11th International Conference of the Immersive Learning Research Network
Selected Academic papers for the iLRN Proceedings

DOI: https://doi.org/10.56198/0efasn65

Doctoral Colloquium—Narrative and Soundscapes: Crafting Video Game for the Intersection of Neurodiversity, Gender and Queerness, The Things Left Behind

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Abstract. This doctoral colloquium proposal explores the intersections of neurodiversity, gender, and queerness in video game design, focusing on the development of The Things Left Behind, a narrative-driven Unity 2D game. Despite growing interest in inclusive gaming, research addressing how these interactions shape game design and player experience remains limited. The study addresses two primary research questions: (1) how can the lived experiences of individuals at these intersections inform the creation of authentic video games, and (2) how do neurodiverse individuals interpret and respond to video game music, and what design insights can be drawn from their feedback? Employing qualitative methods, including semi-structured interviews on identity and musical impact, this research aims to refine inclusive game design practices. Preliminary findings suggest themes for fostering empathy, enhancing inclusivity, and representing diverse identities. Ultimately, this project aspires to contribute to the development of video games that are both entertaining and socially transformative.

Keywords: Video Game Design, Neurodiversity, Queerness, Inclusive Representation, Sound Design.

1 Introduction

Video games have been increasingly recognized as powerful platforms for exploring narrative and social commentary, providing distinct opportunities to depict and engage with marginalized communities [1–3]. These interactive mediums combine visual, narrative, and auditory elements to foster empathy and challenge societal norms. Within this context, the neurodiversity movement has shifted perspectives on conditions such as autism, ADHD, and dyslexia, framing them as inherent variations in cognition rather than deficits [4–7]. Gender and queerness, similarly, represent fluid and non-binary identities that question traditional norms of identity and expression. Despite progress in media representation, individuals at the intersection of neurodiversity, gender, and queerness remain largely overlooked in video game design. Their unique experiences offer both challenges and opportunities for creating inclusive digital narratives and gameplay [7, 8]. Research on video games has highlighted their potential to elicit empathy and amplify marginalized perspectives through dynamic, player-driven storylines [9]. However, studies often focus on broader demographic groups or specific cognitive conditions without addressing intersections between neurodiverse and gender-diverse identities. This study builds on foundational work [5] by examining how game design can be informed by lived experiences at these intersections to address this critical gap. ADHD and autism, in particular, were chosen for their prevalence among neurodivergent gamers and the distinct sensory processing patterns they bring to gaming experiences [6, 10].

Additionally, narrative and sound design are also crucial in shaping immersive player experiences and promoting inclusivity [10–12]. However, the specific impacts of game design elements like music and soundscapes on neurodiverse players are underexplored and merit deeper investigation [13, 14]. This study aims to bridge these gaps by integrating empirical data from targeted interviews that explore gender identity, queerness, and sensory experiences related to game audio. The insights gleaned will guide the development of nuanced design strategies that accommodate and celebrate neurodiverse needs, contributing to a more diverse and empathetic gaming culture.

2 Literature Review

2.1 Neurodiversity

The concept of neurodiversity has emerged as a framework advocating for the recognition of conditions like autism, ADHD, and dyslexia as natural variations of the human brain rather than pathologies [4]. This shift challenges the deficit model traditionally applied to neurodivergent individuals, emphasizing that societal structures, not their differences, often create barriers [7, 15]. This perspective has gained traction in advocacy and academic circles, offering an alternative to stigmatizing discourses while promoting cognitive diversity as a valuable asset [16]. Recent research underscores the importance of inclusive design in media, particularly video games, to authentically reflect neurodivergent experiences. Games have the potential to foster empathy and challenge stereotypes by providing representation that acknowledges and celebrates cognitive diversity [17]. Parishani et al. [5] explored the co-design of video games, emphasizing participatory approaches to ensure that neurodivergent voices shape narratives and gameplay, addressing unique sensory and cognitive needs.

Despite progress, gaps remain in representing neurodivergent individuals in media, particularly in video games. Meinen [8] notes that portrayals of conditions like ADHD and dyslexia are often absent or oversimplified, with greater emphasis placed on autism. This selective visibility highlights the need for broader, more nuanced representations of neurodiversity. Additionally, the sensory sensitivities experienced by neurodivergent individuals, such as heightened auditory responses, necessitate thoughtful game design. Research by Ng and Nesbitt [12] suggests that tailored music and soundscapes can enhance accessibility and engagement, providing an opportunity to create more inclusive environments. Addressing these gaps requires intentional efforts to develop video games that authentically represent the diversity of neurodivergent experiences.

