

# A GAMIFICATION MODEL FOR COMMUNITY-BASED HERITAGE WORK: THE CASES FROM SLOVAKIA

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## *Abstract*

Gamification, defined as applying game elements to non-game contexts, has proven to be an effective tool for increasing public engagement and motivation. In the context of cultural heritage preservation, it helps maintain and popularise historical and cultural sites, contributing to their sustainability. This paper focuses on practical examples of gamification projects implemented in the Slovak cities of Handlová, Revúca, and Bratislava, showcasing various approaches to engaging communities in heritage protection. It is the outcome of the project “A Gamification Model for Community-Based Heritage Work”, which promotes community and civic engagement in sparsely populated areas and provides a framework with tools for gamification in community-focused work<sup>1</sup>. The analysed examples demonstrate how gamification strategies can enhance community involvement, motivate diverse target groups, and contribute to the sustainable development of local cultural heritage.

**Keywords:** cultural heritage, community engagement, gamification, preservation, Slovakia

## **Introduction**

In pedagogy, particularly within formal education, humanistic and psychological learning theories have led to a preference for methods that shift the teacher’s role from traditional instructor to coach or leader, facilitating the learning process and stepping back. These discussions also question established educational content and the current canon. For this paper, the most interesting aspect of humanistic pedagogy is the need to reevaluate educational methods and procedures so that students are not merely passive recipients of facts and information – they should learn through their activities in a way that feels effortless<sup>2</sup>. They might not even fully realise that they are learning. This paradigm is partly reflected in the ongoing curriculum transformation of basic education in Slovakia<sup>3</sup>. The reform aims to develop performance and content standards involving students in learning. Students should investigate, explore, and discover

<sup>1</sup> Silviu Miloiu, Marusya Smokova, and Sergiu Musteață, eds. *A Gamification Model for Community-Based Heritage Work: Selected Best Practices*. Târgoviște: Editura Cetatea de Scaun, 2024.

<sup>2</sup> Branislav Pupala and Ondrej Kaščák, *Výchova a vzdelávanie v základných diskurzoch* (Prešov: Rokus, 2015); Yves Bertrand, *Soudobé teorie vzdělávání* (Praha: Portál, 1998).

<sup>3</sup> “Education for the 21st Century: Foundations for Changes in the Primary Education Curriculum”. Ministry of Education, accessed July 26, 2024, <https://vzdelavanie21.sk/wp-content/uploads/2022/06/Vychodiska-zmien-v-kurikule-zakladneho-vzdelavania.pdf>.



new knowledge through their activities. In this educational discourse, teachers and experts praise experiential learning or learning by doing, with information and communication technologies also playing a significant role<sup>4</sup>.

This approach extends beyond formal education. Specific trends are also emerging in the realm of leisure. As people's education levels increase, so do their expectations for the quality of entertainment in their free time. This entertainment should be meaningful and not feel like a waste of time. Therefore, in education, we observe trends to make learning processes more accessible and attractive, while in leisure or non-formal education, the dominant approach is "entertainment" and "edutainment". The terms are similar in content and semantics. Entertainment is a broader concept that does not exclude edutainment but does not automatically include it<sup>5</sup>. Edutainment is a specific type of entertainment where participants learn (acquire new knowledge) or are educated (their attitudes and behaviour patterns can be influenced) without necessarily realising it. The term combines education and entertainment, which may initially seem antagonistic but creates a new area of educational reality. Here, the key role is not played by the teacher or educator but by a set of psychologically, pedagogically, and didactically designed tools linked to new information and communication technologies or other widely spreading media<sup>6</sup>. Understanding the importance of gamification requires knowledge of the theoretical foundations of play, as defined by various authors. The use of play principles in gamification lies in these fundamental properties, which we explore in more detail in the following section.

### Homo ludens

The functionality and appeal of entertainment, whether in school or other areas, are determined by the inherent qualities of play. Games often accompany entertainment, and games automatically evoke fun. The topic of play has always intrigued philosophers, psychologists, educators, and biologists in various ways<sup>7</sup>. Play is commonly associated with childhood, a period dominated by this activity. When adults play, it is often viewed as a waste of time. However, several authors have challenged this view, highlighting the naturalness, attractiveness, and irreplaceable role of play in adulthood. Philosophically, play is not just an existing entity but an ontological interpretation of the world, transcending the notion of a mere pastime. Play is not just fun but "establishes the world's order; it is an ontological principle"<sup>8</sup>. A historian and cultural anthropologist, Johan Huizinga, reflected on play in this manner, pointing out the playful nature of any artistic activity, such as speech (metaphors, wordplay). He proposed adding the term

<sup>4</sup> Roman Svaříček, "Konec pedagogiky: Kritický esej", *Studia paedagogica* 18, no. 2-3 (2013): 55-72.

<sup>5</sup> Jíří Nemeč, "Volný čas dětí a mládeže – zábava nebo výchova", in *Pedagogika volného času. Teória a prax*, ed. Emília Kratochvílová (Trnava: Pedagogická fakulta Trnavskej univerzity v Trnave, 2007): 75-82.

<sup>6</sup> Nemeč, "Volný čas dětí a mládeže"..., 75-82.

<sup>7</sup> Anna Hogenová, "Hra a filosofie", *Pedagogika* 51, no. 4 (2001): 471-487.

<sup>8</sup> Hogenová, "Hra a filosofie"..., 471-487.

*homo ludens* to the designations *homo sapiens* and *homo faber*, expressing the idea of “a playing man.” In his work, he gradually defines the rules and character of the play. It is a “free activity that is ‘just for fun,’ standing outside ordinary life, yet fully absorbing the players; it is not associated with any material interest and does not yield any profit; it takes place in a specially designated time and space, follows certain rules, and fosters a sense of community among its participants, who often enjoy shrouding it in mystery or stepping out of the ordinary world by disguising themselves as others”<sup>9</sup>.

