Leveraging Virtual Reality for Bullying Sensitization

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ABSTRACT

Virtual reality games are known for creating the feelings of presence, ethical reasoning, and reflection in their users. In what ways can we use the design and gameplay of a virtual reality game to make moral demands of players and encouraging them to reflect on their negative behavior? In this article, the authors propose an ethically notable game as one that provides sensitization opportunities through both design and gameplay for encouraging ethical reasoning and reflection in children. To measure success, they present the results of two participatory design workshops with children and a user study carried out at Japanese elementary schools. The results underline the effectiveness of game-based learning to raise awareness of children on bullying victimization and eventually producing bystander intervention behavior.

KEYWORDS

Bullying Sensitization, Participatory Design, Social and Emotional Learning, User Study, Virtual Reality Games

1. INTRODUCTION

Practices such as ethical reflection, perspective-taking and introspection are known to have positive short and long-term effects on human well-being. If ever there was a perfect test-bed for helping users learning about ethical reasoning and reflection, XR and immersive technologies particularly virtual reality games would be it (Kitson, Prpa, & Riecke 2018; Nay & Zagal 2017). XR is an umbrella term for a group technologies such as Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) together. It covers the hardware, software, methods, and experience that make VR, MR, AR and cinematic reality a reality.

The notion of "*Immersive or Interactive Technologies*" long predates the current generation of XR, though it includes VR, AR and MR experiences. The term is a very broad one, much like XR, incorporates user engagement, exploration of new creative forms, education, entertainment, training etc. Defining "*immersion*" is also critical to our understanding of the relationship between the user and the interactive technologies. Immersion is "*a form of spatio-temporal belonging in the world that is characterized by deep involvement in the present moment*" (Hansen & Mossberg 2017; Agreval et al., 2019). Using the video games mechanisms, VR games communicate specific information and impart relevant knowledge and skills that enable players to act better in real world. Other names of

VR games include serious games, virtual learning environment, interactive or intelligent storytelling, digital simulations etc.

Mota, Botelho & Adamatti (2016) argue that VR games have affordances that can shape attitude and behavior. The power of a VR games is that it requires players to participate, rather than simply spectate, and this demand placing players in dilemma situations in which their understanding of an ethical system is challenged, or by creating moral tension between the player's goals and those posed by the narrative and the gameplay (Nay & Zagal 2017).

The Japanese practice and literature (Kobayashi & Farrington 2020; Osuka et al., 2019; Horiguchi, 2018) so far has focused primarily on non-digital bullying interventions, from a social or psychiatric lens and with an emphasis on treating symptoms rather prevention. Furthermore, Japanese e-learning literature focusing on XR and immersive technologies for moral, social and emotional learning on bullying as a preventative point of view is uncommon.

Developing and implementing digitally-propelled anti-bullying interventions are crucial in the face of enormous "bullycides"[1] in Japan that has become the leading cause of death in children (Baseel 2020; Olivier 2017). The rate of child-suicide keeps rising (Engelmann, 2020), despite numerous attempts at anti-bullying legislation, school and community-based prevention programmes. That said, there does appear to be a rise in interest in Japan in using VR games, based on XR and immersive technologies, for positive human functioning and well-being across many different domains (Kitson 2018). This diversified interest seems to imply promise for future applications of digital technology for positive youth development and improving the quality of school-life in Japan.

In the following sections, we describe how a VR game has been used to sensitize Japanese children on bullying victimization through moral, social and emotional learning. Section 1 presents the need that underpins the approach taken in the research by discussing the researchers' interdisciplinary stance and consequent choice of methods. It also outlines the 4-phase research design and the choice of appropriate research methodology adopted in this study. Section 2 discusses the use of both game design and gameplay as a bullying prevention strategy, which stem directly from the application of a bottom-up approach, providing new ways of dealing with emotionally sensitive issues. An overview of the data collection methods and the means to analyse data have been provided in the subsections, along with a discussion on key innovations, findings and contributions. The paper concludes after describing research limitations in Section 3 followed by related work (Section 4).

1.1 Challenge and Context

Bullying, is a violence perpetrated among peers and its main characteristics are: repeated physical, verbal and relational abuse, due to imbalance of power (Yoneyama 2015), with intention to cause suffering in someone weaker than the perpetrators. The consequences of bullying, including anxiety, low self-esteem, depression, self- mutilation, loneliness, delinquency, truancy, drug usage and suicide (Silva et al., 2017) are of great concern in Japan, with bullying significantly on the increase (Fig. 1).

Compared to the school bullying seen in the West, in Japan it is linked with enormous child-suicides (Baseel 2020; Oi 2015) and predominantly a "*with-in group*" phenomenon (Stalter 2017). Social conformity is imperative in the Japanese school environment. A number of prefectural education authorities have implemented measures designed to stamp out the problem, including mandatory surveys each semester for all students on bullying and additional staff meetings to handle situations once an incident is confirmed (Ryall 2018). Yet, it is clear that more efforts need to be made to tackle this problem. To address this issue, the Shimpai Muyou aims to patch knowledge gaps in both basic research and applied research domains that includes: (1) addressing the paucity of sensitivity training opportunities on empathy and bullying victimization to Japanese children via participatory design, and (2) the lack of digital game-based social and emotional learning through gameplay.

The goal is to sensitize children on bullying through both design and game play thereby, weaken the bond between the bully and the peers by evoking empathy, ethical reasoning and

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