2.2 Gender-Diverse Individuals and Queerness

Gender diversity and queerness challenge the binary frameworks of gender and sexuality that dominate much of society. With gender identity increasingly understood as fluid and non-conforming, research highlights how video games can serve as platforms for self-expression and identity exploration for queer and gender-diverse individuals [2, 18]. As interactive and immersive mediums, video games uniquely allow players to experiment with identities and narratives, reflecting the lived experiences of these communities. Despite this potential, the depiction of queer and gender-diverse individuals in gaming remains limited and often conforms to stereotypical representations [3]. Haines [10] critiques mainstream game design for its reliance on reductive portrayals of gender and sexual minorities, which reinforce harmful norms. While queer content is becoming more visible, it frequently lacks depth, reducing queer characters to token roles or side narratives that fail to meaningfully engage with their identities [2].

Gender-diverse individuals, including non-binary and genderqueer players, face additional challenges in seeing their identities authentically reflected in games. Character customization features, while increasingly popular, often fail to accommodate non-binary or gender-fluid experiences, alienating players and limiting their engagement with narratives and communities [19]. Progress, however, is being made. Recent initiatives actively incorporate queer and gender-diverse voices in game design, such as co-design methods used in Parishani et al.'s [5] The Things Left Behind, which empower these communities to shape narratives and gameplay. These participatory approaches integrate authentic experiences, fostering empathy from other players. Additionally, DePass [1] advocates for using diversity consultants in game development to ensure nuanced and stereotype-free representation of gender and queerness.

2.3 Intersectionality of Neurodiversity and Queerness

Intersectionality, conceptualized by Crenshaw [20], examines the interplay of social identities and power dynamics that impact marginalized groups [4]. This framework is critical for understanding how intersecting identities like disability, race, gender, and sexuality shape individual experiences and societal interactions. The neurodiversity movement, advocating for the acceptance of conditions like autism, ADHD, and dyslexia as natural variations of the human condition, aligns with these principles [7, 15, 21]. Despite advancements in advocacy, neurodiverse individuals, particularly those who identify with other marginalized groups, face significant challenges [4, 6, 7]. Barnett [6] introduces the term neuroqueer, fusing neurodiversity with queer identities to challenge societal norms and emphasize the importance of authentic and inclusive portrayals in media, including video game design. Such portrayals can foster broader societal understanding and inclusion.

The representation of neurodiverse characters in media has evolved, depicting them in more empathetic roles across platforms such as films and video games [16, 17]. However, this progress often centers on autism, overlooking other conditions like ADHD and dyslexia, which remain underrepresented or stereotyped [5, 8]. This

gap highlights the need for broader media engagement that more accurately reflects the diversity within neurodiverse communities. Moreover, the intersection of neurodiversity with gender and queerness adds complexity to these portrayals. Research, such as Dias et al.'s [9] study on the video game Neurotype Cafe, demonstrates how games can provide insights into the realities of individuals at these intersections, fostering empathy and understanding. However, portrayals of intersectional identities within the neurodiverse community remain limited. Future media must move beyond predominant neurodiverse conditions and incorporate the varied experiences of individuals with overlapping identities, promoting genuine inclusivity and equity [22].

2.4 Narrative Design in Games for Marginalized Communities

Narrative design in video games can be a powerful tool for authentically representing marginalized communities, including neurodiverse and LGBTQ+ individuals [3, 10, 11]. Scholars such as Parishani et al. [5] and Moutafidou and Bratitsis [23] emphasize the importance of co-design and digital storytelling in empowering these communities by allowing them to shape the narratives themselves. Co-design, as implemented in games like *The Things Left Behind*, ensures that the lived experiences of neurodiverse individuals are authentically reflected, which can challenge stereotypes and foster understanding [5]. Similarly, digital storytelling offers a platform for socially excluded individuals to voice their experiences, aligning with the goals of narrative-driven games designed for marginalized communities [23]. The role of authentic representation is further supported by DePass [1], who advocates for the involvement of diversity consultants to ensure that narratives accurately reflect the complexities of underrepresented identities. These methods collectively highlight the potential of narrative games to not only entertain but also educate and foster empathy.