This voluntary activity, governed by freely accepted yet unconditionally binding rules, occurs within temporal and spatial boundaries, has its goal within itself, and is accompanied by a sense of tension, joy, and what Huizinga called “being different” compared to “ordinary life.”<sup>10</sup> They all know they are playing, whether a child, an orchestra player, or an athlete. A younger game theorist, Roger Caillois, appreciated Johan Huizinga’s work for analysing the fundamental properties of play and highlighting its importance in developing civilisation. He also recognised games in areas where they had not been previously identified. However, Caillois criticised Huizinga for deliberately ignoring the classification of games and reducing their description to competitive games with rules.<sup>11</sup> Caillois took on this task, explaining the difference in generational perspectives. While Huizinga belongs to classic philosophers who uncover hidden assumptions and distrust the fixation of superficial concepts, Caillois represents a generation focused on various comparisons and classifications without questioning the essence of play itself.<sup>12</sup> Caillois added uncertainty and fictitiousness to Huizinga’s attributes (freedom, rules, time and space beyond everyday life, non-productivity). These new attributes assure players of the illusory nature of the game compared to real life. Besides offering a definition, Caillois also presented a widely cited classification of games using Greek and Latin terms. Understanding Classical Greek can provide a broader context and understanding of his classification. He divided play behaviour into four categories, considering the game’s temporal development (from games without rules to complex versions bound by regulations). The first category is agonistic games (sports, chess), based on competition and the goal of winning through strength and skill. The second category is aleatoric games (roulette, cards), based on principles of chance and luck. Mimicry games (theatre, film) are based on imitation, pretending, or role-playing. The last category, vertigo games (*ilinx*), involves experiencing dizziness and losing balance (carousel rides, extreme sports).

### Edutainment and Gamification

To understand why the edutainment approach is successful, studying the works of both previously mentioned authors is productive. Using game elements

<sup>9</sup> Johan Huizinga, *Homo Ludens* (Bratislava: Tatran, 1990).

<sup>10</sup> Huizinga, *Homo Ludens...*, 240.

<sup>11</sup> Roger Caillois, *Hry a lidé* (Praha: Studia Ypsilon, 1998).

<sup>12</sup> Jaroslav Kotá, «Traktát o třech klasických ludologických analýzách a o jejich pojetí významu hry», *Pedagogika* 51, no. 4 (2001): 439-453.



for educational purposes is effective due to the inherent properties of games, which both authors explored. Additionally, creators of educational games should consider the diversity of game behaviours and create multiple variations, recognising that individuals naturally gravitate more or less toward certain game motives. However, playing a game is not an end but a means to achieve another goal. This aspect might be criticised from two perspectives: philosophically, questioning the essence and purpose of play in human life, and institutionally, as public institutions like museums do not want to be perceived as amusement parks. A closer analysis from the perspective of the emerging nature-based tourism approach could be beneficial<sup>13</sup>. Traditional museums and other public institutions, often considered dull and unengaging, have started incorporating elements of fun and games. A small change was allowing movement among exhibits beyond marked paths. Initially, visitors were not allowed to touch the exhibits. New approaches seek alternatives where items are handed to visitors, or their duplicates are part of workshops. The museum visitor becomes the leading creator of an interactive, fun, engaging, and motivating process for further learning.

This gently enforced, unrecognised educational process can provide new knowledge and an emotional experience that enhances learning and possibly changes attitudes. Museums and children's museums are becoming large laboratories of knowledge where participants can touch everything and, if possible, try things out to understand complex physical and natural phenomena. This interactivity supports heuristic learning and is a low threshold, not just in terms of inclusive principles but primarily because museums or exhibitions are built on a community principle. They cooperate with other cultural and educational institutions and create spaces for informal education for all social groups. Nowadays, "gamification" appears more frequently than "edutainment" across various life and business spheres. It is not exclusively tied to educational settings or informal education, but it remains true that play is not an end. Gamification (often marketing) increases motivation and interest among employees, clients, visitors, and citizens by applying game design elements, thinking, or principles to non-game contexts. Examples include point collection, earning badges or rewards, advancing through levels, ranking in success charts, knowledge quizzes, and other game elements. These features spark interest, maintain attention, and provide a sense of accomplishment. In summary, it is about fun.

### Cultural Heritage Preservation

In recent years, gamification has proven to be an effective tool for increasing public engagement in preserving cultural heritage. The main goal of this approach is to involve the public in the preservation process and raise awareness of its significance. Adding game elements such as rewards, points, and challenges

<sup>13</sup> Russell K. Blamey, "Principles of Ecotourism", in *The Encyclopedia of Ecotourism*, ed. David Bruce Weaver (Wallingford: Cabi Publishing, 2005): 5-22.

makes individual activities more attractive and enjoyable<sup>14</sup>. This approach is efficient, whereas traditional methods fail to generate sufficient interest and public engagement. Gamification creates a dynamic and interactive environment that motivates people to become more actively involved in preserving cultural heritage. Studies show that game elements can promote long-term learning and increase information retention. These elements utilise theories of learning through play and edutainment<sup>15</sup>, creating interactive and engaging educational programs.<sup>16</sup> This has led to the development of “serious games” that serve not only for entertainment but also for education, training, and dissemination of important information. These games provide valuable experiences and information, crucial for preserving and transmitting cultural heritage. Cultural institutions use them as educational tools and marketing strategies to attract visitors and raise awareness about cultural heritage<sup>17</sup>. Game mechanics like point collection, level progression, and badge earning help maintain high levels of engagement and motivation among participants.

