

Gamification to Enhance the Mini-Conference: A Case Study From Researching Digital Cultural Heritage

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ABSTRACT

Recent trends since the COVID-19 era indicate a rapid increase in remotely organized conferences; however, the remote-based nature of these types of events has gained notoriety for a lack of appeal particularly due to long and exhausting sessions without physical contact. On the other hand, previous research has demonstrated several benefits to well-designed games and gamification such as its ability in creating a state of flow by instilling motivation and rewarding its participants for overcoming challenges. As a case study in the cultural heritage sector, we organized a day-long remote conference known as the Mini-conference held among members of a consortium to which we belong. The Mini-conference applied gamification in combination with other relevant methodologies using online collaboration tools. This remotely organized event deployed four (4) collaborative workshops conducted by the different consortium partners. The results of the workshops presented in this paper demonstrate the use of gamification. The methods used were based on qualitative engagement, group participation and outputs emanating from each of the activities. They indicate positive effects of gamification in drawing interest and enhancing engagement among the remotely located participants. The contributions made by this paper include unique insights to the ongoing research on remotely organized conferences, especially through the purview of gamification. In addition, the paper also sheds light on methods that could be employed by museums within the domain of cultural heritage. These might be relevant to the “post-COVID-19 era” in which hybrid engagement consisting of physical and remote collaboration is becoming the norm.

Keywords: Collaborative workshops, Digital cultural heritage, Gamification, Motivational affordances, Remote conferencing

INTRODUCTION

In the last decade, remote conferences have surged, boosted by technological advancements. The COVID-19 pandemic further fuelled this trend, as lockdowns and travel restrictions made physical gatherings challenging (Bozkurt and Sharma, 2020; Hacker et al., 2020). Online collaboration tools have made these remote gatherings more accessible, proving ideal for consortiums and case studies.

Poorly designed conferences and lengthy meetings often suffer from a reputation for being dull, monotonous, and exhausting for attendees (Lu and Abella, 2021). Conversely, well-designed games, including board games, card

games, and digital ones, offer continuous engagement, motivation through competition, obstacles, challenges, and rewards for overcoming them. **Gamification, the application of game-like elements such as competition and rewards in non-game settings** like remote conferences, has shown benefits across various domains (Hamari et al., 2014; Koivisto, 2017). Can it be developed further as a design tool to mitigate the challenges of lengthy and draining remote conferences? This paper explores this question and showcases the use of gamification in our Mini-conference held within a research project.

The project, SPICE (Social cohesion, Participation, and Inclusion through Cultural Engagement), operated within the H2020 European research framework, aiming to integrate advanced information processing tools with cultural heritage to foster social cohesion, participation, and inclusion among museum audiences (Bruni et al., 2020). It involved partners from research universities, museum institutions, and industry, focusing on cultural heritage, game design, and language technologies. The Mini-conference, co-hosted by project partners, specifically targeted case study museums within the project (Díaz-Kommonen et al., 2024).

In late 2020, during the initial phase of the project when physical meetings were impossible due to travel restrictions and lockdowns, we adapted by organizing this online event. The event featured four (4) collaborative workshops led by various consortium partners. The outcomes, discussed in this paper, utilized gamification and centred on qualitative engagement, group participation, and outputs from each activity.

The findings highlight the impact of gamification in generating interest and boosting engagement among participants dispersed remotely. This paper offers valuable contributions to the ongoing research on remotely organized conferences, particularly through the lens of gamification. These findings are particularly relevant in the evolving landscape of the “post-COVID-19 era”, where hybrid engagement involving both physical and remote collaboration is increasingly common (Sneader and Sternfels, 2020).

FIELDS OF STUDY AND APPROACH

It is the case that an overabundance of research has examined gamification in collaborative workshops, often in relation to learning scenarios and the education sector (Dicheva et al., 2015; Stott and Neustaedter, 2013). However, **there has been a lack of study researching as well as critically examining the application of gamification exclusively within remotely organized conferences.**

A conference can be defined as a formal event wherein many people meet to discuss and engage with a specific topic, typically lasting several hours or days (van Venter, 2019). From our perspective, we see gamification as the incorporation of specific elements of games into non-game contexts including in conferences as well as in other work-related events such as, for example, in collaborative workshops. We are also aware that during the past decade, gamification has been gaining increasing prominence not only within

academia but in several sectors such as museums and cultural heritage (Bujari et al., 2017; Hammady et al., 2016; Ioannides et al., 2017).

