experiences for groups" [18], Luimula and Trygg from 2017 titled "Cultural heritage in a pocket: Case study 'Turku castle in your hand'" [19] and Pantile, et al. from 2017 titled "New Technologies and Tools for Immersive and Engaging Visitor Experiences in Museums: The Evolution of the Visit-Actor in Next-Generation Storytelling, through Augmented and Virtual Reality, and Immersive 3D Projections" [20].

3.1. Q1. What Heritage Is Being Gamified?

One of the inevitable challenges of conducting such a broad analysis within the heritage field is that, by the very nature of the field, classification of heritage assets into discrete categories reveals itself as a limiting exercise. Heritage assets are multifaceted and dynamic. There are diverse tangible and intangible aspects that intersect, overlap and contextual to cultural, social, political and economic factors. Moreover, by its very pliable nature, gamification can be used for a significantly vast variety of purposes [56]. Because of this, the definition of working categories that would accurately describe the heritage assets for which gamification projects were being developed was a topic of debate for the authors. The initial findings presented an exploratory approach to this question, indicating a prevalence of papers discussing heritage in general or unspecified terms, and, in those clearly specified, a flight prevalence of GLAM heritage institutions (galleries, libraries, archives and museums) [14]. With this in mind, the authors opted to expand this research question, to better clarify and map out to which heritage assets gamification was being applied to.

As such, this expanded inquiry opted to analyze the dataset from the perspective of heritage value. The concept of "heritage value" is here understood as the characteristics of assets of "outstanding interest and therefore [necessity to be] preserved" [93] (p. 64), even if recognizing that ideas around universal heritage value are pliable and subject to significant and important debates within heritage studies. As such, the authors again adopt the use of working categories and indicative and not limiting tools. To do so, the study utilized the categories described in the Portuguese Base Law on Cultural Heritage (107/2001, September 8th) [94]. Despite its national-level jurisdiction, it very well reflects the working parameters of international heritage practice (as explicitly indicated on article 1) and, crucially to this analysis, it provides working categories for the description of heritage value. As such, given that this value-oriented analysis is applicable to the objects of concrete gamification projects, the study considered the following categories (Figure 3): (1) Historical; (2) Paleontological; (3) Archaeological; (4) Architectural; (5) Linguistic; (6) Documentary; (7) Artistic; (8) Ethnographic; (9) Scientific; (10) Social; (11) Industrial; (12) Technical; and (13) Unspecified.
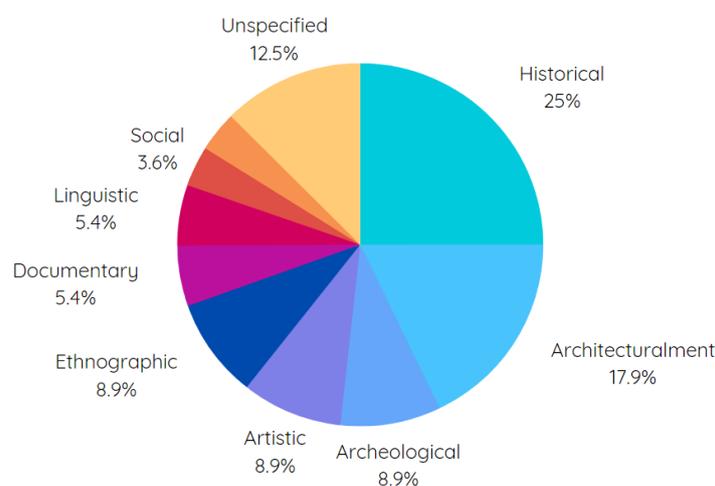
Figure 3. Heritage Values.

The results demonstrate a prevalence of heritage assets recognized for their historical value 19 (25.0%), followed by their architectural value 14 (17.9%). Archeological, artistic and ethnographic value each correspond with 5 (8.9%), documentary and linguistic value with 3 (5.4%) and social and technical with 2 (3.6%). Seven (12.5%) were unspecified. Although many factors can play into the present distribution, the elements and purposes of gamification be favorable for the prevalence of historical and architectural values in this sample. Within heritage practice, gamification is often pointed out as an effective means for both on-site interpretation of the historical contexts of assets and as a vehicle to better interpret relevant characteristics for their understanding. This prevalence, as such, can be indicative of this tendency, although further research into it would be needed.

