Game Designers' Perspectives: Interception between Games and Educational Games Design

Mifrah Ahmad
Deakin University, Melbourne, Australia
mifrah09@gmail.com

Abstract: Games and Educational Games(EGs)! To what extent do they diverge? How do game designers approach such apposition? The extensive need for games in and outside classrooms demands clarity between games and EGs through game designers' perspectives. In the Australian context, game designers have witnessed technological advancement, the user-expectation, and the use of games within various contexts, including the classroom. The transformation in technology and the need to adapt and design games corresponds to the needs and requirements of its end-users. Admittedly, it has been overlooked in gaming studies if the designing processes and their perception differs between games and EGs. Respecting that aspect and the knowledge adapted by game designers to achieve players' experience successfully, we first need to comprehend how game designers position games and EGs within their context, their experience constructed over time, and their beliefs. Therefore, this paper interprets seventeen game designers' perspectives through semi-structured interviews in Australia. The data is thematically categorized, coded, and analyzed using NVivo. The results are presented through the interpretivism paradigm, which is grounded in the theoretical implications based on Dewey's theory of experience and concepts to gather the 'essence' of game designers' experience. Furthermore, a conceptual basis is established for game designers and learning designers to consider while designing games and EGs.

Keywords: Game designers, balance, fun, active experience, educational games, experiential learning, game design

1. Introduction

Games include 'all games' where learners improve their in-game skills, whereas EGs transfer the knowledge developed during game playing (Rick & Weber, 2010). The literature argues that existing beliefs that promote understanding real-world concepts through realistic scenarios allow learners to achieve learning outcomes of a particular subject (Beavis, Dezuanni, & O'Mara, 2017; Stieler-Hunt & Jones, 2015). However, evidence is absent on whether game designers' beliefs complement the models proposed for games or educational games (EGs). Although the history of Australian videogame making has been researched by prominent academics (Apperley, 2008; Banks & Cunningham, 2016; Swalwell, 2012), it is crucial to understand how the video game industry and the game designers are positioned in the emergence of the industry.

The essence of a "game" is problem-solving, with which competence is developed through trial-and-error and exploration of learning practices (Koster, 2013; Schell, 2008). The transition between games as entertainment and for educational purposes is designed somewhat similarly. However, the process of designing an EG equipped with fun and educators' perspectives has had its own challenges. EGs are remarkable motivational power tools including challenges that excite players, teach and master achievements: "It is the act of solving puzzles that makes games fun… with games, learning is the drug" (Koster, 2013). A cross-disciplinary integrative approach to enhance learning is proposed (De Freitas, 2018); however, balancing game playability, fun, and the learning outcome remains challenging. In response, a recent study advocated the need to empirically and theoretically gather individual experiences of "video game makers" more vividly to obtain a broader range of perspectives across video game production (Keogh, 2021). This indicates a lack of evidence on game deisgners' experiences and perspectives and how their decision-making processes are undertaken in their daily activities (Keogh, 2019, 2021; Sotamaa & Svelch, 2021), and perhaps, the need to explore whether their experiences influence their future game and EGs projects.

Understanding game design is tricky: "Design is a process by which a designer creates a context to be encountered by a participant, and from which meaning emerges" (Salen & Zimmerman, 2004). Notedly, meaning emerges through 'play,' a voluntary 'nature of act' where the 'desire' of participating in a game increases motivation and gives purpose (De Castell & Jenson, 2007). I argue that the learning experience is highly crucial and predominantly rooted in Dewey's theory of experience (Dewey, 1938) and Kolb's experiential learning (Kolb, 1984, 2014). Most research focuses on the players' experiences during gameplay; however, game designers' and teachers' learning experiences are still under-researched despite their vital position in designing EGs. EG design has been perceived and examined differently across disciplines for specific purposes, including creating research-based games for educational impact (Gaydos, 2015). Some of the characteristics emerging in recent

years include learning outcomes, usability, user's experience, motivation, engagement, game design, user satisfaction, usefulness, understandability, performance, playability, pedagogical aspects, efficacy, social impact, cognitive behavior, enjoyment, acceptance, and user interface (de Aguiar, Winn, Cezarotto, Battaiola, & Gomes, 2018; Shi & Shih, 2015; Wouters & van Oostendorp, 2017).

Despite the existence of many successful EGs, there have been many unsuccessful cases as well. Game designers do not create replicas of well-recognized games, or perhaps, we are unaware of what game designers perceive. This paper reports game designers' perspectives, including actively experiencing designing games and EGs, integrating game elements and core concepts to maximize the games' effectiveness and increase the possibilities of achieving learning outcomes and levels of engagement and motivation (Kalmpourtzis, 2018; Schell, 2008). Furthermore, the study provides answers to how game designers balance features between games and EGs*,* how they adapt such orientation*.,* and whether they consider any formally published definitions of games or EGs in their practice.