Scientific studies emphasise the importance of personalising experiences. Gamification allows content to be tailored to users’ individual preferences and interests, increasing their engagement and motivation<sup>18</sup>. Social media enable participants to share their experiences and encourage others to get involved, thereby increasing the reach and impact of individual projects. An example is mobile applications and online platforms that allow users to explore cultural monuments and the history of their surroundings interactively, leading to greater engagement and interest in local heritage. In tourism, gamification enhances the experiences of tourists and locals by making interactions more engaging and enjoyable. Current research categorises tourist needs into entertainment,

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<sup>14</sup> Marios Magioladitis, Dimitrios Ringas, and Eleni Christopoulou, “Promoting Cultural Heritage via Gamification and Augmented Reality”, in *Digital Culture & AudioVisual Challenges: Interdisciplinary Creativity in Arts and Technology*, ed. Agnes Papadopoulou, Michail Panagopoulos, Vasileios Komianos, and Andreas Giannakouloupoulos (Corfu: Ionian University Publications, 2019):158–67.

<sup>15</sup> Sevde Karahan and Leman Figen Gül, “Mapping Current Trends on Gamification of Cultural Heritage”, in *Game + Design Education*, ed. Özgür Cordan et al., vol. 13 of Springer Series in Design and Innovation (Cham: Springer, 2021): 281-93.

<sup>16</sup> Maria Xipnitou et al., “From Discovery to Exhibition: Digitizing a Cultural Educational Program Using 3D Modeling and Gamification”, in *Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage* (Cham: Springer Nature, 2019): 337–349.

<sup>17</sup> Elisa Bonacini, and Sonia Caterina Giaccone, “Gamification and Cultural Institutions in Cultural Heritage Promotion: A Successful Example from Italy”, *Cultural Trends* 31, no. 1 (2021): 3–22.

<sup>18</sup> Doğan Kalak, Derya Güleç Özer, and Serdar Aydın, “Experiencing Cultural Heritage Through Gamification: Mardin Orphanage”, in *Digital Design Reconsidered*, ed. Wolfgang Dokonal, Urs Hirschberg, and Gabriel Wurzer, *Proceedings of the 41st Conference on Education and Research in Computer Aided Architectural Design in Europe* (Graz: Graz University of Technology, 2023): 671–79.



educational, escapist, and aesthetic experiences<sup>19</sup>. Tourists can collect digital cards with information about local culture (education), complete tasks and earn rewards (entertainment), participate in local activities and traditions (escape from reality), and admire natural and cultural landmarks (aesthetic experiences). This model of integrating game elements into tourist experiences helps increase visitor numbers and foster a deeper understanding and appreciation of cultural heritage.

The dynamic tourism model divides tourist experiences into various phases: interest arousal, attraction enhancement, experience, reflection, retention, and recollection. This model helps identify when and where game elements can be integrated to improve experience. Before the trip, visitors can watch videos and read articles about the destination (interest arousal); during the journey, they can earn points for visiting specific sites (experience), and after returning, they can share their experiences and photos on social media (retention and recollection)<sup>20</sup>. Gamification can also help create lasting memories and positive experiences, leading to repeat visits and sustained interest in cultural heritage. The phenomenon of “game tourism”, where successful video games like *Assassin’s Creed* influence tourist interest in historical sites, shows gamification’s significant impact on tourism<sup>21</sup>. Gamification combined with information and communication technologies allows for personalised and interactive experiences that contribute to the sustainable development of cultural heritage.<sup>22</sup> Such technologies enable the creation of immersive experiences that can deeply engage visitors in the area’s history and culture. Additionally, virtual and augmented reality can bring historical events and sites to life, simultaneously providing a unique opportunity for education and entertainment. Besides enhancing tourist experiences, the gaming approach has great potential to increase community engagement, which will be discussed in more detail in the next section.

## Community Engagement

Using game elements and technologies to present historical and cultural sites is becoming an increasingly common way to boost public engagement. This approach leads to a better understanding and appreciation of cultural heritage, promoting sustainability. Active community involvement strengthens the sense of ownership and responsibility, ensuring the long-term protection of heritage. Practical tools include democratising access to heritage protection, DIY (do-it-yourself) approaches, various public engagement strategies, crowdsourcing, egalitarian tourism relationships, and stakeholder collaboration. The conceptual framework

<sup>19</sup> Zhang, Duo-duo, and Peng-ri Luo, “Research on Gamification-based Tourism Experience Design for Cultural Sustainability”, *Packaging Engineering* 41, no. 14 (2020): 36-42.

<sup>20</sup> Zhang and Luo, “Research on Gamification-based Tourism...”, 36-42.

<sup>21</sup> Bonacini and Giaccone, “Gamification and Cultural Institutions...”, 3-22.

<sup>22</sup> Nicolau Almeida, Rodrigo, Célio Gonçalo Marques, Paula Almeida, and Eunice Ramos Lopes, “From the Convent to the Streets: Recentering Touristic Products Through Gamification and ICT Based Strategies”, *Journal of Tourism and Heritage Research* 3, no. 1 (2020): 196-209.

for citizen engagement is based on the “participatory turn” in politics, which supports a democratic, inclusive, and egalitarian environment. This environment is essential for practical education and heritage protection<sup>23</sup>. A DIY approach to cultural heritage allows ordinary people to participate in its preservation and conservation without needing experts. Volunteers often collaborate with official organisations to gain expertise and support while maintaining independence. They create “communities of practice” where they learn and develop skills through interaction and collaboration<sup>24</sup>. Thus, cultural heritage is managed by various entities, from government-supported official institutions to unofficial community initiatives. Founders of independent museums and archives use creative methods to support and promote their initiatives, often outside traditional rules.

