Introduction to the 1st Game-based Learning Minitrack

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1. Introduction

Games are inherent to human life (Huizinga, 1956). Over the years, games have gone through many changes, but they never lost their essence in entertaining people (Huizinga, 2014). However, over the years, games have had several applications, including their direct use in educational contexts (Anastasiadis et al., 2018; Gao et al., 2020; Zhan et al., 2022), or the use of some of their aspects (*e.g.*, gamification) in educational environments (Oliveira, Hamari, Joaquim, et al., 2022; Oliveira, Hamari, Shi, et al., 2022).

Thus, a few years ago, the term game-based learning (GBL) Prensky, 2003 came up referring to learning and education that involves characteristics of games and play in their design, pedagogy, praxis, culture, or teacher and learner experience (All et al., 2021; Yu et al., 2022; Zhan et al., 2022). Game-based learning is a broad field of research and practice and contains under its umbrella for example the following key concepts: educational games, serious games, gamification of learning, games-with-a-purpose, science games, simulation games, and smart toys.

To help advance the literature on GBL, we propose the realization of this minitrack, with the aim of receiving submissions on different topics related to GBL (*e.g.*, educational games, serious games, gamified learning, single- and multiplayer games for learning, simulation, and training games, and gameful design). The papers presented in this minitrack provide us with a series of interesting reflections, especially related to ethical aspects and other contemporary topics. We hope that the papers presented be of interest to the community and add good reflections to the discussions on GBL.

2. Minitrack Details

In the first edition of the Game-based learning minitrack, we initially received a total of 10 submissions. From these 10 submissions, two were transferred to correlated minitracks, as they presented topics more consistent with these other minitracks. Thus, eight papers were sent for the anonymous review process. Each of these papers received at least three reviews. Afterward, the papers and reviews were further analyzed and summarized by the minitrack chairs. Of the eight peer-reviewed papers, three were considered suitable for publication at the conference. Thus, the final acceptance rate was 37.5%.

3. Accepted Papers

The paper **Turtles and Ethics: Experiential Learning through Game-making**, by *Lena Hylving, Andrea Resmini, Bertil Lindenfalk, Dimitrios Gkouskos, and Oliver Weberg* provided us with a qualitative long-term study on ethics and game-based learning. They detailed how a class of international graduate students engaged in a year-long exploration of ethics, gender, and sustainability issues by playing, remixing, and designing games using a Design Games Framework. The authors opted to use a qualitative approach (based on participatory observations), where the student's entire game-making process and a series of final semi-structured interviews followed. With the results, the authors illustrated how game-making can enable higher education students to better understand the interplay of ethical issues and digitalization processes.

The paper **Game-Based Approaches to Enhancing Public Understanding of Science: A Descriptive Literature Review**, by *Lewen Wei and Juho Hamari* addressed very new and relevant topics (*e.g.*, climate change, Covid-19, and public understanding of science). In particular, due to the growing number of studies on game-based learning and public understanding of science, they provided us a state-of-the-art in this field. They reviewed 29 papers and investigated its interventions, contexts, populations, and outcomes. The study indicated diverse yet imbalanced research focuses thus far.

The paper **Examining Misinformation and Disinformation Games Through Inoculation Theory**

URI: https://hdl.handle.net/10125/103201
978-0-9981331-6-4

and Transportation Theory, by *Lindsay Grace and Songyi Liang* also addressed a recurring issue in recent studies on game-based-learning (*i.e.*, media misinformation and disinformation). They used inoculation theory and transportation theory to examine games designed to serve as interventions for changing players' behaviors in misinformation and disinformation media. The results are diverse and one of those that draws the most attention indicates that for all designers balancing efficacy often relies on a combination of narrative fiction and repeated engagement. Thus, if a narrative takes too long to develop, it may be hard to get players to reengage with the media or complicated to design long-term engaging narratives.

4. Papers Session

The papers were presented at the conference following the sequence presented next:

1. Turtles and Ethics: Experiential Learning through Game-making
2. Game-Based Approaches to Enhancing Public Understanding of Science: A Descriptive Literature Review
3. Examining Misinformation and Disinformation Games Through Inoculation Theory and Transportation Theory

5. Challenges for the Future

In recent years there have been several changes in human social structures. Such changes directly affect education and the way we can think about the use of games in education. The papers published in this minitrack make clear a community concern about ethical aspects involving GBL. In view of the advances in this discussion provided by the papers presented in this minitrack, we highlight the importance of conducting in-depth studies, with different types of intercultural and cross-cultural data analysis, thinking about the ethical aspects that involve the dialogue of games and gamification in educational contexts.

In the same way, the papers presented in this minitrack, make clear the community's concern in what involves thinking about the relationship of games with relevant issues of the moment, such as the spread of fake news and climate change. While studies have been conducted in this direction, it is important to understand how games have been used within these contemporary topics, how they have affected people's behavior in relation to these aspects, and how it is possible to improve their application within these contexts.

Finally, we believe that it is also important to think about the technical aspects involved in conducting the studies. Two of the three studies presented in this minitrack are qualitative studies (as are most of the other studies submitted). It is important to think about studies that prove a variety of methods, metrics, and types of data analysis. In the coming years, we expect and suggest that the GBL area invests in studies to deepen discussions on ethical aspects involving GBL, as well as, deepen relations on GBL in contemporary issues.

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