2. Related Literature

Defining games is versatile as it adapts differently to the genre/concept required. A review of 60 definitions sheds light on different game design requirements and complexities desired within an end product (Stenros, 2017). Nevertheless, it is yet to empirically build upon an ontological foundation to avoid building limitations around the field of inquiry as the designing processes of games have become adaptable in nature (Gaydos, 2015). Games have been identified as highly motivating and engaging tools for 21st-century skills and the tech-savvy generation. Mastering new challenges using trial-and-error approaches and repetition of a task to understand better the concepts demonstrate positive learning through playing games (Barab, Pettyjohn, Gresalfi, Volk, & Solomou, 2012; Young et al., 2012). However, binding game design elements into educational learning outcomes has factually generated positive and negative results (De Castell & Jenson, 2007; Young et al., 2012). As defined, a game is *"a system in which players engage in artificial conflict, defined by rules, that results in a quantifiable outcome"* (Salen & Zimmerman, 2004). "Meaningful Play" combines actions (descriptive) and outcomes (evaluative) within a magic circle to add the emotional experience of playing games through a game system. Players use a free activity to consciously experience impressiveness through play, and games provide an opportunity for play, resulting in flow experiences (Gaver, 2002).

For decades, games have been valuable in different contexts (in a classroom or outside). It has been argued that games are not entirely extraordinary (Kultima, Lassheikki, Park, & Kauppinen, 2020) and that the argument where what is valuable in games or what is good game design needs explicit clarifications. It is difficult to identify whether players 'feel' through play and whether it relates to the game's design that is neither fun nor educational. Such pitfalls are not surprising because designing EGs that fulfill the seemingly contradictory functions of fun and seriousness is challenging (Flanagan, 2009). It has been established that games with seamless integration, also called an *endogenous* design (Athavale & Dalvi, 2019), are effective as they harness the intrinsic motivation of games for delivering learning (Gaydos, 2015). The current era is challenging and competitive when games are positioned in various contexts, and their use heavily depends on how it is utilized (Stenros, 2017). Undoubtedly, games have become a normalized 'activity' across many educational and entertainment industries where communication, expressing versatility in ideas, and creating memorable experiences are concerned. As highlighted, *"Game designers need as well consider the specific needs of teachers, parents, instructors or non-formal educational institutions who are responsible for the implementation of serious games into their educational praxis or curricula."*(Slussareff, Braad, Wilkinson, & Strååt, 2016).

3. Theoretical and Conceptual Relevance of Data Analysis and Interpretation

The conceptual and theoretical framework adopted in this paper relates to Dewey's theory of experience (1938) concepts such as the *growth* of experience, *purpose,* and *continuity*. As these concepts were relevant to the epistemology and ontology of the research, constructivism belief is situated as the paradigm to construct new knowledge that welcomes the subjectivity of individual experiences (Dewey, 1938). The *growth* of experience represents how individuals grow in their careers, experience everyday activities to gain knowledge, learn to achieve their goals, sustain their understanding of the phenomenon, and continue to grow in their experience. The aspects of '*growth'* are driven by one's desire to formulate a '*purpose'* that reverts to the growth of experience with the intelligence of one's mind. In this context, the adults whose learning methods combine work and studying or theoretical and practical exposures are highly familiar and productive in their expertise.

The *purpose* is simple when a desirable quality "…which identifies freedom with power to frame purposes and to execute or carry into effect purposes so framed. Such freedom is, in turn, identical with self-control; for the formation of purposes and the organization of means them are the work of intelligence" (Dewey, 1938, p.67). Dewey's description of an actual purpose is that it begins with an impulse. It is always equipped with "end-view" – which involves "the foresight of the consequences that may result from acting upon that impulse" (1938, p.67). Game designers create meaning and constantly reflect through their actions as the games are play-tested, designed, prototyped, iterated, or conceptualized. Hence, deriving an enriched experience shows an individualized aspect of comprehending how game designers differentiate games and EGs and how they distinguish between those above and their dilemmas in the decision-making process that requires their attention. The principle of *continuity* is where each experience taken from the past affects the future experience of the individual.