Various strategies for public engagement in cultural heritage include using social media, internet platforms, knowledge resources, and games. Participatory initiatives should be inclusive and accessible to all populations, including marginalised communities. Social media are easy to replicate and sustainable but require significant effort. Digital platforms, such as mobile applications, virtual reality, and augmented reality, enhance interactivity and public engagement, leading to a better understanding and appreciation of heritage. However, they require more specialised knowledge and equipment and are more challenging to implement<sup>25</sup>. Some authors argue that a precise methodological procedure for public engagement is optional; understanding specific social situations and values is more important. Archaeological ethnography focuses on particular contexts and reflective considerations when planning and implementing public engagement projects. For example, collecting stories and personal memories from residents associated with specific places can create a “heritage map” of the village<sup>26</sup>. Crowdsourcing and citizen science use people’s natural interest in games to collect and analyse data, increasing public involvement in heritage protection. This approach leverages collective knowledge and skills to achieve results that would otherwise be difficult to attain.<sup>27</sup> It allows people to contribute to research without specific technical skills, thereby “democratising” scientific knowledge

<sup>23</sup> Višnja Kisić and Goran Tomka, *Citizen Engagement and Education: Learning Kit for Heritage Civil Society Organisations* (The Hague: Europa Nostra, 2018): 8–11.

<sup>24</sup> Sarah Baker, *Community Custodians of Popular Music’s Past: A DIY Approach to Heritage* (Abingdon and New York: Routledge, 2018): 1–22.

<sup>25</sup> Daniel Pett and Chiara Bonacchi, “Conclusions”, in *Archaeology and Digital Communication: Towards Strategies of Public Engagement*, ed. Chiara Bonacchi (London: Archetype Publications, 2012): 126–30.

<sup>26</sup> Aris Anagnostopoulos, “Public Engagement in Heritage Studies: Local Communities and Archaeology”, keynote speech for the session moderated by Aris Anagnostopoulos and Lena Stefanou, the 3rd IHC International Conference in Heritage Management, Elefsina, Greece, September 2016.

<sup>27</sup> Grażyna Piechota, “Gamification as the Tool of Supporting Digitalization Processes and Protection of Cultural Heritage in Libraries”, in *Information, Communication, Society (ICS-2017) Proceedings: Materials of the 6th International Scientific Conference ICS-2017, May 18–20, 2017, Ukraine, Slavsko*, (Lviv: Lviv Polytechnic Publishing House, 2017): 304–5.



and promoting broader participation<sup>28</sup>. Local communities can be involved in all phases of the research process, which can lead to a better understanding and valuation of heritage and support its sustainability<sup>29</sup>.

Various methods of actively engaging local communities in cultural heritage protection are becoming increasingly popular. This is evidenced by a workshop held at the European Association of Archaeologists (EAA) conference in 2024.<sup>30</sup> Gamification also supports an egalitarian relationship between visitors and residents, leading to mutual interaction and increasing the cultural confidence of locals. Tourists can engage in local customs and traditions through game activities, enhancing their experience and the authenticity of their visit. Role-playing and participating in game activities allow tourists to feel part of the local community, fostering active participation and respect for local traditions.<sup>31</sup> Successful implementation of gamification in tourism requires cooperation between local businesses, government agencies, and online platform providers. This collaboration enhances the tourist experience, supports cultural sustainability, and contributes to the economic development of local communities. Local entrepreneurs can provide services and products for tourists, government agencies can support tourism politically and financially, and online platforms can serve as a medium for gamification activities and communication between tourists and locals. Gamification of historical and cultural sites leads to a better understanding and appreciation of cultural heritage, strengthening the relationship between tourists and the local community. In the next section, we will focus on specific gamification activities and strategies that support this engagement.

### Gamification Activities and Strategies

Gamification in cultural heritage employs game elements and digital technologies to document, present, and disseminate cultural landmarks. This approach enhances user experience and makes cultural heritage accessible through various interactive methods. It encompasses community challenges, educational and geolocation games, interactive maps, museums, and virtual tours. These activities increase interest in cultural heritage and foster creativity and engagement among participants<sup>32</sup> while enhancing their digital skills.<sup>33</sup> Gamification activities are often tailored to target groups based on age, interests, and technical abilities.

<sup>28</sup> Luca Senatore, Arturo Gallozzi, Michela Cigola, and Rodolfo M. Strollo, "Citizen Science and Gamification for Cultural Heritage", *Expresión Gráfica Arquitectónica* 39 (2023): 232-239.

<sup>29</sup> Tibusay Sankatsing Nava and Corinne L. Hofman, "Engaging Caribbean Island Communities with Indigenous Heritage and Archaeology Research", *Journal of Science Communication* 17, no. 04 (2018): C06, <https://doi.org/10.22323/2.17040306>.

<sup>30</sup> "EAA 2024 Sessions Overview". European Association of Archaeologists, accessed July 26, 2024, <https://submissions.e-a-a.org/ea2024/sessions/overview/preview.php?id=838>.

<sup>31</sup> Zhang and Luo, "Research on Gamification-based Tourism...", 36-42.

<sup>32</sup> Kalak, Güleç Özer, and Aydın, "Experiencing Cultural Heritage Through Gamification...", 671-679.

<sup>33</sup> Magioladitis, Ringas, and Christopoulou, "Promoting Cultural Heritage...", 158-67.



Age groups include children (5-12 years), teenagers (13-17 years), and young adults (18-25 years). Each age group has specific preferences and abilities that are considered when designing games and interactive experiences. Besides age, activities are also customised according to interests, such as history, art, archaeology, or natural sciences. For example, educational games may be designed to appeal to those interested in historical events or artworks. Other target groups include families seeking joint activities or visitors and tourists.<sup>34</sup> Local communities are also an important target group, as participation in games can promote local identity and pride in cultural heritage.

Implementing gamification in museums can transform passive visitors into active participants through interactive games and quizzes that motivate deeper engagement with museum content. This approach allows museums to communicate more effectively with younger generations, such as Millennials and Generation Z, who are accustomed to digital technologies and interactive forms of entertainment. Projects are designed to enhance the experience and engagement of target groups through interactive and immersive methods. The focus is on several design dimensions, especially intrinsic motivation, which includes purpose and meaning, challenge and competence, completion and mastery, autonomy and creativity, and relatedness and immersion. Extrinsic motivation includes ownership and rewards, scarcity, and loss avoidance. Context-dependent heuristics focus on feedback, unpredictability, change, and disruption<sup>35</sup>.