3.2. Q2. Are the Gamification Projects More Institution-Oriented or Tourism-Oriented?

As previously mentioned, the initial content analysis allowed for the identification of general tendencies. One of these is that within a significant portion of the publications, heritage assets seem to be discussed under the concerns of heritage institutions, namely museums, and/or under the guise of their nature as tourism assets. Although these are naturally not two mutually exclusive factors, as they frequently intersect and overlap, they do imply different (if often converging) operational concerns from the perspective of the respective heritage practitioners—that of an institutional framework operating as a cultural agent in the public sphere, or that of valorization of cultural assets within the operational framework of the tourism sector. As such, analyzing the heritage projects on the texts as

fitting more on one or the other can be a useful indicator as to what concerns guide the gamification projects.

As an illustration of these different operational concerns, two papers within the dataset can be indicated: "Wine and food tourism gamification. Exploratory study in Peso da Régua" by Dália Liberato, Marta Nunes and Pedro Liberato [29] and "Designing Performative, Gamified Cultural Experiences for Groups" by Maria Vayanou, et al. [18]. In the latter, the project's focus is on the advancement of social role of the institution, in this case a museum. As such, the starting point for the creation of gamified experiences is the mission of the institution which creates them. The former, on the other hand, is predicated on the structuring of the supply within a framework of tourist visitation. Naturally these are not hermetically sealed categories. As mentioned, there is often a significant overlap between them. It does, however, help understand how the purpose of the gamified experience was conceived by its creators.

Of the analyzed sample, 18 (23.4%) operated within the operational frameworks of a cultural heritage institution, the overwhelming majority within museums. Because museums hold collections, archives and exhibitions, they tend to be more readily available for the intervention of academics or heritage practitioners knowledgeable about gamification techniques, which makes this result, although interesting, not surprising. Closely, 19 (24.7%) were directed at tourism valorization of cultural assets, which also corresponds with frequently pointed out used of gamification as tools for the enhancement of tourist experiences. A noteworthy observation is that only one of the publications could have been said to be identifiable as both working within a cultural institution's framework and be directed at tourism valorization in equal terms. Although most projects developed in museums were directed at their visitors, their concerns were largely placed in heritage education, asset interpretation and the overall concerns of public history, and not as much in the tourism-oriented aspects of visitor experience. Notably still, 41 (53.3%) could not be said to clearly fall within one or the other, with their operational concerns being left unclear.

3.3. Q3. What Gamification Design Dimensions Are Present in the Project?

Although gamification is generally discussed as though it was a singular thing, in practice it is best described as a collection of game-inspired design elements, strategies and ways of organizing processes [95]. These gamification dimensions can often intersect and overlap, but are still different and identifiable, with each project applying them in different ways and at different degrees. To understand these differences in application of gamification strategies, the study looked at the different gamification dimensions in each of the gamification projects.

The study utilized the gamification heuristics proposed by Tondello, et al. [96], which propose twelve categories based on "common dimensions of motivational affordances, which were based on the theories of intrinsic and extrinsic motivation and behavioral [sic] economics" [96]. These categories are:

1. Intrinsic Motivation Heuristics
   1.1. "Purpose and Meaning", affordances aimed at helping users identify a meaningful goal that will be achieved through the system and can benefit the users themselves or other people;
   1.2. "Challenge and Competence", affordances aimed at helping users satisfy their intrinsic need of competence through accomplishing difficult challenges or goals;
   1.3. "Completeness and Mastery", affordances aimed at helping users satisfy their intrinsic need of competence by completing series of tasks or collecting virtual achievements;
   1.4. "Autonomy and Creativity", affordances aimed at helping users satisfy their intrinsic need of autonomy by offering meaningful choices and opportunities for self-expression;

1.5. "Relatedness", affordances aimed at helping users satisfy their intrinsic need of relatedness through social interaction, usually with other users;

1.6. "Immersion", affordances aimed at immersing users into the system to improve their aesthetic experience, usually by means of a theme, narrative or story, which can be real or fictional.