In contrast, *interaction* is referred to the situational and game designers' influence on players' or students' experiences. Dewey believes that the elements of *interaction* and the *situation* occur concurrently. Some challenges may be encountered despite the importance of experience, such as "that all experiences are genuinely or equally educative" (1938, p.13). Hence, the game designers must first comprehend the nature of human experience, stating that the effect judges the experience's value that this experience has on the individual's present and future, an individual's ability to contribute to society. Therefore, it is directly relevant to how game designers evaluate players' experience while playing the game. In this context, it does not matter whether the player is a gamer or a learner. This is related to how game designers design the interaction for every individual's needs, support their cultural and social differences, and allow them to learn/play equally and freely. Experience, which may be enjoyable, may not contribute to personal *growth* or experience with no coherence to a *situation* that does not necessarily result in a cumulative learning foundation for future learning.

The theory of experience has been discussed and applied in many fields. The prominent Kolb's cyclic model (1984) of experiential theory was built on the works of Dewey and has provided its means in the field of education and EGs. As described above, experiential learning is simply defined from the perspective of how learners experience a phenomenon and use that to facilitate learning. It has become a mutual ground for both teachers and game designers attempting to integrate game-based learning with education (Appelman, 2005; Kolb, 1984; Salen & Zimmerman, 2004):

- Learning involves participation in the real-world
- There are intimate relations between experience and education
- Understandings are derived from and modified through experience
- Meaningful learning consists of action and reflection. Experiential learning is also based on the belief that people learn best by doing.

3.1 Participant Recruitment, Data Collection, and Data Analysis

Initially, the location was set in Victoria, Australia; however, due to the pandemic, location expansion was obligatory. With criterion and snowballing recruitment procedures, semi-structured qualitative interviews with 17 game designers in Australia were completed (January 2020-October 2020). The criteria set for the recruitment process are shown in Table 1. Each interview session was approximately 2 hrs and 30 minutes (Zoom, Discord, MS Teams). The current paper interprets one central theme (six themes) emerging through the coding analysis. Consequently, the phenomenological approach was adopted to allow the researcher to uncover the essence of lived experiences described, as the qualitative researcher pursued to identify the phenomenon of human experience and then derive a description representing the experience's very nature (Kafle, 2011). The essence should not be viewed as a vague idea but rather the ability to identify the meaning embodied in the lived experience (Merleau-Ponty & Smith, 1962).

Table 1: Participant recruitment criteria in this study

Criteria	Participants Details
Location	Within Australia (Victoria, New South Wales, Queensland, South Australia)
Years of Experience	Between 5 years – 15 years
Type of experience	Game designing and Developing(all types of genres). Must have an experience in designing Educational games.
Types of Players' Demographic	All Demographics. Primary school players' demographics are beneficial.
Participants in the study	17

3.1.1 Data Analysis and Interpretation Approach

The interviews were audio-recorded, transcribed, and time-stamped. An initial hand-coding approach was taken before an in-depth thematic analysis using NVivo 10 software. This research adopted a six-step thematic analysis approach (Braun & Clarke, 2006, 2012), as shown in Figure 1. This analysis aims to allow the emergence of game designers' perspectives, the way they distinguish between games and EGs, their experience designing both types of gaming systems (its *growth* and *continuity*), and the way they criticize the conceptualization of games and EGs before they are designed (framing the purpose of designing games and EGs). Interpretive results are discussed through interpretivism, where hermeneutic analysis is adopted to allow game designers' experience subjectivity. Consequently, the results are rigorously discussed to demonstrate experience in designing games and EGs, what they believe games and EGs have in common, and how they distinctively describe their professional opinions. Lastly, the analysis also correlates with and is critically interpreted through researchers' epistemological and ontological positions and concepts of the theory of experience. Please note that all names mentioned in the analysis are pseudonyms[1].

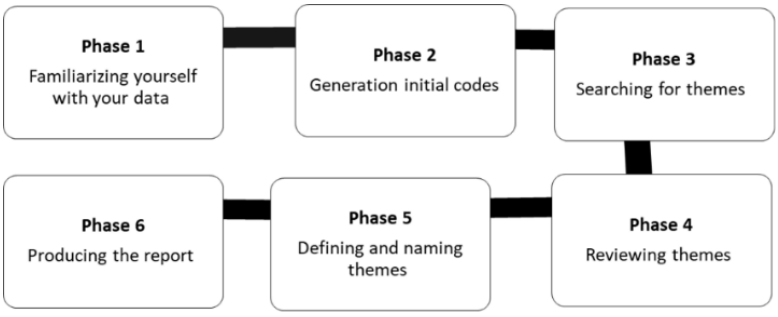

Figure 1: Steps of Thematic Analysis adopted

4. Thematic Analysis and Interpretive Results Discussion

This section centers on a discussion and interpretation of the central theme and sub-theme to demonstrate game designers' perspectives on how they value or distinguish between the term 'game' and 'EGs.' Their views must be theoretically documented to identify the necessary game design elements, features, or factors. The theme emerged from the subjective success and availing the position of game designers, designing games and EGs. It is essential to understand whether what academics and researchers publish about games and EGs aligns with game designers' perspectives. As games provide endless positive possibilities (Russo, 2021), it is critical to adhere to game designers' aspects as the first-end users who play-test the game/EGs. The validity consideration of data analysis towards the authenticity and accuracy throughout the research is achieved through techniques including triangulation (examining with theoretical concepts, investigator, and data triangulation), and peer debriefing, prolonged and persistent engagement with the raw data set to allow critical and clarity throughout the analysis and emergence of themes to be compared.

