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Editorial: Serious Games

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Editorial on the Research Topic

Serious Games

Games are structured contexts, with clearly defined rules in which players must overcome challenges and face opponents (real or non-player characters) to achieve victory. Games offer incredibly immersive environments where users engage in "learning by doing," receiving immediate feedback on their unsuccessful actions (therefore also learning by error) and getting instant gratification after successful attempts which contributes to their sense of accomplishment and increased self-esteem. Games (and simulations) also offer safe environments to try and learn procedures and actions that, in real life, could be dangerous or potentially damaging if not done correctly. By playing, users can improve their skills and competencies in decision making, strategy, teamwork, social skills, leadership, collaboration, etc.

Serious Games focus precisely on the design, development, use, and application of games for purposes other than entertainment by exploiting the increased user motivation and engagement to promote learning, construct knowledge, sraise awareness or inspire behavior change. As such, the Serious Games domain brought together expertise from very different areas such as cognition, psychology, neurosciences, sociology, technology-enhanced education, evaluation and assessment, multimedia and information technology, interaction and simulation, etc. Serious Game research has been growing in the past few years namely trying to construct supporting theoretical framework and identifying the most effective design, implementation, and validation methodologies and models for each particular area of application and for each particular target group.

This Research Topic contributes to this research effort, while truly showing the multidisciplinary nature and application of Serious Games, by presenting theory, research, practice, and validation in multiple areas. While education and training still represent the main areas of application of Serious Games (and in this Research Topic) we can also see here scientific approaches, experiments and real-life applications in psychology, social sciences, health care and other domains. In sum, we have gathered nine different research works about Serious Games showing their importance and exemplifying potential research paths.

Coelho et al. present an analysis of the pervasive nature of Serious Games, their inherent meaningful gameplay and the usefulness for learning and communication. Several case studies are presented with a special focus on the BEACONING project that aimed to contextualize the teaching and learning process in STEM connecting it with problem-based and location-based game mechanics using real-world interactions and applications.

Smy et al. present a study on the usability of mobile training applications in the Aeronautical industry, in particular for air traffic control. These applications represent alternatives to the equivalent current training practices (a lengthy and expensive process) and the authors conclude that digital applications have the potential to engage future trainees in the air traffic services industry.

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Kyrlitsias et al. created an interactive digital reconstruction of an archaeological site and conducted a feasibility study. The results showed high levels of presence and more positive experience by the participants who used the Virtual Reality system although this did not directly translate into greater learning gains.

Othlinghaus-Wulhorst and Hoppe addressed the use of virtual role-playing games to provide an authentic experience of situated learning through different problem-solving and communication strategies. They present a conceptual and technical framework for serious role-playing games for the training of specific social skills in virtual 2D learning environments involving chatbots in dialog-centric settings. They used this framework to create a set of training scenarios that include workplace-oriented conflict management, patient-centered medical interviews, and customer complaint management. The results indicate that the scenarios could be well-suited for real training situations.

Kyrlitsias et al. presented an experimental study that elaborates on the social influence through conformity with a group of virtual agents within an immersive virtual environment. The results showed that participants did, in fact, conform to the agents as they exhibited sympathetic behaviors in the trials.

Christofi et al. compared a perspective-taking immersive Virtual Reality system with and without a number of sensorimotor contingencies (SC) to investigate the effect of the supported SC in promoting empathy and positive attitudes toward drug users. Results demonstrate a strong correlation between closeness to the drug user and empathy in the SC group.

Crepaldi et al. presented the design, implementation, and evaluation of a serious game on inhibition skills in children. Positive correlations between impulsiveness as measured by standard tests and impulsiveness scores in the Serious Game emerged. Furthermore, self-report ratings in the questionnaire showed that the Serious Game was engaging and elicited positive responses from children.

Berenbaum et al. focused on the use of serious games for persons with dementia. Their study showed that, despite declines in cognitive abilities, a tablet based Serious Game could stimulate their emotional and social intelligence and evoke responses in self-awareness, empathy, social, and communication capacities.

Martin-Niedecken et al. present a study on how to boost the attractiveness and effectiveness of an exergame by individualizing it with game adaptations based on physiological parameters like the player's heart rate. The results showed that the formula-based in-exergame adaptation approach was suitable in the presented study population, and that the developed exergame provided an equally reliable in-exergame adaptation and comparable exergame play experiences.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication..

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