# An Integrative Process for the Design of Seriously Fun Games

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**Abstract.** Serious games – games designed for purposes beyond entertainment – rely on input from experts, stakeholders, and target audiences to ensure they meet their objectives in an accurate, authentic, and sensitive manner. These objectives may range from education to encouraging social change. Yet existing frameworks, while offering sound guidance on design principles and practices, are often unclear about how and when to involve key stakeholders, risking underutilising domain-specific experience and expertise. To address this gap, we propose an integrative design process for creating "seriously fun games" that applies an iterative, multi-stakeholder approach across three phases: Co-discovery, Co-design, and Co-evaluation. We illustrate the process through case studies (e.g. *Built from Beneath*, *T Cell Titans*) where sustained stakeholder engagement was critical in defining game purpose, shaping impactful narratives, aligning mechanics with objectives, and anticipating audience interpretations. This work contributes a replicable, stakeholder-driven methodology for designers seeking to create entertaining titles that support learning and address complex societal issues.

**Keywords:** design, method, process, integrative, co-design, serious games.

## 1 Introduction

Designing serious games presents distinct challenges. Unlike commercial games, which often pursue broad entertainment goals, serious games are driven by specific objectives such as education, raising awareness, or promoting social change [3, 8, 6]. These goals can be difficult to define and must be carefully tailored to audiences and contexts. To achieve this, it is crucial to involve experts, stakeholders, and members of the target audience throughout the game's design process [6]. Without such engagement, a serious game can risk missing its objectives, losing focus, being perceived as inauthentic or even trivialising sensitive issues [7]. A co-creative approach, on the other hand, can help ensure the game remains relevant, respectful, and meaningful to those it seeks to engage or support.

Drawing from years of experience designing *'seriously fun games'* with the company Echo Games CIC, we have adapted an integrative design process. Rooted in participatory design principles, this iterative, multi-stakeholder approach is especially effective

for addressing issues that require diverse perspectives and adaptable solutions. Additionally, it helps clarify the purpose of the game and guides how that purpose can be effectively evaluated. Through selected case studies, this paper presents how we use an integrative design process to create serious games, following three phases: Co-discovery, Co-design, and Co-evaluation.

## 2 Background

Designing Serious Games (SGs) is a complex, multidisciplinary process that requires careful consideration of both pedagogical objectives and engaging gameplay [1, 4]. A key challenge is ensuring effective collaboration among various experts, such as project managers, cognitive specialists, domain experts, storyboard writers, artistic directors, pedagogical experts, and programmers [2]. To address this, several methodologies, frameworks, and tools have been proposed to guide the design process, including co.LAB [10], iPlus [4], Marne et al's Six Facets of SGs Design [11], and Yusoff's 12 attributes of educational games [14]. These frameworks often start by identifying objectives and move to designing and testing mechanics, scripts, and content. Many of those methodologies also explicitly incorporate **iterative** cycles, allowing for continuous refinement and adaptation based on feedback and evaluation [10, 11].

However, the need for multidisciplinary teams often leads to difficulties in **communication and mutual understanding** [2, 11, 13]. Experts from different fields (e.g., design, pedagogy) may use different vocabularies and have conflicting objectives, hindering efficient collaboration [2]. And although user and stakeholder involvement is widely encouraged, it often remains limited to feedback on later stages of development, rather than active **participation** in early ideation and co-design [5, 13]. This highlights the need for more inclusive and collaborative design approaches that promote engagement and shared understanding among different stakeholders from the outset.

**Table 1.** Overview phases of the Integrative process.

| Phase | Aim | Examples activities |
|---|---|---|
| Co-Discovery | Explore purpose, needs, values, design brief | Iterative conversations, focus groups, game modding, mini games (storytelling, RPG) |
| | Playtest & interpret | |
| Co-Design | Define tone, narrative, aesthetics, mechanics | Brainstorming, concept testing, iterative interview rounds, paper prototypes |
| | Playtest & interpret | |
| Co-Evaluate | Validate narrative and gameplay; Test usability | Digital evaluation platforms (e.g. Miro), visual tools (e.g. interactive PDF), usability testing |

## 3 The Integrative Process

The integrative design process is collaborative, iterative, and inclusive. It values communication, collaboration, and critical reflection, so it is particularly well-suited to address "wicked problems" such as climate change, healthcare, and social inequality

[9, 12]. It is grounded in critical inquiry, inherently tied to political and economic contexts [12]. It also involve multiple stakeholders such as citizens, entrepreneurs, policy-makers, and researchers, all contributing to socially innovative solutions [9, 12]. We realised this type of collaborative design approach was ideally suited for complex projects, like 'seriously fun games'. Thus, we have adapted it to the development of our games and found it to be an effective approach because it involves stakeholders (e.g. professionals, researchers, and students) through the full design process, which is made of **three consecutive phases**: Co-discovery, Co-design, and Co-evaluation (Table 1).

### 3.1 Co-discover the game's purpose

The *Co-discover* phase initiates the process by bringing together all stakeholders to define the game's purpose. This stage is essential for establishing a common vision and ensuring that the game addresses real-world needs and values. For example, with the digital escape room *Built from Beneath*, we wanted to tell the story of the city of Bath from different perspectives, from its prehistoric beginnings to the technological and societal developments of the modern era. To this end we brought together stories and objects from five museums in and around Bath - Bath Royal Literary and Scientific Institution (BRLSI), Radstock Museum, the Museum of Bath at Work, the Museum of Bath Stone, and Bath Medical Museum. These museums have distinct missions and collections. Our goal was to include each institution equitably, creating a shared message that resonates with all. Thus, we had multiple conversations with professionals from each institution to find a common purpose for the game. We took the information we collected during these co-discovery conversations to identify a shared goal.