[1] Kindly note that this paper is part of a larger research project, and due to the limited number of words, the author has reduced the discussion and quotes.

4.1 Central Theme: Game Designers' views about games and Educational Games

To comprehend their beliefs and practice in designing games and EGs, game designers' experiences within their practice were highly valuable to this study. The data analysis suggested that all game designers asserted their understanding of the terms above as *"the big umbrella of games", "EGs are part of games", "some elements of games slide into EGs", and "EGs can be represented through a Venn diagram with games sharing some elements".* Consequently, most game designers (14 out of 17) did not refer/quote any specific published game designing models, frameworks, definitions, or any of the designing principles or methods/approaches. However, three game designer participants asserted that their practice of designing games considers definitions that have been formally published and prominently known in gaming research (Salen & Zimmerman, 2004; Schell, 2008; Suits, 1967).

Firstly, Bernard's definition[2] (Suits, 1967) was mentioned by **[Timothy]**, as he argued that it is 'ablative' in the sense of 'vagueness' and explained: *"it is concerning that it is so vague and can be interpreted differently by any other game designers too!"*. I observed that **[Timothy]** believes in contextualizing multiple game definitions depending on the essentialities of game requirements, and there is a *purpose* to every game concept that needs to be explored in various manners. Similarly, **[Zack]** argued: "maybe because we as game designers do not think of definitions, that is why we have failing games? However, my games have been a hit, and I define games with concepts as I go and not limit to one definition". This quote suggests that the belief of defining games is not appealing as they might feel limited to choices for the designing process.

A second definition was identified in **[Charlie's]** on Zimmerman's (2008) definition: *"I sometimes consider Zimmerman's definition of game is more simplistic. It has some direction and helps me refocus my game idea if I go broad… but other definitions exist, and they match other types of games… not for me, though".* Charlie's emphasis on allowing a refocus reconnects with the formation of purpose through *interaction* and *continuous* experiences – hence, meaningful play occurs between game and players. A third definition noted was Schell's (2008), while highlighting some crucial essential qualities for games, including playing wilfully, having goals, conflicts, rules, and winning and losing. **[Anne]** explained: *"…playing various games makes me remember how those mechanics worked and helped me achieve challenging goals. I find a playful sense through it, and that is what Schell mentions based on experiences, and I believe that is needed in every game!".* **[Anne]** values the experience of playing games as it allows her to connect with the future decisions that will affect her and her players. It also enables her to create new experiences for them after they have completed the game.

It is widely believed that most game designers do not refer to formal knowledge (definitions/published) in their practices. I observed a lack of familiarity with formally published definitions/principles and experience-based and reflective practice in the game designing field. The following section presents an interpretation of game designers' views on *balancing* between games and EGs as they share their experiences aligned with their game designing practices.

4.1.1 Views about games and educational games

This sub-theme is about the beliefs and perspectives of game designers, as they do not have a defined framework or model for describing their views on games and e-learning. Their experiences can influence their decisions when it comes to developing new experiences. Noting the plethora of literature on game designing principles, elements, definitions, and theories, fourteen (14) game designers did not mention any formally published game definition but provided an overall perspective. Additionally, observing practices, real-life choices and decisions in the designing processes were considered by game designers. The *situation* in which they make those decisions relies on their *interactions* (with the game system and within game concepts) being achieved according to the expectations (Dewey, 1938). The discussion below explores the similarities and differences based on game designers' perspectives.

For instance, I observed some commonalities in-game designers' responses. **[Nora]** mentioned: *"EGs are not too different from games because games are fun, overcoming obstacles and sharing experiences. But EGs should have the educational value where goals that needs completion refers to the learning content, I think"*. Similarly,

[2] The definition is, "*to play a game is to engage in activity directed toward bringing about a specific state of affairs, using only means permitted by specific rules, where the means permitted by the rules are more limited in scope than they would be in the absence of the rules, and where the sole reason for accepting such limitation is to make possible such activity*" (Suits, 1967, p.156).