Modern technologies contribute to preserving and promoting cultural heritage by engaging the public and creating interactive and captivating educational programs. They allow users to immerse themselves in the stories and contexts of cultural heritage, thereby increasing their motivation and interest in protecting and preserving cultural landmarks. These technologies include mobile applications, augmented reality (AR), and virtual reality (VR). Mobile applications provide users access to interactive experiences directly from their devices, enhancing education and overall experience. AR overlays digital information onto the real world, improving understanding and engagement with the topic. Participants can explore physical locations while receiving digital content simultaneously<sup>36</sup>. VR creates immersive simulated environments that allow users to explore historical sites and events thoroughly<sup>37</sup>. Past events and personalities can be brought to life through interactive technologies. 3D modelling, often utilising photogrammetry to create accurate models from photographic images<sup>38</sup>, is used in both VR and AR

<sup>34</sup> Célio Gonçalo Marques, João Paulo Pedro, and Inês Araújo, "A Systematic Literature Review of Gamification in/for Cultural Heritage: Leveling up, Going Beyond", *Heritage* 6, no. 8 (2023): 5935-51.

<sup>35</sup> Marques, Pedro, and Araújo, "A Systematic Literature Review of Gamification...", 5935-51.

<sup>36</sup> Magioladitis, Ringas, and Christopoulou, "Promoting Cultural Heritage...", 158-67.

<sup>37</sup> Eike Falk Anderson et al., "Developing Serious Games for Cultural Heritage: A State-of-the-Art Review", *Virtual Reality* 14, no. 4 (2010): 255-75.

<sup>38</sup> Cristina Marín-Buzón, Antonio Pérez-Romero, Juan L. López-Castro, Imen Ben Jerbania, and Francisco Manzano-Agugliaro, "Photogrammetry as a New Scientific Tool in Archaeology: Worldwide Research Trends", *Sustainability* 13, no. 9 (2021): 5319.



contexts to create detailed historical models and simulations. Localisation systems and interactive tools, such as touch screens and motion sensors, complement these technologies and provide comprehensive and engaging experiences<sup>39</sup>.

### Cases from Slovakia

This section aims to illustrate gamification strategies through specific cases from Slovak cities. The selected examples demonstrate the principles and procedures summarised above. Each focuses on preserving cultural heritage, emphasising community involvement and enhancing local areas. The first example is a city game in Handlová, created by the children's organisation Fénix, which provides children with meaningful ways to spend their extracurricular time. The second example is a city game in Revúca, which focuses on cultural and educational heritage and was developed in collaboration with local actors and artistic blacksmiths. The third example is a neighbourhood community initiative from Bratislava, organising a treasure hunt for golden coupons on Panenská Street. The selected city games share a regional fate. Revúca and Handlová are located in regions that are not frequently visited by tourists and have high unemployment rates. Young people often migrate to the capital for work, leaving their hometowns. In Revúca, the situation is further complicated by a significant Roma minority, which significantly contributes to the unemployment rate, compounded by natural integration and educational challenges.

Although the example from Bratislava is not in a low-population area, the game aims to revitalise a neglected city district. This area is relatively isolated and poorly maintained despite its proximity to the centre. Residents and institutions strive to revive this part of the city, increase community engagement, and improve the overall environment and infrastructure. In Handlová and Revúca, services and tourism are not well-developed. Paradoxically, during the Industrial Revolution, these cities were among the richest in the Hungarian Kingdom (Slovakia was part of Hungary, later Austria-Hungary, until the end of World War I). Their wealth and high cultural and educational levels stemmed from the mining and extraction industries. The area around Revúca was called the "Iron Heart" of Hungary<sup>40</sup>, producing one-third of the kingdom's iron ore. Handlová's city game reflects its heritage of brown coal and precious metal mining, while Revúca's game leverages its top-tier educational and cultural heritage.

A key feature of these games is their strong focus on community principles. In Handlová, the city game is created by the children's organisation Fénix, which is based at a local elementary school and provides children with enriching activities<sup>41</sup>.

<sup>39</sup> Kalak, Güleç Özer, and Aydın, "Experiencing Cultural Heritage Through Gamification ...", 671-679.

<sup>40</sup> "About Gemer: Gemer Region", Region Gemer, accessed July 26, 2024, <https://www.regiongemer.sk/>.

<sup>41</sup> "Parti Project in Handlová", Children's Organization Fénix, accessed July 26, 2024, <https://www.do-fenix.sk/2023/12/parti-projekt-v-handlovej/>.

Revúca does not represent a grassroots community principle but follows a top-down approach initiated by the city's cultural department<sup>42</sup>. However, the project's realisation involves multiple cultural and educational institutions, including community members with specific skills who play crucial roles in the outcome<sup>43</sup>. In Bratislava, the community principle involves local residents and institutions working together to revitalise Panenská Street. Collaborating with bookstores, libraries, and galleries, they organise interactive activities to raise awareness of the street's historical and architectural value and strengthen neighbourhood relationships and community cohesion.

The evaluation focused on interviews with organisers, local community leaders and players. Qualitative data came from semi-structured interviews with creators and participants, which were analysed through simple coding. The transcription of the interviews was followed by a phase of careful familiarisation with the data built on repeated readings and identification of different aspects of the data, continuing through the generation of initial codes. The initial codes provide insight into the perception of the benefits of gamification for heritage conservation, reflecting the participants' engagement, satisfaction and knowledge acquisition from gamification activities. The project's success was evaluated using various criteria, divided into impact and gamification criteria<sup>44</sup>.