2. Extrinsic Motivation Heuristics

2.1. "Ownership and Rewards" affordances aimed at motivating users through extrinsic rewards or possession of real or virtual goods. Ownership is different from competence when acquiring goods is perceived by the user as the reason for interacting with the system, instead of feeling competent;

2.2. "Scarcity", affordances aimed at motivating users through feelings of status or exclusivity by means of acquisition of difficult or rare rewards, goods or achievements;

2.3. "Loss Avoidance", affordances aimed at leading users to act with urgency, by creating situations in which they could loose acquired or potential rewards, goods or achievements if they do not act immediately.

3. Context Dependent Heuristics

3.1. "Feedback", affordances aimed at informing users of their progress and the next available actions or challenges;

3.2. "Unpredictability", affordances aimed at surprising users with variable tasks, challenges, feedback or rewards;

3.3. "Change and Disruption", affordances aimed at engaging users with disruptive tendencies by allowing them to help improve the system, in a positive rather than destructive way [96].

Each publication was analyzed to see if there were indicators for each of the categories above, identifying which gamification dimension (one or more) were present in every article. The study identified an average of 2.8 dimensions per publication, with a larger prevalence on the use of Immersion, Completeness and Mastery, Autonomy and Creativity, Relatedness and Ownership and Rewards (Table 2). Interestingly, the categories that present the highest predominance are those associated with intrinsic motivation. This type of motivation is associated with more meaningful experiences that endure over time when compared to extrinsic motivation [97]. The need for gamification projects to give special importance to intrinsic motivation dimensions has been a long-running topic of discussion within circles of gamification practice, precisely due to this fact. The identified prevalence of this focus within the analyzed sample may suggest that this concern has found its way into gamification practice.

The distribution of the different publications Is described in the following table:

Table 2. Distribution of the different publications by Gamification Dimensions.

Dimension	Publications	Total
	1. Intrinsic Motivation Heuristics	
1.1 Purpose and Meaning	[24,26,28,40,41,45,57,72,88]	9
1.2 Challenge and Competence	[24,39,45,53,57,62,68,78,81]	9
1.3 Completeness and Mastery	[19,26,28,30,33,35,38,42,45,50,58,64,66,68,69,74–78,80,83–85,88]	26
1.4 Autonomy and Creativity	[17,19–21,24,28,30,31,37–40,44,49,50,53,58,62,67,68,71–73,80,88,89]	26
1.5 Relatedness	[18,38,40,41,43,45,57,64,66,68–70,76,78,83,85]	17
1.6 Immersion	[17,19,20,24,25,30,35,37–39,42,44,45,49,50,53,58,62,66,71–73,76,80,82,84,88,89]	28
	2. Extrinsic Motivation Heuristics	
2.1 Ownership and Rewards	[18,38,42,43,45,57,58,67–70,74,75,78,80,81,83–85]	20
2.2 Scarcity		0
2.3 Loss Avoidance	[39]	1
	3. Context Dependent Heuristics	
3.1 Feedback	[28,35,38,39,55,62,66,71,74,76,78,80]	13
3.2 Unpredictability	[24,25,28,31,53,66]	6
3.3 Change and Disruption		0

According to authors such as Chou [98] and Tondello [96], a gamified experience should achieve as many dimensions as possible, if not all, throughout all its phases. Only then is it possible to reach the motivational interests of anyone participating in the experience. It is therefore normal for gamified experiences to show indicators for several dimensions. During the analysis of the articles, it was possible to identify indicators within the various categories, from figures with prints screens or from the description in the text. However, as most of papers do not provide a detailed description of the experience, other indicators may be omitted. Thus, we consider that the dimensions identified will be those that each author intended to emphasize, valuing the experience only by those indicators.