[Terry, Max, Timothy, Raymond, Paige, Blaire, and Tia] suggested that *"fun", "challenges", "immersive", "challenging real-world environment", and "the realistic feel of design"* are crucial for all games, no matter the genre/type. Furthermore, considering the need for the design of EGs to portray realistic events, **[Max]** mentioned, *"the realistic feel through play happens through design"*, **[Raymond]** claimed *"it should not feel fake"*, and **[Paige]** asserted: *"it should be relating to something that exists but only more fictional".*

Playing games can affect engagement levels, including players' emotional and behavioral feelings. Play experiences also reconnect with intrinsic motivation theory (Malone, 1981), which includes fantasy and curiosity. A few game designers emphasized *experience*, such as **[Ross]** who added: *"that the experience of playing games is a takeaway. If learners do not experience that, no game can be educational or successful"*. **[Paige]** mentioned that: *"adding an active experience through the game tasks can help differentiate your role as a player. If the learner explores their roles, they might actively experiment! we want that!"*. On that note, **[James]** mentioned: *"as much fun as possible in-game design helps players experience exciting and curious things…EGs are not designed alongside fun, but they should be!"*. Active experimentation and experiencing the play are highly crucial, and it relatively connects with how players learn or prefer the design communicated through games. Another relevant point with experience was that EGs are somewhat similar to games, where **[Anne]**: "*there is more interactivity, engaging experience with 'educational experience' and not just an entirely fun game*". Here, defining fun is related to the emphasis on educational experience where fun may be derived through a *situation* [classroom] in which it is "richly interpretable" (Koster, 2013, p.38). Because games are defined with rules and limitations surrounding the 'fun element', which needs to be controlled when designing EGs, that becomes an insight for game designers.

As previously published work suggested, teachers desire EGs to "look good and realistic" (Ahmad, 2021). On that note, **[Joel]** emphasized: *"I think the EGs are put in its own category as 'just sh*tty games' that are not made by people trying to make it fun instead…like just 'crafting as a tool' than a fun experience."* Furthermore, **[Max]** stated: "*I think all games teach you something. But, importantly, in-game design, just teaching the player how to play the game and experience fun, is crucial! So, if I know my players' learning process, I design it to grab the fun-bit of learning without the boring-bit of learning*". It can be presumed that the *art of designing* a game depends upon the players' learning acquisition, their play preferences, and how they interact with the games/EGs. Moreover, to avoid boredom, forceful learning in cognitive learning, or how their players can learn and analyze gameplay patterns with extra details around the game world.

It was further observed that participants relied upon their intuition and *prior* play experiences in their practice and suggested another crucial point: creating experiences for the specific audience/players' psychology (cognitive development) seemed to draw a line between games and EGs prominently. I discovered similarities suggested by all game designers as they justified their answers by using players' psychology as the intended audience, age group, or cognitive development levels distinguished when designing EGs. As emphasized by **[Anne]:**

> *..we usually do not agree on a particular definition because we aim our design concepts with game ideas and players' psychology, considering engaging elements like animation that can provide meaningful choices for players/learners to take action and see how it affects the outcome.*

While it is important to adopt strategies geared toward a specific demographic group, it is also challenging to avoid overlaps from learning about the players' psychology. Instead, game designers tend to focus on the design aspects of the game through a well-defined thought process. For instance, **[Warren]** added: "*I always familiarise my understanding of how much players know and what their cognitive development level is… helps me understand how to set goals and learning outcomes in design with constraints*". They also highlighted the confusion regarding the genre mix required for EGs design. **[Terry]** advocated that: "*players love fictional, racing cars, achieving all possible challenges and competing with their friends. But EGs cannot be too fictional but require realistic interface*".

Moreover, **[Charlie]** mentioned: "*EGs need to be fictional, fun, collaborative, and also relate to the learning outcome of what the topic is…*". Considering players' psychology, game designers mentioned that players could recognize gameplays through a pattern recognition understanding of play as they immerse in many gameplays. The pattern recognition and mental conception relevant to cognitive learning seemed prominent in the discussion. The construction of gaming activities is designed in a pattern that allows players to create their

knowledge and reality based on what they experience through the play. Here, referring to the cognitive learning theory, which allows multiple paths of the game world to be exposed and players to create their mental schema (Schell 2008, p.199): *"the game is not the experience – games are simply structures that engender mental models in the mind of the player…"*.

