Does Co-discovering Educational Games Design Process between Game designers and Teachers Converge?

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INTRODUCTION
In the 21st century, it has become essential to observe, interact, and engage with players' experience in the gaming industry – the end-users of a game system. The involvement of end-users in design processes has demonstrated positive outcomes in many fields, including game designing (Tuhkala 2019; Lange-Nielsen et al. 2012; Khaled and Vasalou 2014; Dodero and Melonio 2016). Furthermore, participatory design (PD) research leverages relevant stakeholders while investigating a phenomenon and contributes to enhanced knowledge (Könings, Seidel, and van Merriënboer 2014; Björgvinsson 2008). Hence, affirming the requirements of the end-users, not just players in the classroom but the designers and teachers as players of the product/system needs attention.

PD tools and techniques have been prominently used in design studies; however, '*Designing Games*' have recently shown its capacity to allow various stakeholders in sharing their experience, desires, the type of engagement, and what can make games better (Brandt, Binder, and Sanders 2012; Brandt 2011). Although from a game design perspective, defining and systematically structuring games has its own discrepancies (Huizinga 1955; Roger and Meyer 1961), this ought to change to simplify the notion of designing games. Furthermore, published articles have demonstrated the requirements associated with designing processes and educational games (EG)(Kalmpourtzis 2018; Salen and Zimmerman 2004); nevertheless, some differences in grasping the position of PD and games seem to be of interest (games facilitating designing process or games as end-product) (Ampatzidou and Gugerell 2018; Könings, Bovill, and Woolner 2017). Similarly, the EG design process requires various stakeholders, and requiring interdisciplinary collaboration to move towards providing successful EGs for schools has been noted (Keogh 2021, 2019).

PD and co-design approaches are emerging in the field of serious game design, EGs design, and implications of using co-designing processes (Tuhkala 2019; Könings, Seidel, and van Merriënboer 2014; Könings, Brand-Gruwel, and Van Merrienboer 2007; Könings, Bovill, and Woolner 2017). Co-designing activities between stakeholders involving exploration and earning enhancing communication and moving towards lesser biases towards game designers' has shown its benefits (Vines

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et al. 2013; Muller and Kuhn 1993; Muller and Druin 2012). However, theoretically establishing an interdisciplinary study has its challenges and time consumption (Könings, Seidel, and van Merriënboer 2014; Könings, Bovill, and Woolner 2017). As collaborative research needs rise, EG designing stakeholders and academics supporting PD research have become prominent. However, the Australian gaming industry has not yet explored exchanging interdisciplinary knowledge and PD approaches (Keogh 2021).

Henceforth, it raises questions on how game designers transition their knowledge of designing games to designing EGs? Do they have collaborative projects of EG design with educators? What are their limitations that hinder their process of designing EGs? Do collaborative workshops assist in expanding their knowledge around building engaging EGs? These questions are attempted to answer through an ongoing research project that aims to examine the roles and perspectives of game designers and primary school teachers in the designing process of EGs.

The PD approach is adopted to complement the co-designing workshop (CoD) method within the Australian context. The CoD workshop steps and stages were redesigned after being critically examined to accommodate the research question (Spinuzzi 2005; DiSalvo et al. 2017). Consequently, the researcher proposes six(6) stages of the three workshops (conducted via Zoom, six participants). The seven stages of the CoD workshop proposed are: (1) Empathy, (2) Define, (3) Ideate, (4) Prototype, (5) Feedback, and (6) Learn. The project is theoretically firm with the theory of experience (Dewey 1938, 1934) and its concepts (continuity, interaction, situation, social control, freedom (intelligence), and growth of experience). Lastly, reflective and experiential learning to visualize multiple perspectives and allow subjectivity to stream thoroughly within data analysis. During workshops, the researchers' position is facilitation and technical support (tools used).

CoD workshops are divided into three parts: (1) Pre-workshop, (2) During, and (3) Post-workshop. Pre-workshop, each participant was instructed to play three EGs at the primary school level (*Duolingo*[1], *Mammals*[2], and *Build a Bridge*[3]). During the workshop, participants answer the prompt questions developed for each stage to evaluate three EGs and engage by design (Dickey 2005; Malone 1981). The elemental pentad (Kalmpourtzis 2018) introduced for EGs is grounded by core elements of the game design (Schell 2008) to allow pedagogy as a core element for EGs. Post-workshop is individual debriefing and feedback on the overall workshop process and knowledge expansion on the EG design process. Two data analysis techniques are selected to comprehend the depths of knowledge-sharing and learning about the EG design process: thematic analysis (Braun and Clarke 2019, 2012) and cross-case analysis (Leavy 2017). Data analysis (worksheets, audio, and video-screen recording) is still ongoing throughout coding, and tangible materials gathered during the sessions generated a set of reflections and obstacles that both stakeholders encountered during the design decision-making process.

In terms of positive responses, participants enjoyed discussing what they experienced through playing the three games. They believed that fun, engagement, motivation, non-boring factors (too much text), interactivity, and aesthetically appealing games are necessary. Across the three workshops, all game designers demonstrated their ease of using tools during the session while teachers were comfortable contributing verbally. Obstacles and challenges include the 'translation' of terms used by game designers or teachers during the activities as it is not the *same language*. Another online workshop challenge was that despite CoD being an engaging process, it might not be suitable if software lags, does not interact, or responds to participants' needs. From a learning perspective, both experts seemed to replenish the knowledge they

gained through the workshops, despite explaining each other. Across the board, CoD encouraged engagement, co-discovering what teachers' desire in the EGs was enlightening for game designers and what game designers' anticipated works, was otherwise dissimilar for teachers. Game designers 'crave' a collaborative platform to gather feedback from end-users (players and educators). Overall, they relished the workshops to communicate, make professional connections and discuss further how EGs design can be improved.

In the future, the analysis of co-design workshops results will further explore the understandings of crucial roles of multiple stakeholders' involvements in the EG design process. Due to the pandemic, a limited number of participants hindered the recruitment process; however, a more significant number of participants may be beneficial for collaborative workshops to create a framework where multiple perspectives can be integrated and move towards a decomplexing EG design process.

BIO

Mifrah Ahmad is a Ph.D. researcher in the School of Education at Deakin University Melbourne. Her primary research examines the roles and perspectives of educational games design, exploring the possibilities of diverging and converging knowledge of primary educational games designing process between education and the gaming industry.

ENDNOTES

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2 *Mammals*. TINYBOP Schools. 2018 (June). Mammals. https://schools.tinybop.com/explore/mammals, Version: I. Release Brooklyn, NY, Country: TINYBOP Schools, INC. Year Accessed: 2020.

3 *Build a Bridge*. *CrazyGames*. October 2018. *Build a Bridge*. Platform: https://www.crazygames.com/game/construct-a-bridge, Version: 1 (desktop and mobile). Prof. Roger Van Overstraetenplein 2 3000 Leuven, Belgium. Year Accessed: 2020.

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