Remote Conferences

Videoconferencing traces its origins back to the early 1930s with AT&T's 'two-way television-telephone' system (MacDougall, 2006). However, it wasn't until the early 1990s that videoconferencing with multiple participants gained momentum. PictureTel conducted the first world's largest global video conference in 1995, involving around 50 sites worldwide (Lasic-Lazic et al., n.d.). The COVID-19 pandemic from early 2020 accelerated the adoption of cloud videoconferencing software like Zoom, driven by the increase in remote work and the shift of conferences from physical to virtual spaces (Hacker et al., 2020). Given this surge, this paper advocates for research into integrating gamification with remotely organized events, such as conferences.

Gamification

Games are commonly associated with amusement and entertainment, structured by rules toward a goal. However, they also hold potential for motivating players and addressing real-life challenges (Marshall, 1999). Key elements of games include players, rules, mechanics, environment, and interface (Järvinen, 2008). Gamification extends these elements to non-game contexts (Deterding et al., 2011). The growing digital gaming industry and widespread adoption of gaming illustrate their impact (Şener et al., 2021; Sneader & Sternfels, 2020). McGonigal's book *Reality is Broken* highlights games' ability to foster play, curiosity, motivation, meaning, and reward, thereby enhancing participant engagement (McGonigal, 2011). To evaluate the latter, we utilized video recordings and qualitatively analyzed the workshop outputs.

Approaches Used in the Mini-Conference

The Mini-conference relied on two multimedia conferencing components: videoconferencing for all attendees and real-time online collaboration among participants in workshop groups (Marshall, 1999; Schooler et al., 1991). Zoom was chosen for videoconferencing due to its widespread familiarity among participants and features like "breakout rooms" for dividing participants into groups. Additionally, Flinga facilitated real-time online collaboration (NordTouch n.d.). By integrating videoconferencing and gamified workshop activities, our goal was to keep participants engaged and motivated with frequent creative tasks, rather than passively listening throughout the potentially lengthy event.

Each workshop, co-designed by different consortium partners, aimed to foster inclusion and participation aligned with project goals. Gamification strategies included: setting clear goals, providing agency to participants through moderate facilitation, ensuring tasks were challenging yet achievable, implementing time-limits and limited selectable items for competition, using intuitive collaborative online tools for a seamless user experience, and

rewarding participants with acknowledgment and constructive criticism. Through this gamified approach, the workshops aimed to bridge physical gaps between partners by connecting them with case studies through collaborative creative endeavours.

METHODOLOGIES EMPLOYED

In the Mini-conference, methodologies were carefully chosen to align with co-designed workshop contents and the multimedia conferencing context. These methods included gamification for motivation, collaborative brainstorming for creativity, and qualitative analysis of video recordings for output evaluation. Lessons from the Mini-conference experience are invaluable for future remote conferences, particularly those involving target audiences of case studies. To address potential shortcomings, participants were provided with pre-requisite tasks or homework to familiarize them with topics, concepts, and online tools, aiding in the successful implementation of methodologies.

Gamification

Gamification was carefully integrated into the workshops to align with the cultural heritage-based goals of the research project. Rather than imposing it on tasks, specific game elements were selectively used to match the framework, design, content, and scope of the workshops. Additionally, the Mini-conference incorporated trivia game sessions between workshops to inject fun and humor into the event. Each session featured an entertaining multiple-choice question presented to all attendees, who were prompted to type the correct answer using Zoom's chat feature and promised a reward.

Group Formations

Group discussions are a valuable source of knowledge, stimulating conversation and collaborative development of ideas (Flick, 2006). This dynamic is also pertinent to gamified activities, where participants collaborate and focus on common topics. At the Mini-conference, approximately thirty (30) participants were grouped based on their involvement with specific case studies, resulting in five (5) groups for each workshop activity, named after consortium case studies. Each group was facilitated by a moderator who guided discussions and occasionally assisted participants. Moderators were instructed to minimize interruptions, allowing participants to engage in gameplay and achieve workshop objectives. This approach intended to ensure participant comfort, maintain task control, foster new insights, and meet workshop requirements.

Video Recordings

Facilitators were tasked with recording sessions held in their respective breakout rooms to ensure accessibility of data (video recordings) for all participants, facilitators, and organizers. On the positive side, analyzing this data proved fruitful, allowing observation of participant

engagement and the effects of gamification. Screen recordings of Flinga Whiteboard sessions provided insights into the brainstorming process. Despite potential concerns about data privacy under GDPR laws, no significant changes in participant behavior due to camera shyness were observed (GDPRhub n.d.). This lack of change could be attributed to the remote nature of the activities, subtle camera presence, and participants' familiarity with each other and the video recording tools.

DESIGN OF THE MINI-CONFERENCE

The primary goal of the one-day Mini-conference was to advance the collaborative design of case studies, which had been hindered by the inability of consortium partners to meet physically due to COVID-19. This objective was achieved through a series of engaging thematic co-design workshops led by various consortium partners. The workshops were facilitated using multimedia conferencing and other online collaborative tools.