One reasonable conclusion to the point mentioned above is to envision games as the big umbrella and EGs as falling within or a part of it. However, game designers only marginally acknowledge the differences. On this note, **[Ross]** added: "*…for me, EGs are a lot more explicit about what they are trying to get across, but they can certainly be a broad spectrum of games that have educational value"*. Moreover, **[Tia]** also emphasized: "*the learning goal or purpose that needs to be considered in designing EG was a different thing I did… it was difficult because the curriculum requirements are hard to integrate!*". Another relevant explanation is that curriculum requirements are a complex feature, as mentioned by **[Joel]**: "*I feel like most games have to teach as a system, having curriculum is the only difference added into requirement and designing phase*". **[Betty]** emphasized: "*…having fun and educational factors are difficult to work with… my team found it challenging!*". Here, addressing games directly with curriculum seems to be complex, as, despite their practice of designing games, they are still uncertain about how curriculum can be integrated with fun. All game designers in this study emphasized that EGs are designed to achieve a particular learning objective and are not designed for entertainment. For instance, **[Charlie]** asserted that an excellent learning process through play enables the development of play experiences that reflect real-world problems: "*EGs are made for learning outcomes, and it should reflect with real-world problems. That is the main difference*". The *situation* in which they [participants] experience playing relates to their *prior* experience and learning through *interactions* – is interconnected.

Three game designers revealed a clear difference between games and EGs. Their reasoning and justification for their beliefs relied upon: (1) the type of experience the players felt, as **[Tia]** quoted: "*So, it is not focused on the fun aspect, but more on the player experience information that allows a more receptive response to remembering it better*", (2) the productive outcome is combined with fun, and learning acquisition through play, as **[Blaire]** mentioned: *"…players learning outcome is productive for us when they learned and had fun which they remember and return to play the game again!*", and (3) successful learning through fun concepts within the games, as **[Raymond]** suggested: "*they [learners] typically require a significant amount of skill that you learn by playing it. Education means having a clear goal and including 21st-century skills necessary for education within design*". It also depicts that game designers rely on the experiences, unfolding the flow of their learning acquisition with the way players learn such play experiences, revealing tasks or rules in games, an experience designed as *memorable,* and how it is intertwined with *interactions*, *situational* context, and the *continuous* form of the learning process through engaging with the game world.

Understanding games as systems, **[Terry, Max, Timothy, Zack, Paige,** and **Nora]** indicated comparing both terms from a software perspective. Game designers claimed that it is crucial to express the need to have a choice-based design for players and further discussed that deconstructing how the game is designed to ensure it fits the initial criteria, along with the emotional experience desired by the players, is highly sophisticated. For instance, **[Terry]** mentioned: "*I believe that EGs are created with the express intent of delivering information to the player*". In addition, **[Zack]** added:

> *…the initial intention is to give players challenging experiences, and it's a lengthy deconstruction of the game and its criteria. Broadly, games are intended to entertain and evoke a wide array of emotional experiences... so that they [players] can absorb, retain, and use it in other contexts.*

Hence, EGs have standard content delivery expressed through the game design and allow the players to retain the content (information) when they engage with the game in a *situation* (classroom). Additionally, they immerse and connect through interaction and continuous play. Moreover, **[Nora]** defines EGs as software: "*…that has an information payload, and it uses the conventions, appearances, and experiences as the vehicle for delivery of that content and set agenda".* It suggests that it clearly relates to the formation of *purpose* by Dewey (1938) and how it drives their *desire* to *exercise their intelligence* (growth of experiences) through experimentation, and actively participating through *learning by doing* is promoted.

5. Outline of Thematic Analysis Discussion

To conceptualize the discussion, Figure 4 presents features/factors based on game designers' perspectives in Australia. It has recently been argued that games are potentially merging, and it will be more beneficial if

communication through interdisciplinary expertise is exercised (Kultima et al., 2020). Figure 4 represents a Venn diagram highlighting the intersection (co-existences) between digital games and EGs and what needs to be present as the *balance* (as labeled) according to game designers. In addition, it demonstrates that adding the factors from all digital games within the EGs design may provide higher engagement levels for learners. For example, all digital games are fun, fictional, overcome obstacles, provide shareable experiences between players, have challenging goals, and provide an immersive experience of high quality in aesthetics and design. Even so, game designers anticipate that 'players' are gamers (not specifically students or learners), and the *situation* in which players will play the game is not predefined. On the contrary, EGs need what 'all-digital games' have to establish a meaningful play experience: educational values, learning outcomes, clear goals, curriculum, and constraints as set by those curricula, avoiding book-imitation for design and aesthetics, clearly defined purpose, and instructions to allow a 'balance' between fun and learning. Game designers suggested that integrating educational values, goals, or curricula is the most challenging task in designing an EG. It is complex for their understanding to provide a perceptive or informed decision-making process of EG design.