3.4. Q4. What Technologies Were Used in the Gamification Project?

Oftentimes discussions around gamification go hand in hand with the technologies in use or with potential to be applied in the context of cultural heritage work. As such, an important question to ask is what technologies were used in each of the gamification projects. Much like other previously mentioned categorization challenges, no clear set of categories can be complete and hermetically tight descriptors of the technologies. Due to this, in the publication of the initial studies [14], the authors opted to use very general categories: (1) Online; (2) Stand-alone; (3) Mobile apps; and (4) Unspecified. The results then presented show a very slight prevalence of stand-alone software, with 24 (31.2%) of instances, followed very closely by unspecified use of software 21 (27.3%), mobile apps 17 (22.1%) and online resources 15 (19.5%) [14].

Even with the impossibility of a coherent set of categories for the use of technologies, the authors elected that it would be relevant to understand what tools are in use within gamification projects for cultural heritage. As such, using content analysis, the study opted to solely indicate the technology described in each publication (Table 3), with the following results:

Table 3. Distribution of the different publications by Type of Technology.

Technology	Publications	Total
Games (in general)	[17,19,24,26,28,30,35,38–40,42,50,53,58,67–71,75,80,82,84,88]	25
Mobile Application	[18,19,30,31,39,41,45,50,55,57,62,74,78–81,83,89]	18
Augmented Reality (AR)	[19,20,33,35,37,39,43,50,62,72,80,89]	12
Virtual Reality (VR)	[17,19,20,30,49,53,58,72,82,88]	10
3D Modeling	[17,21,41,66,69]	5
Localization system	[57,70,85]	3
Web	[64,72,85]	3
Mobile device	[68,70]	2
QR code	[33,78]	2

In addition, ten other technologies were mentioned only by one of the publications: Head-mounted display [30], Smart Objets [31], Cloud [33], HoloLens and Mixed Reality [89], Internet of Things (IoT) [78], Robotics [66], Radio-Frequency Identification (RFID) technology [66], Multiplatform application [66] and Tangible User Interfaces (TUIs) [76].

As can be observed, mobile applications for mobile devices and immersive technologies such as virtual reality and augmented reality are clearly prominent in the results. These are heavily associated with the dimension of immersion and have garnered particular attention as tools for the enhancement of tourist and visitor experiences, being one of the benefits pointed out by authors such as Xu, Buhalis and Weber [99]. Interestingly, this goes in line with the potential of gamification for cultural heritage assets. As a tool for greater engagement with cultural legacies gamification can bring cultural objects closer to the public—it can help break the often-criticized artificial divide between public as an observer of heritage and heritage assets as sacrosanct objects of observation and reflection.

It does so by allowing the public (and heritage stakeholders) to engage with heritage with more than just the sense of vision and experience it through immersion.
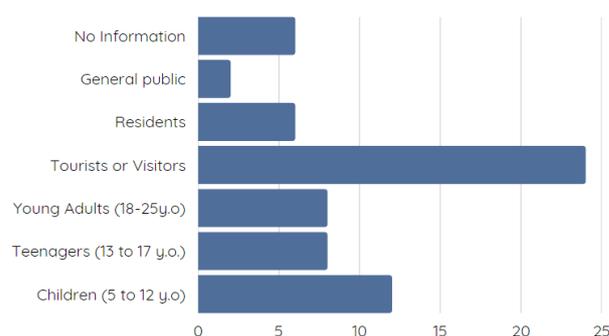
3.5. Q5. What Are the Target Publics of the Gamification Project?