In another project, we worked with a youth justice team, young offenders, and academics to design a game that supports reflection and future-oriented thinking. We began with a co-discovery phase using games to facilitate conversations. For example, young offenders modified existing tabletop games to explore themes relevant to their lives. We also created a storytelling game where they played as students at a superhero academy—an allegorical setting that allowed them to express challenges and needs without sharing personal details. This Co-discovery process helps define the game's purpose, concept, and an initial design brief that will guide the development of the game. The design brief is key to ensure stability and coherence, so that the development team has a solid foundation through what is a very flexible and iterative process.

### 3.2 Co-design narrative and core mechanics

During the *Co-design* phase, the game's theme, narrative and core mechanics are developed in close collaboration with stakeholders. This phase is highly iterative, with continuous feedback loops ensuring that the design remains aligned with stakeholder values and needs. For example, Echo Games CIC worked closely with museum professionals to determine which stories to tell and which objects to feature in the digital escape room *Built from Beneath*. We organised a one-day workshop during which representatives from each museum could share their stories and values. This was a truly collaborative effort that offered a rare opportunity to bring regional museums together to share their insights and experiences. The event included two main activities. Firstly,

a group brainstorming guided by Echo Games CIC where museums could discuss which stories and artefacts we could include in the game together. Secondly, we held individual interviews with each museum where a creative writer helped the five institutions to express the stories they wanted to tell and how these could be sequenced to express a shared narrative. The workshop was complemented by a series of site visits and online interactions where historical information, images, and representations of key artefacts were exchanged. Through this iterative process, a multidisciplinary team—comprising developers, artists, and researchers—translated all these inputs into a coherent narrative and a playable experience.

In other cases, we used concept testing sessions to share early ideas with stakeholders, collecting feedback via email or surveys. For more detailed input, especially from domain experts, we preferred iterative interviews - online or in person - with one or two participants at a time to refine game elements like narrative, characters, and puzzles. This method was central to *Immersed in Conservation*, a digital escape room exploring deforestation in Malaysia and the impact of global purchasing habits. We collaborated with Dr. Cedric Tan, an expert on the Malaysian rainforest, through a series of online interviews. His insights shaped a unique shopping mechanic where players made purchasing decisions based on environmental and economic factors. These choices influenced how many trees were cut down in a visual representation of the rainforest, reinforcing the connection between consumer behavior and environmental impact.

### 3.3 Co-evaluate to ensure authenticity and alignment

The *Co-evaluation* phase focuses on validating the game's content and narrative but also tests its playability. For example, stakeholders may assess full prototypes and narratives, as well as specific game mechanics and aesthetics. We often use digital co-evaluation platforms - like Miro or Figma- or other visual tools - like interactive PDFs - that allow for remote evaluation such as rating aspects of the experience. For example, after we storyboarded the whole narrative for *Built from Beneath* based on inputs from the co-creation phase, we shared interactive PDFs via email with museum professionals. The PDF presented the storyboard and the related artefacts, with space for comments. In this way, stakeholders could review the storyboard of the narrative and the game objects at their own pace, providing clear guidelines to ensure authenticity and representation of each institution's voice.

We also often engage with the target audience to ensure that the experience is not only authentic but also engaging and easy to play. This was the case with *T Cell Titans*, a game we created for Great Ormond Street Hospital (GOSH) to help young patients understand what happens in their bodies when undergoing CAR-T therapy. We invited a group of young patients to playtest a beta version of the game and provide detailed deconstructions and feedback on the game's mechanics and narrative during online interviews. During these semi-structured interviews, the young players helped shape its look, tone, and gameplay style. They also contributed with their own creative ideas on how to increase the game engagement and appeal. For example, based on this input, we added a final boss in the last level of the game. Their feedback was invaluable to enhance the final product.

### 3.4 An iterative Process

Although co-evaluation is the final phase of this integrative process, development is iterative, continuous, and bidirectional. After each phase, teams interpret stakeholder input and may return to Co-design or Co-discovery if revisions are needed. Regular brainstorming helps not only to make sense of findings but also to decide on the next steps. In game design, early and repeated playtesting is essential - especially when addressing complex topics like war and conflict. This can begin even before technical development, using low-fidelity methods such as paper prototypes.

This approach was central to our collaboration with the Ruhr Museum in developing the Agonistic Games *Umschlagplatz '43* and *Endless Blitz* for the Ruhr Museum in Essen [6]. Agonistic Games reject an antagonistic 'us' vs 'them' way of remembering in favour of a multi-perspective approach to contextualising and learning from war and conflict [6]. In this project, there were (to the best of our knowledge) no examples of practice available indicating that Agonistic Games were a new concept. With no existing models to draw from, we worked closely with researchers and curators to iteratively test and refine narrative and gameplay elements. The result was two games that embodied the principles of agonistic memory, encouraging players to engage with World War II through a multi-perspective lens.

## 4 Conclusion

This paper has presented the potential of an integrative approach for the design of serious games to address complex societal challenges. Through iterative phases of Co-discovery, Co-design, and Co-evaluation, we ensure the creation of games that are meaningful, authentic in their purpose, and impactful. In a digital era where technology shapes human experience, integrative design offers an inclusive and socially innovative framework for developing transformative digital tools. Importantly, this approach can extend beyond the evaluation of design to the evaluation of impact – a challenge that remains significant in the field of serious games. Although games may be engaging, assessing their impact on knowledge, attitudes, or behaviour is complex. A parallel line of work is therefore examining how co-evaluation methods can be refined to better capture long-term effects, involving stakeholders not only in validating content but also in defining relevant metrics and longitudinal strategies. In addition, ongoing research is investigating how other serious game designers apply the integrative framework in their own projects, to assess its practical benefits and adaptability across contexts.

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