Use of Online Collaboration Tools

For video conferencing, Zoom was selected as the primary tool, while Flinga facilitated group collaboration and gamified tasks during workshop activities. These tools were chosen based on specific criteria:

1. Facilitating collaborative whiteboarding for participants to generate ideas rapidly during brainstorming sessions.
2. Featuring simple and intuitive interfaces for ease of use, particularly for newcomers without the need for tutorials.
3. Accessibility via web browsers without requiring offline installation.
4. Adherence to ethical norms, including personal data protection and anonymity for participants by not mandating account registration.

In the Mini-conference, a Flinga Whiteboard supported participants' collaborative activities and brainstorming sessions enabling them to view each other's work, as well as facilitated competition for resources from a shared pool.

Outline of the Collaborative Workshops

The activities in the workshops and their objectives were developed and refined collaboratively with other consortium members. Gamification and game elements were not always explicitly embedded in every activity. Rather, they were strategically blended within the workshops and other conference activities. However, a time limit for each activity was used as a 'common game obstacle' for all the participants.

Table 1. Planned workshop activities along with game elements in the Mini-conference.

Workshop (W) objectives	Activities (A) in separate groups	Incorporated game elements
W1 – Creating interpretive and fictional narratives about heritage artefacts and sharing the stories.	A1 - Presenting separate artefacts to the groups and tasking each participant to write a short fictional story based on how they might have interpreted the artefact in their preadolescent and adolescent years. A2 - Sharing stories amongst group members in the breakout rooms.	Rules: Participants presented with different sets of images of artefacts. Mechanics: Writing a short fictional story based on several images of artefacts and participants guessing which ones were presented while listening to stories. Goal: Completing the story. Rewards: Correctly guessing, receiving acknowledgement, and relating to each other's stories.
W2 – Persona design for different museums and end-user communities.	A1 – Elaborating on the aspects of a case study's pre-requisite persona designs. A2 - Selecting an unexpected or "surprise" visitor from a pool of fresh personas and brainstorming their attributes. A3 – Choosing characteristics of a case study's user model.	Components: Cards used in Flinga. Rule: Selecting a visitor. Mechanics: Collaborative design of a persona and selecting images from a common resource pool. Goal: Completing all the attributes for the persona within a time-limit. Reward: Most interesting and detailed group's persona awarded.
W3 – Curating an imaginary exhibition.	A1 - Curating using the cards in the UX map and the personas as references. A2 - Selecting a set of artefacts from a pool to be used for an imaginary exhibition. A3 - Organizing gathered artefact samples by arranging them to denote a storyline. A4 - Sharing exhibitions in the main room and narrating stories.	Components: Cards representing artefacts and a pre-defined UX map template presented in Flinga for participants to develop. Rule. Maximum limit of 12 for selection. Mechanics: Collaboratively arranging artefacts and developing the attributes of the UX map. Goal: Completing the UX map and curating an imaginary exhibition in a time-limit.
W4 – Evaluating an interface for an exhibition.	A1 – Discussing, rating, and selecting interfaces to be used by museum visitors.	Mechanics: Collaboratively rating pre-defined interfaces. Goal: Evaluating and selecting intended interfaces.

RESULTS

Participant engagement was assessed through multiple measures:

1. Video documentation: Reviewing recorded videos provided insight into participant involvement and the impact of gamification on collaboration.
2. Analysis of workshop outputs: Reviewing the materials created by participants during the workshops offered tangible evidence of engagement and productivity.
3. Feedback analysis: Gathering feedback from participants after each workshop allowed for a direct assessment of their experience and engagement levels.

By combining these approaches, a comprehensive understanding of participant engagement was achieved, informing future conference planning and implementation strategies. The outputs derived from each workshop are summarized in Table 2.

Table 2. The outputs derived from each workshop along with the noticeable effects of gamification.

Workshop (W) objectives	Output(s)	Incorporated game elements
W1 – Narrative development	Narrative methods and artifact analysis allowed participants to share personal and fictional childhood stories. This established a benchmark for the potential application of these methods in workshops conducted by case study museums with their target audiences (Vishwanath, 2023).	The interaction among participants in groups revealed that creating and sharing stories around artifacts was engaging, relatable, challenging, and rewarding.
W2 – Persona development along with users and communities	Persona development focused on curating and evaluating systems for museum audiences' needs and testing proposed solutions. Using an unexpected visitor for the case study encouraged creative brainstorming by introducing a fresh perspective. Participants analyzed their museums to promote inclusivity and accessibility. Case studies employed unique personas, necessitating further testing and development.	Participants in groups cooperatively played to match and develop persona attributes. Creating attributes for an unexpected visitor prompted participants to imagine and craft new personas. After persona development, participants reconvened in the main room to share feedback, including acknowledgment, compliments, and constructive criticism.
W3 – Activities and contexts through pre-defined UX maps	Within their respective group's UX maps, participants identified barriers in the provided templates and iterated solutions focused on physical and cultural accessibility and inclusion. In addition to artifacts aligning with the theme and genre of a case study's museum, groups selected various other artifacts, indicating the museum's openness to multiple interpretations. Different order types, including non-linear storytelling, emerged in the arrangement of artifacts for the exhibition and these stories narrated by group representatives contained intriguing new ideas and fostered a creative outlook.	Groups competitively selected artifacts from a shared pool for their exhibition to prevent others from reserving them. Collaborative decision-making and arranging artifacts based on a story for the exhibition proved to be a playful process. Presenting the exhibition to all attendees by narrating its story upon completion was perceived as a rewarding experience.
W4 – User interface design	Each case study group selected their preliminary sets of interfaces for visits, interpretations, and reflections, and rated the majority of the interfaces presented to them.	The outcomes of gamification were limited to collaborative selection and rating within a defined time limit, with no explicit additional results.