The evaluation focused on in-depth interviews with organisers and local community leaders. Quantitative data were obtained through interviews assessing participant engagement, satisfaction, and knowledge acquisition from gamification activities. Qualitative data came from semi-structured interviews with creators and participants, analysed through simple coding. These interviews provided insights into personal experiences and perceptions of the benefits of gamification for cultural heritage preservation. The project's success was evaluated using various criteria, divided into impact and gamification criteria<sup>45</sup>. The former are more general and assess the initiative's effectiveness, sustainability, accessibility and inclusivity, originality, creativity, social and cultural impact, and multiplier effects. Gamification criteria included heuristics of internal and external motivation and context-dependent heuristics, such as creativity, immersion, player autonomy, rewards, unpredictability, and feedback. Two independent reviewers evaluated each project. A third reviewer was brought in for the final evaluation if their assessments did not match. This process ensured objectivity and consistency in the review.

<sup>42</sup> "Hviezdojed Brings the Streets of Revúca to Life", Maj Gemer, accessed July 26, 2024, <https://www.majgemer.sk/gemer/obce-gemera/item/12367-hviezdojed-ozivuje-ulice-mesta-revuca>.

<sup>43</sup> "Revúca is a Fairytale: Krutohlav and Olejkar Stand on the Street, along with the Magical Tree", MY Novohrad, accessed July 26, 2024, <https://mynovohrad.sme.sk/c/22967977/revuca-je-rozpravkova-na-ulici-postavaju-krutohlav-s-olejkarom-cinka-zazracny-strom.html>.

<sup>44</sup> Smokova, Marusya et al., "A guide to Identifying Best Practices for Gamification in Cultural Heritage", accessed September 30, 2024, <https://dlib.uni-svishtov.bg/handle/10610/5035>

<sup>45</sup> Marques, Pedro, and Araújo, "A Systematic Literature Review of Gamification ...", 5935-51.



## Handlová Children's Quest: A Fénix Project

The city QR game in Handlová is a simple, interactive game where players move around the town centre.<sup>46</sup> It consists of twenty stations with QR codes, and the story revolves around two main characters. Players must solve tasks to uncover the following parts of the story. A practical brochure, which includes a map of the stations, is available for download. The game begins at the Town Hall, where basic instructions are provided (Fig. 1). It is challenging to assess the game's popularity among tourists and residents without detailed data. However, community engagement and awareness of cultural heritage are certainly increasing. The sustainability of the game is ensured because the QR code version does not require additional financial contributions. The game is accessible to anyone with a mobile phone capable of scanning QR codes, which is not a barrier today. No specific skills are needed. The QR game is a commonly used form of gamification, but it is a new attraction in this region. The creativity of the game is directly proportional to the capabilities of its creators. Since children mainly design it, the story and technical aspects are relatively simple (the simplicity of the game environment is illustrated in Fig. 3).



Fig. 1. Start of the game (map and points), Handlová. Photo: Zuzana Danišková.



Fig. 2. A mining machine in the mining museum exhibition is used in the game as an element of motivation, Handlová. Photo: Zuzana Danišková.

Community spirit is fostered through the development of a story that references Handlová's industrial heritage (Fig. 2). The locations with QR codes are chosen with attention to the town's monuments, which may help reduce vandalism (Fig. 3 shows a task where the player reads the text by holding it up to a mirror; the new binary clock in town provides the suitable reflective surface). Evaluating the game's "playfulness," as analysed in the first part of the text, concerns mainly the combination of mimicry and soft-form agonistic play. The player takes on the role of a saviour of the relationship between Katarína and Félix, whose

<sup>46</sup> "Have Fun", Handlová, accessed July 26, 2024, <https://www.handlova.sk/novinka/84937/zabavte-sa->.

love is opposed by their parents. This meaningful story engages the player in its dynamics. The game's difficulty gradually increases, and incorrect answers send the player to a station where they learn their wrong response. This causes a time loss as the player has to return to the previous point. Each month, the children's organisation Fénix selects three participants who complete the game and post a photo as instructed, rewarding them for participating.

### Revúca City Quest: Exploring Culture and History

The city game in Revúca is also designed for movement around the town centre. It was created through collaboration between the local government's cultural department and a regional cultural organisation. Besides institutional partnership, a vital community element is the involvement of residents with specific skills. Local actors contributed to the audio aspect of the game, and artistic blacksmiths created statues of characters around the town. Revúca, like Handlová, has an industrial past, but this game's story focuses on cultural and educational heritage. The presence of capital from precious metal mining also attracted wealthy families interested in education and cultural assets. As a result, Revúca became the site of the first Slovak high school in Austria-Hungary in 1862, where all subjects were taught in Slovak. This was a crucial event for national development. In the original school building, now a museum, one can see the contents of the final exams, which included translating selected Latin and Greek texts. Knowledge of German and Hungarian was also expected.

This information illustrates the significance and quality of the high school, particularly the educators who worked there. One of the teachers was Ľudovít Reuss, whose father Gustav inspired the city game. Gustav Reuss collected Slovak folk tales, often featuring fantasy and magic. Although he was a doctor by profession, his interest in natural sciences led him to astronomy. He wrote simplified texts about the universe for the public, culminating in the 1856 sci-fi novel "Hviezdoved" (Star Knowledge), published before Jules Verne's books. The main character of this novel, Krutohľav, becomes the main character in the city game. However, the region's better-known collector of tales is Pavol Dobšinský, so the game's characters from both sci-fi and folk tales appear.<sup>47</sup> The game begins

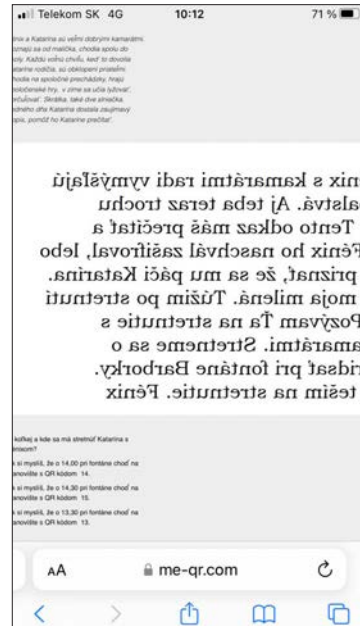


Fig. 3. View of the game environment, Handlová. Photo: Zuzana Danišková.