Admittedly, game designers struggle to balance EG design between imaginative and realistic context which they believe is rewarding as players experience the stimulating experience that the game designers design. However, as agreed by (Kalmpourtzis, 2018), I observed a close relationship between *continuity* and *interaction* within the experience to allow the audience's prior experience and building experiences (*growth*) around it through a *continuous* form of play and *interaction* between the player and game (Dewey, 1938).

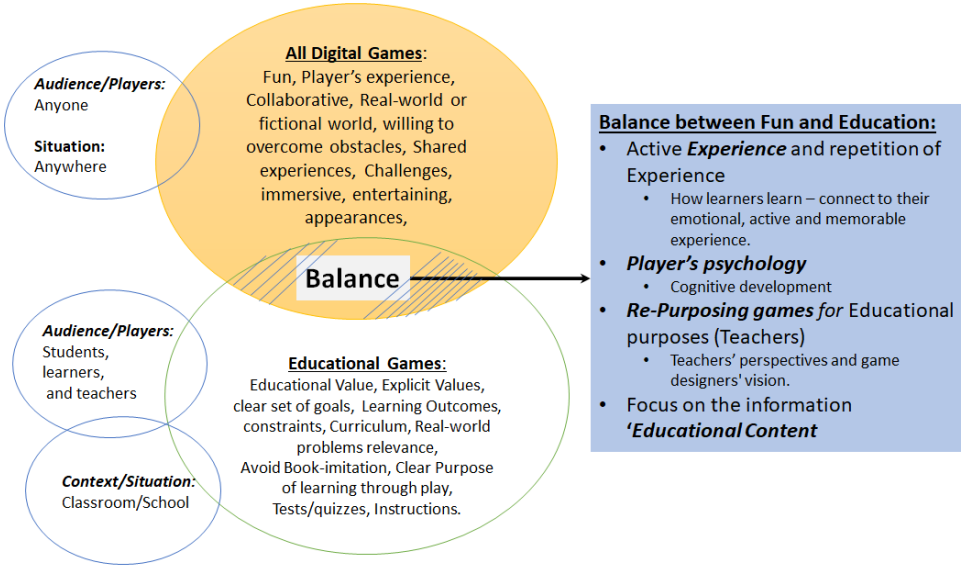

Figure 4: The intersection to demonstrate similarities and differences between games and EGs

6. Conclusion and Future work

To conclude, game designers design EGs based on their prior play experiences with versatile games and EGs. their intuitive and epistemological beliefs interfere with and impact their decision-making processes. The results suggested that game designers' practices of designing games affect their understanding when EGs are considered. Prominently, their understanding of EGs and the balance between fun and educational aspects related to a balance between active experience and repetition of experiences, player's psychology, re-purposing games for educational purposes, and focusing on educational content (curriculum requirements). The results promote a compelling need to empirically and theoretically comprehend the '*essence*' of the perspectives of game designers to decomplex the designing process of games and EGs. Addressing the EGs are subsets of games, and if EGs retain all elements of games, they may have a greater chance of success. Lastly, I observed a gap between research published on EG designing and processes/elements compared with what participants advocated. The researchers in the gaming industry need to be involved in game designers' perspectives to understand the current trends, terms used to address future frameworks/models, and how those might be reachable to the users.

Limitations include a reduction of participants due to the pandemic (2020), the number of words to represent a complete analysis, and the scope of recruitment changes. Furthermore, the data collection procedures began

with the pandemic lockdown (January 2020), which enforced re-examining of the number of participants from an initial number of 40 to 17, as saturation was achieved during analysis. Lastly, the generalization may still apply in the context of Australia and the gaming industry within Australia.

In the future, the remaining emerging themes on game designers' perspectives will be published and continue to close the gap between game designers and their perspectives on designing processes of games and EGs while valuing their experience theoretically and empirically.

References

Ahmad, M. (2021). *Teachers' Contemplation Towards Selecting and Evaluating Games for Classroom.* Paper presented at the European Conference on Games Based Learning.

Appelman, R. (2005). Designing experiential modes: A key focus for immersive learning environments. *TechTrends, 49*(3), 64-74.

Apperley, T. (2008). Video games in Australia. *The Video Game Explosion*.

Athavale, S., & Dalvi, G. (2019). *Strategies for Endogenous Design of Educational Games.* Paper presented at the DiGRA Conference.

Banks, J., & Cunningham, S. (2016). Creative destruction in the Australian video games industry. *Media International Australia, 160*(1), 127-139.

Barab, S., Pettyjohn, P., Gresalfi, M., Volk, C., & Solomou, M. (2012). Game-based curriculum and transformational play: Designing to meaningfully positioning person, content, and context. *Computers & Education, 58*(1), 518-533.