As pointed out by Jerome de Groot, "how a society consumes its history is crucial to the understanding of contemporary popular culture, the issues at stake in representation itself and the various means of self or social construction available" [100] (p. 3). The question of the public, who they are, what are their concerns, among others, are always at the forefront of heritage work. For whom is this work conducted is a guiding principle in the decisions made and the strategies being adopted, including in all the analyzed texts. As such, this study looked at who the target groups were for each of the projects of the analyzed publications. After content analysis of the texts, the following categories were described:

1. "General public", for everyone or unspecified;
2. "Children", students between 5 and 12 years old;
3. "Teenagers", students and adolescents between 13 and 17 years old;
4. "Young Adults", students and young workers between 18 and 25 years old;
5. "Tourists or visitors", specifically those not from that location but visiting in some capacity, regardless of age;
6. "Residents", specifically those living in that location, regardless of age.

As expected, there is overlap between some of the categories of publics for which the gamified experience was designed for. Categories such as "tourists or visitors" and "residents" are not mutually exclusive. They can encompass other categories, namely those age-related[1]. Even so, the observed descriptors of the target publics often either mention a specific target group (often age related) or fall into a more general description, which is more closely described by the status of the target audience in terms of local or external visitor. As such, the authors opted to sort the papers solely into the respective categories that most approximate the target publics described in each of the texts.

The results of the analysis (Figure 4) indicate that the majority of analyzed gamification projects are directed at tourists and visitors 24 (31.2%) or Children (5–12 y.o.) 12 (15.6%). The other categories rank at 8 (10.4%) each for Teenagers and Young Adults, 6 (7.8%) for Residents and 2 (2.6%) for the general public.

Figure 4. Target publics of the gamification project.

Additionally, the analyzed the dimensions of gamification discussed in Q3 across the different target publics of each gamification project (Table 4). The results of this cross-referencing that the largest diversity of gamification dimensions are for tourists or visitors. The same does not apply with specific groups, which is an expected outcome, given the prevalence of this target group within the results and the internally diverse nature of the target group itself. For both Children and Teenagers, most projects seem to rely on the dimension of Completeness and Mastery, whilst for Young Adults the projects seem to favor the dimension of Autonomy and Creativity. This corroborates a pattern observed in other studies, particularly within the application of gamification for education. If for younger

participants the feeling of mastery by "completing series of tasks or collecting virtual achievements" is important, for older participants it is necessary to offer "meaningful choices and opportunities for self-expression" [96] (p. 5).

Table 4. Dimensions of gamification across the different target publics.

	No Information (*n* = 6)		Children (5 to 12 y.o.) (*n* = 12)		Teenagers (13 to 17 y.o.) (*n* = 8)		Young Adults (18–25 y.o.) (*n* = 8)		Tourists or Visitors (*n* = 24)		Residents (*n* = 6)		General Public (*n* = 2)	
Scarcity	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Change and Disruption	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Purpose and Meaning	2	33%	2	17%	1	13%	0	0%	3	12%	1	17%	1	50%
Challenge and Competence	1	17%	1	8%	0	0%	3	38%	4	16%	0	0%	0	0%
Completeness and Mastery	2	33%	8	67%	6	75%	2	25%	11	44%	2	33%	1	50%
Autonomy and Creativity	5	83%	5	42%	3	38%	6	75%	8	32%	1	17%	1	50%
Relatedness	0	0%	4	33%	2	25%	1	13%	9	36%	3	50%	2	100%
Immersion	5	83%	6	50%	4	50%	4	50%	11	44%	1	17%	0	0%
Ownership and Rewards	0	0%	4	33%	2	25%	3	38%	12	48%	3	50%	0	0%
Loss avoidance	0	0%	0	0%	0	0%	0	0%	1	4%	0	0%	0	0%
Unpredictability	3	50%	1	8%	0	0%	1	13%	1	4%	0	0%	0	0%
Feedback	1	17%	2	17%	2	25%	2	25%	8	32%	0	0%	0	0%

3.6. Q6. What Future Directions Do the Authors Wish to See Explored?

One of the aspects already pointed out in the publication of the initial results of the present study [14] was the need for studies on gamification for cultural heritage to more actively engage in broader discussion within the field, instead of remaining insular publications. To do this, it is important that academics to pay explicit attention to what directions the field is moving towards. As a contribution for this purpose, this study looked at the statements of future directions and intentions of further research within the analyzed publications. Because the locus of this question is very specific to the context of this study and the contents of the analyzed publications, an a priori set of categories could not be found to accurately portray future orientations of these publications. As such, after a close content analysis, these future orientations were divided into the following working categories:

1. "Continue the work", meaning that the project would remain ongoing following the publication of the text;
2. "Expand the work", meaning that the project would not just continue but increase its areas of applicability, scope or objects of interest;
3. "Looking for new ideas", meaning that the authors will (themselves) seek to engage in concrete debates in the future;
4. "More reflection is needed", meaning that the authors point to specific questions left unanswered or unearthed by their study, and leave it up for debate for the broader academic community;
5. "Unspecified", meaning no discernable mention of any future work or orientation.

The results of the analysis indicate that a vast majority of the studies, 70.1% fall into the "unspecified" category, meaning that they make no reference to future work, gaps in the field left to be responded to (by themselves or by others), and/or where the publication fits as a response to the broader debates within the field of gamified cultural heritage. This is a trend previously alluded to [14] and corroborated by these results. A total of 18.2% of the publications do indicate that they will continue the work after its implementation and 6.5% indicate that they will expand on it. Without disregarding the relevant discussions that these texts engage in (with different degrees of theoretical and practical locus), their future orientations remain almost exclusively relevant to the context that they operate in, meaning that they are mostly relatively self-contained.

Despite small in representation, with two (2.6%) each for "Looking for new ideas" and "More reflection is needed", those that fell within the remaining two categories did point out relevant debates and directions which the gamification field can engage in, even without disregard for the specific contexts in which projects are developed. As indicative

examples, the paper by Wang, et al. [44], titled"Encourage Self-exploration Through an Interactive Chinese Scroll Painting Design", points out the relevance of the discussion around the risks of using spectacle and theatrics for heritage interpretation, originating in public history and historical education circles, particularly following the popularization of so called "New Museology" [100]. The authors point out the necessity for projects to engage with the debate on whether the use of "appealing media" [44] can detract from the objective of classical heritage education. In practice, this future engagement can happen simply by stating how specifically do gamification projects prove, disprove or detract from these risks.

Other publications, such as Synnes, et al. [92], titled "CyberParks Songs and Stories- Enriching Public Spaces with Localized Culture Heritage Material such as Digitized Songs and Stories", engage with broader sociological debates around cultural heritage and cultural identity, particularly around the European cultural citizenship. In particular, the authors point out the value of gamification project such as theirs for "promoting intercultural dialogue beyond Euro-centered views and assumptions by enriching European cultural expressions by means of new knowledge on heritage" [92], and the need for projects to engage in these considerations. Other open directions of inquiry that were pointed out in the publications are the need to understand the consequences of COVID-19 in these projects, namely changes in consumption patterns [70], the influence of gamification on the perceptions of the historical past in the consumers of gamified cultural heritage [30], and other general socio-techno-economic debates within the social context in which projects operate.

4. Concluding Remarks

As pointed out in the introductory portion of this study, there is a significant need in the field of gamification in/for cultural heritage for studies that take a broader perspective. Studies dedicated to taking stock of how gamification has been discussed, how it has been applied to cultural heritage, what directions have been explored, and, consequently, what paths and debates are ripe for discussion. This study aimed to serve as a checkpoint in this constantly growing field, to help provide direction to future work by firstly mapping it out and ask questions such as what has been carried out, by who, to what end, how and what does it imply. To do this, a broader systematic literature review was conducted. Some aspects limited the present research, namely the restriction of the search terms to "HERITAGE" and "GAMIFICATION". Although these were purposefully chosen to congregate a variety of topics, some specificities, such as particular cultural institutions which could be included but did not mention both terms, often can be left out of the pool of analyzed papers. Because of the importance they present for the understanding that is sought, the authors aim at tackling these specificities in future research. As a jumping point for these aims, it is important to review some broad/guiding takeaways from the points of debate and reflection that have been mentioned and discussed in the present study and that are extremely relevant for future research, both for the authors and for the field in general.