<sup>47</sup> "The Mystery of the Mighty Belt Inspired the City of Revúca to Create Its Own Game", accessed



Fig. 4. Start of the game, Revúca.  
Photo: Zuzana Danišková.

by accessing a website and starts in the museum of the first Slovak high school (Fig. 4). It does not use QR codes; instead, players are guided by voice and prompted to choose answers on the website. The museum staff member positively assesses the game's popularity among tourists and locals but notes the need for more promotion. Community engagement and cultural heritage awareness are certainly increasing. According to a regional cultural organisation worker, there is an interest in further developing the game and building additional gamification concepts. Like the museum staff, he expects greater city involvement in promoting the game. The game is accessible with a mobile phone and internet connection; no specific skills are required. In the region, this is the first gamified game, making it a new attraction.

The creativity of the game is higher than that in Handlová due to its creators. The game has a website and uses local institutions and statutes created explicitly.<sup>48</sup> It can potentially improve social culture by referencing the community's cultural heritage. Involving historical city sites in the story may also reduce vandalism. The statues created for the game have not shown signs of damage so far.

From a gamification criteria perspective, the game mainly combines the mimicry motive, as players do not compete against each other for a possible prize.



Fig. 5. The Star Eater, Revúca.  
Photo: Zuzana Danišková.

Each player who completes the game receives a reward. Players must return to the starting point to receive a themed memory game. The player takes on the role of a saviour because Krutohlav (Fig. 5) has taken all the stars from the sky. The game is called "Hviezdojed", which translates to "Star Eater" in English. The player's task is to help other characters return the stars to the sky, using props and trophies for further tasks. The statues and structures are not just passive props but allow players to physically experience the story (Fig. 6: a hot air balloon basket the player must enter; a chain). The game's difficulty stays the same with each task. Incorrect answers provide immediate feedback, allowing players to correct themselves. Players are directed by a riddle back to the starting

July 26, 2024, <https://kultura.trnava.sk/novinky/zahada-mocneho-opasku-inspirovala-mesto-revuca-k-vytvoreniu-vlastnej-hry>.

<sup>48</sup> "Hviezdojed (Star Eater) ", accessed July 29, 2024, <https://www.hviezdojed.sk/#/>.

point, keeping them engaged until the end, when they must answer the final question. The themed memory game as a reward includes a recipe from one of Pavol Dobšinský's tales. The museum staff member who gave the prize notes said that some illustrations in the memory game might be scary for younger players.

### **Panenská Street Challenge: Building Community in Bratislava**

Another example is a city and community game in the densely populated area of Bratislava. It aims to develop a neglected part of the city. Despite its proximity to the centre, the area around Panenská Street is relatively isolated and poorly maintained. The city library introduced the game in collaboration with a civic association, which oversees various community activities in the area. The local businesses and neighbours know each other, regularly organise neighbourhood picnics and meetings, and operate a community message board. This game is an example of a grassroots initiative connecting the community of people living on the nearby streets<sup>49</sup>. Panenská Street has several bookstores, libraries, institutions, and galleries that created a game based on random luck in March (the month of books). While browsing books in these establishments, participants might find a "golden coupon" inserted in a book<sup>50</sup>. This yellow bookmark contains a surprise, which the winner can redeem at another establishment on the street. The game encourages participants to search for the coupon, which may lead them to a business they need to become more familiar with. Community engagement and awareness are growing, although the game does not explicitly communicate the historical message of the place. However, the area has historical and architectural value that is implicitly conveyed to the residents. The game requires no technological means or financial support, is limited to one month a year, and is planned to continue in subsequent years.

The sustainability of this initiative is ensured by its recurring nature, which has been successfully held for two years<sup>51</sup>. The potential for the game to multiply



Fig. 6. Bodily aspects  
in the game, Revúca.  
Photo: Zuzana Danišková.

<sup>49</sup> "Golden Coupons Hidden on Panenská Will Lead Finders to a Surprise", accessed July 26, 2024, <https://bratislava.sme.sk/c/23292807/na-panenskej-su-ukryte-zlate-kupony-nalezcov-nasmeruju-k-prekvapeniu.html>.

<sup>50</sup> "Projects," STARlib, accessed July 26, 2024, [https://www.starlib.sk/sk/projekty\\_1/](https://www.starlib.sk/sk/projekty_1/).

<sup>51</sup> "Tip for Fun: Find the Golden Coupon on Panenská Street for a Prize", Bratislavské noviny, accessed July 26, 2024, <https://www.bratislavskenoviny.sk/aktuality/stare-mesto/79723-tip-na-zabavu-najdite-na-panenskej-zlaty-kupon-ktory-vam-poskytne-vyhru>.



its effects is clear: residents start to see the neighbourhood as valuable and gain confidence to request comprehensive renovation from the local government instead of just new concrete on the roads. A separate manual for public spaces has been created for the street and surrounding area, with phased renovations making it a better place for both residents and passersby. The game involves 72 coupons placed in books or gallery promotional materials. The library director, who conceived the idea, notes that the game includes an element of excitement, connecting to the experience of discovering fantastic worlds in books, which offer a different perspective on life. The game does not apply increasing difficulty criteria or incorrect answers. Players search for the trophy, which they exchange for a prize at another nearby establishment.