Beavis, C., Dezuanni, M., & O'Mara, J. (2017). *Serious Play: Literacy, learning and digital games*: Taylor & Francis.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Braun, V., & Clarke, V. (2012). Thematic analysis.

de Aguiar, M. P., Winn, B., Cezarotto, M., Battaiola, A. L., & Gomes, P. V. (2018). *Educational digital games: a theoretical framework about design models, learning theories and user experience.* Paper presented at the International Conference of Design, User Experience, and Usability. In: Marcus A., Wang W. (eds) Design, User Experience, and Usability: Theory and Practice. DUXU 2018., USA.

De Castell, S., & Jenson, J. (2007). Digital games for education: When meanings play. *Intermédialités: Histoire et théorie des arts, des lettres et des techniques/Intermediality: History and Theory of the Arts, Literature and Technologies*(9), 113-132.

De Freitas, S. (2018). Are games effective learning tools? A review of educational games. *Journal of Educational Technology & Society, 21*(2), 74-84.

Dewey, J. (1938). *Experience and education: Kappa Delta Pi* (First Touchstrone Edition 1997 ed. Vol. 1998). Rochefeller Center, New York, NY 10020: Touchstone NY.

Flanagan, M. (2009). Critical play. *Radical Game Design, Cambridge*.

Gaver, W. (2002). Designing for homo ludens. *I3 Magazine, 12*(June), 2-6.

Gaydos, M. (2015). Seriously considering design in educational games. *Educational researcher, 44*(9), 478-483.

Kafle, N. P. (2011). Hermeneutic phenomenological research method simplified. 181-200.

Kalmpourtzis, G. (2018). *Educational Game Design Fundamentals: A journey to creating intrinsically motivating learning experiences*. New York: AK Peters/CRC Press.

Keogh, B. (2019). From aggressively formalised to intensely in/formalised: Accounting for a wider range of videogame development practices. *Creative Industries Journal, 12*(1), 14-33.

Keogh, B. (2021). The cultural field of video game production in Australia. *Games and Culture, 16*(1), 116-135.

Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*: Prentice Hall.

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*: FT press.

Koster, R. (2013). *Theory of fun for game design* (R. Roumliotis Ed. 2 ed.). United States of America: O'Reilly Media, Inc.

Kultima, A., Lassheikki, C., Park, S., & Kauppinen, T. (2020). *Designing games as playable concepts: five design values for tiny embedded educational games.* Paper presented at the Proceedings of the 2020 DiGRA International Conference: Play Everywhere, Tampere, Finland.

Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive science, 5*(4), 333-369.

Merleau-Ponty, M., & Smith, C. (1962). *Phenomenology of perception* (Vol. 2012): Routledge London.

Rick, S., & Weber, R. A. (2010). Meaningful learning and transfer of learning in games played repeatedly without feedback. *Games and Economic Behavior, 68*(2), 716-730.

Russo, Toby. (2021). How primary teachers use games to support their teaching of mathematics. *International Electronic Journal of Elementary Education, 13*(4), 407-419. doi:10.26822/iejee.2021.200

Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*: MIT press.

Schell, J. (2008). *The Art of Game Design: A book of lenses.* Burlington, USA: Morgan Kaufman

Shi, Y.-R., & Shih, J.-L. (2015). Game Factors and Game-Based Learning Design Model. *International Journal of Computer Games Technology, 2015*. doi:10.1155/2015/549684

Slussareff, M., Braad, E., Wilkinson, P., & Strååt, B. (2016). Games for learning. In *Entertainment computing and serious games* (pp. 189-211): Springer.

Sotamaa, O., & Svelch, J. (2021). *Game Production Studies*: Amsterdam University Press.

Stenros, J. (2017). The Game Definition Game: A Review. *Games and Culture, 12*, 499-520. doi:10.1177/1555412016655679

Stieler-Hunt, C., & Jones, C. M. (2015). Educators who believe: understanding the enthusiasm of teachers who use digital games in the classroom. *Research in Learning Technology, 23*.

Suits, B. (1967). What is a Game? *Philosophy of science, 34*(2), 148-156.

Swalwell, M. (2012). Questions about the Usefulness of Microcomputers in 1980s Australia. *Media International Australia, 143*(1), 63-77.

Wouters, P., & van Oostendorp, H. (2017). Overview of Instructional Techniques to Facilitate Learning and Motivation of Serious Games. *Instructional Techniques to Facilitate Learning and Motivation of Serious Games*, 1-16. doi:10.1007/978-3-319-39298-1_1

Young, M. F., Slota, S., Cutter, A. B., Jalette, G., Mullin, G., Lai, B., . . . Yukhymenko, M. (2012). Our princess is in another castle: A review of trends in serious gaming for education. *Review of educational research, 82*(1), 61-89.