Firstly, it remains an overall observation that most of the analyzed publications are fairly insular and self-contained. Despite their contribution as explorations of established frameworks, tools and techniques within the gamification toolbox, they often do not significantly engage with broader debates or concerns, neither within gamification circles nor within broader heritage studies. As previously mentioned, it is common for gamification projects to be highly contextual [9]; however, significant steps have been taken in other fields in this regard, showcasing how an enriched debate, even in context-dependent studies, can strengthen reflection and the impact of gamification. This is the case with debates on gamification within the field of education, namely its relationship with contemporary governmentality in the "knowledge economy" [101]. In that same strand, contributions coming from critical heritage approaches, and its engagement with broader socio-political questions, can be the entry point for reflection of gamification as a more reflexive tool for heritage work. Reflections around gamification projects in cultural heritage can discuss, for example, how their project responds to open debates within the field regarding the role of

the community in the production of these heritage interpretation tools or in the narratives being constructed by these gamification projects—what was the role of which heritage stakeholders in deciding what aspects of that particular heritage asset were being gamified and why?

Secondly, likewise, an important takeaway for research moving forward is the greater need for collaboration and the consolidation of strong networks of both gamification and heritage practitioners/researchers. Steps in this direction have already been taken, since, as observed in the texts, it is not uncommon for papers to have authors affiliated with multiple institutions, or authors from different institutions in the same publication. However, more extensive and expansive reflections require greater consolidation of research and discussion networks, both formal and informal. This does not mean the need for authors to work in unison. Enriched debates require different perspectives and the discussions that result from them. However, this can only be so if future research goes beyond occasional and insular studies and addresses gamification as an established tool in its own right, with an open door for new approaches that intersect with broader debates and concerns in academia and society at large.

Thirdly, an interesting aspect that was alluded to is how, in the context of the cultural heritage field, gamification seems to bring cultural objects closer to the public. That is, the fact that inducing immersion is such a prevalent concern for gamification project indicates that practitioners are aware of the potential that gamification presents as an expanded medium for storytelling—for engagement and experiencing beyond distanced observation of cultural artifacts. However, the fact that this potential is understood also means that it ought to be reflected on. A gamified experience of cultural heritage is purposefully different than a non-gamified experience. While the vast majority of the publications focus solely on presenting the details of its specific gamification project and/or tool, an equally relevant aspect for discussion is reflecting on the impact of gamification on the experience of that heritage asset by its target public. That is, how differently are heritage assets perceived when gamification is at play? How does the framework of a gamified medium shape the experience and the perception of cultural heritage?

The relevance of these questions is symptomatic of a larger aspect, which ought to be a fourth and final takeaway for future research. The fact that publications are still largely focused on self-contained presentation of results can be indicative of a generalized logic conceptualizing gamification as a tool for efficiency, first and foremost. That is, it seems that in general the underlying assumption is that gamification is there chiefly to transmit knowledge about heritage more efficiently, generally operating under a technicist heritage education framework of the public primarily as a one directional recipient. This is exemplified in how many of the analyzed publications either simply present the results of their project without presenting the impacts it had on its target audience, or, when they do, tend to evaluate success by asking participants about its effectiveness. In response to this observation, a practical orientation for future research can be the need to engage in more qualitative metrics for analyzing the impact of gamification projects, if nothing else to better aid in fostering cycles of return in audiences. Chiefly, by actively questioning the frameworks within which projects are being developed, future work can better avoid the tendency of conceiving the interpretation of cultural legacies as a matter of mere transfer of preexisting knowledge. Instead, it better aligns gamification projects with the operational conceptions of heritage at the forefront of the field: as an open, subjective and ever-changing reflexive exercise in aspects of identity, inheritance, narrativity and belonging.

Data Availability Statement: Data are contained within the article.

Notes

¹ These two specific categories were reserved for those projects who made no mention of age when discussing their target groups, but still specified whether or not they were directed at external visitors or for the local residents.

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