DISCUSSION AND FUTURE WORK

Reviewing the Mini-conference from a case study perspective, enabled us to identify specific characteristics of multimedia conferencing and the impact of gamification when integrated with other methodologies. These types of remotely organized conferences, utilizing gamification as a methodology, are likely to be employed in co-design workshops conducted with the target groups of the case studies.

Gamification

Even though McGonigal's (2011) theories, drawing from Csikszentmihalyi (1990), were crucial in designing the Mini-conference, further validation regarding motivational aspects of gamification was needed. A literature review by Hamari et al. (2014) underscored the lack of coherent understanding and empirical works on gamification's motivational affordances and psychological outcomes. They noted positive results in various contexts, including intra-organizational systems, but cautioned that descriptive studies couldn't infer direct effects of gamification (Hamari et al., 2014). Similarly, while the Mini-conference participants responded positively to gamification, this paper aimed to quantify workshop outputs, revealing gamification's pivotal role in fostering motivation and engagement alongside other methodologies.

The Future for a Hybrid Mode of Collaboration

A hybrid collaboration model, combining remote sessions and limited physical engagement, is anticipated to become commonplace post-COVID-19, notably in the cultural heritage sector (Bujari et al., 2017; Zbucnea et al., 2021). For instance, the Ars Electronica festival in 2020 hosted its first remotely organized exhibition using Mozilla Hubs (Doyle, 2020). Their Kepler Garden installation offered diverse 3D experiences accessible worldwide, spanning artistic, scientific, political, and cultural heritage themes. These immersive encounters were easily accessible via Mozilla Hubs on various devices, including desktops, laptops, smartphones, tablets, and VR headsets. This suggests vast potential for future remotely organized conferences to create novel, far-reaching experiences accessible to broader audiences.

LIMITATIONS

This study has limitations primarily due to the qualitative nature of the workshop activities' outputs and the remote conferencing environment.

Remote Nature of Collaboration

Participants' feedback highlighted that some tasks lacked clarity initially, requiring further clarification to align with the workshops' goals and rules. While having facilitators in each breakout room helped clarify tasks and improved online collaboration, it may have increased the need for facilitation in some activities and reduced voluntary participation. Additionally,

collaborative writing of lengthy texts within time constraints proved challenging for participants. As an alternative, we suggest implementing gamified mechanics such as responding with keywords or working on shorter texts in groups.

Gamification

While participants found the activities engaging, as demonstrated by video recordings and other workshop outputs, increased engagement may not always directly correlate with gamification. Various factors, such as the effects of other methodologies or participants' familiarity with the topics, could influence engagement. Therefore, further research is needed to empirically validate the direct correlation between gamification and the enhancement of remote conferences.

Video Recordings

Recording videos can pose challenges related to camera-consciousness and privacy concerns. Additionally, according to our data management plan, access to video data is strictly limited to consortium members. We explicitly informed all attendees that video recordings would be used solely for research purposes, such as analyzing the development process of workshop activities. However, some participants may feel uncomfortable being on video. To accommodate this, participants were given the option to turn off their camera and mute their microphone while engaging anonymously through online collaboration tools. Nonetheless, this may have hindered their participation. Fortunately, none of the participants expressed a desire to do so.

CONCLUSION

Within our research project, we successfully designed and conducted a remotely organized Mini-conference incorporating multimedia conferencing characteristics. We suggest that implementing gamification in workshop activities enhances participants' motivation and contributes to valuable project outputs. The results offer unique insights into remote conferences and multimedia conferencing with gamification. While the empirical correlation between gamification and participant engagement was demonstrated, further follow-up is warranted. Nevertheless, the prevalence of remotely organized conferences is increasing, making the use of gamified strategies in events and collaborative workshops appealing to the Human Interaction and Emerging Technologies communities.

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