### **Current Challenges and Recommendations**

Implementing gamification in the field of cultural heritage in Slovakia faces several challenges. For the success of each project, it is crucial to tailor each game to the specific needs of target communities. Focusing on particular heritage aspects (industrial, cultural, community) influences specific recommendations for improving each project. Typical recommendations for all games include improving promotion and awareness through social and local media (such as regular social media posts, collaboration with local newspapers and radio stations, and organising promotional events and presentations in schools and community centres). Another important factor is increasing the visual and interactive appeal of the games and introducing systems for collecting feedback (such as implementing live graphics, enhancing user interfaces, integrating mini-games and interactive elements, and conducting regular surveys and player evaluations). Technical challenges in gamification include developing high-quality and user-friendly gamification tools and applications (such as developing mobile applications compatible with all platforms and devices, regularly updating software based on feedback, and ensuring intuitive and easy-to-use design).

In Handlová, the city QR game focuses on a young audience, emphasising simplicity and usability. Technical challenges include creating high-quality QR codes and interactive elements that are easily accessible and understandable for children (such as using colourful and large QR codes visible from a distance and creating simple and fun tasks that motivate children to participate). Improving the design and enriching the story could increase the game's attractiveness and maintain the interest of young players (such as adding animations and visual effects, expanding the story with new characters and plots, and integrating actual historical events into the game story). In Revúca, which focuses on cultural and educational heritage, the leading social challenges are motivating the public to participate in the game and changing public attitudes towards the value of local cultural heritage. Adding educational elements and organising academic events can help raise awareness and appreciation of cultural heritage among residents



(such as organising thematic workshops and lectures, involving local schools in the project, and creating educational materials and brochures about the area's history and culture).

Similarly, in Bratislava, it is essential to maintain the authenticity and integrity of the street's historical and architectural heritage when introducing game elements. Recommendations include educational introductions and interactive elements to increase historical awareness, which can contribute to a better understanding and appreciation of the area's value (such as installing information boards and panels with historical facts and photographs and organising thematic events and festivals).

For the further development of gamification, broader discussions about its potential and collaboration between researchers and practitioners are crucial. Future research should focus on improving gamification technologies and methodologies, engaging local communities, and fostering collaboration between academics, students, and the public (such as organising regular conferences and workshops, creating working groups and partnerships between universities and community organisations, and supporting research projects and grants). Current studies are often isolated and do not engage in broader discussions, preventing the full potential of gamification in cultural heritage from being realised (such as sharing research results and insights in professional journals and online platforms, creating networking and discussion groups to share best practices, collaborating with international organisations and institutions to develop and disseminate gamification strategies)<sup>52</sup>.

## Conclusion

Gamification is an innovative approach to engaging the public in preserving cultural heritage. Despite its challenges, it holds significant potential to increase engagement and awareness of the importance of cultural landmarks. Successful implementation of gamification strategies can significantly contribute to the protection and sustainable development of cultural heritage. Based on semi-structured interviews with creators and participants, which were analysed and grouped into simple codes, it can be concluded that examples from Handlová, Revúca, and Bratislava show that game elements can effectively engage local communities in preserving their cultural heritage across diverse contexts. Examples from Handlová, Revúca, and Bratislava show that game elements can effectively engage local communities in preserving their cultural heritage across diverse contexts. However, our study highlights two critical aspects of applying gamification strategies. While games can raise awareness and engagement, learning and building awareness should not be reduced solely to entertainment. Learning is a cognitive process requiring personal motivation and effort, which

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<sup>52</sup> Marques, Pedro, and Araújo, "A Systematic Literature Review of Gamification...", 5935-51.



simple entertainment promises cannot replace. Although leisure time is often seen as the opposite of work and effort, the ancient Greeks viewed it as a time for growth and cultivation (*scholè*).

Gamification can spark initial interest and motivation for learning but cannot encompass the entire learning process. Understanding broader contexts requires deeper immersion in the topic, or it risks remaining shallow and disconnected information that players may forget over time. The second concern relates to this first point. While city games are attractive to children, the connection between the game's story and the cultural heritage it aims to present may not be evident to young players. For example, the game about Krutohlav only reveals its connection to Reuss and Revúca's significance in the 19th century with additional context, which children cannot uncover without further explanation or reading age-appropriate texts. After being engaged in the game, children are often not motivated to continue learning as passive listeners. These challenges in implementing gamification show that combining game elements with educational activities and thorough contextual introductions are essential. This can be achieved through educational events like workshops and lectures that foster a deeper understanding and appreciation of cultural heritage. Therefore, our recommendations for using gamification strategies and realising their potential involve designing a comprehensive concept where the game is just one component. The game should be preceded by a contextual introduction and a final phase focused on practical learning and understanding beyond just winning.

### Abstract

Gamificarea, definită ca aplicarea elementelor de joc în contexte non-jocuri, s-a dovedit a fi un instrument eficient pentru creșterea angajamentului și a motivației publicului. În contextul protejării patrimoniului cultural, contribuie la menținerea și popularizarea siturilor istorice și culturale, contribuind la sustenabilitatea acestora. Această lucrare se concentrează pe exemple practice de proiecte de gamification implementate în orașele slovace Handlová, Revúca și Bratislava, prezentând diverse abordări pentru implicarea comunităților în protecția patrimoniului. Acesta este rezultatul proiectului „A Gamification Model for Community-Based Heritage Work”, care promovează implicarea comunității în zonele slab populate și oferă un cadru cu instrumente pentru gamification în activitățile concentrată pe comunitate. Exemplele analizate demonstrează modul în care strategiile de gamification pot spori implicarea comunității, pot motiva diverse grupuri țintă și pot contribui la protejarea durabilă a patrimoniului cultural local.

**Cuvinte cheie:** moștenire culturală, implicare comunitară, gamification, conservare, Slovacia

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### Acknowledgement

This article is a result of project No. 2023-1-PT01-KA220-HED-000154261, “A gamification model for community-based heritage work,” funded by the Erasmus+ programme of the European Union. The authors acknowledge the evaluators who evaluated the case studies on gamification in Bulgarian cultural heritage.

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