While progress has been made, there are still significant gaps in how mainstream video games represent intersectional identities, especially concerning queerness and neurodiversity. Haines [10] critiques many mainstream games for relying on narrow, stereotypical portrayals of race, gender, and sexuality, highlighting a need for more nuanced and inclusive representations in narrative design. Shaw and Friesem [3] similarly argue that queer content in games, while becoming more visible, often lacks depth and authenticity, reinforcing the need for richer queer narratives. Additionally, Cabrales [19] notes that despite increasing attention to diversity, marginalized communities, such as neurodiverse individuals, remain underrepresented or poorly portrayed in video games. Moreover, while research into the impact of narrative design on marginalized communities is growing, the specific experiences of neurodiverse players, particularly how they interact with and respond to the narrative content, remain underexplored. Further research could investigate how game narratives can be tailored to enhance immersion and emotional engagement for neurodiverse players, addressing a significant gap in current narrative design practices [5, 24].

2.5 Integrating Sound Design to Enhance Representation in Games

Music and sound design in video games play an essential role in creating immersive experiences that are accessible and engaging for all players, including those with neurodiverse conditions who may experience the game environment differently [12]. The strategic use of sound can significantly influence emotional responses, reinforce narrative elements, and enhance player focus, thereby supporting a more inclusive gaming experience [12, 13]. As the field of artificial intelligence (AI) advances, it offers new possibilities for enhancing game music, potentially transforming how soundscapes are crafted and experienced. Generative music systems can offer a particularly innovative approach by dynamically adjusting music in real-time based on player interactions and game states. This adaptability is crucial for players with sensory sensitivities, as it allows for a personalized auditory experience that can accommodate individual needs and preferences, thus reducing potential sensory overload [14]. Furthermore, the therapeutic potential of music is well-documented, with studies showing that certain musical elements can aid relaxation and improve engagement for players, including those who are neurodiverse [25, 26]. Incorporating such therapeutic soundscapes into game designs can not only enhance the enjoyment and accessibility of games but also support the mental well-being of neurodiverse players [26].

Despite these advancements, research on how specifically tailored sound design impacts neurodiverse individuals, particularly those at the intersection of neurodiversity and queerness, remains sparse. There is a pressing need for more targeted studies that explore how nuanced sound design can contribute to making video games a more inclusive medium for all players [8]. By integrating thoughtful sound design strategies that cater to the diverse sensory experiences of neurodiverse players, game developers can create richer, more engaging, and inclusive gaming environments [8]. This approach not only benefits players with specific sensory preferences but also enriches the gaming community by fostering an environment that values diversity and inclusivity.

3 Research Methods

3.1 Aims of This Project and Study

This project, *The Thing Left Behind*, aims to explore and enhance the representation of marginalized identities within the domain of narrative-driven video games [5], particularly focusing on the intersections of gender, queerness, and neurodiversity. Through immersive and engaging narrative and sound design, the project seeks to create gaming experiences that not only reflect the diverse realities of players but also contribute to broader societal understanding and inclusion. The study is guided by two focused research questions:

- RQ1: How can the lived experiences of individuals at the intersection of gender, queerness, and neurodiversity inform the creation of authentic and inclusive video games?
- RQ2: How do neurodiverse players interpret and respond to video game music, and what design insights can be drawn from their feedback?

3.2 Methodological Framework

This study follows a multi-stage Design-Based Research (DBR) approach as described by Reeves and McKenney [27]. It builds upon previous work [5], which established initial design principles and developed user personas. Previous evaluations highlighted the need to explore how gender, queerness, and neurodiversity intersect, which is the main focus of this ongoing investigation into user needs and experiences. Similar to the work of Nussbaum [28], who used DBR to develop educational games that balance engaging gameplay with curricular content, this study emphasizes iterative design and user feedback to inform and refine game design. Currently, the study is in the second small-scale phase (microcycle) and the first phase (mesocycle) of our ongoing DBR project.

3.3 Materials: *The Things Left Behind* 2D Game

The Things Left Behind is a storytelling video game crafted to enhance empathy and deepen understanding of neurodiverse experiences [5]. The game, created primarily by members of the neurodiverse community using Unity 2D, immerses players in authentic narratives that reflect the varied experiences of neurodiverse individuals. Designed with a warm and inviting "cozy game" aesthetic [29], the game provides a tranquil yet emotionally engaging setting where players face various challenges and make decisions. The fundamental objective of the game is: to educate players and to offer entertainment while actively confronting and reshaping views on neurodiversity.

3.4 Participants

Participants were recruited using purposive [30] and snowball sampling [31] methods, targeting individuals who identify as neurodiverse and have expressed experiences at the intersection of gender, queerness, and gaming. Inclusion criteria required participants to be over 18, fluent in English, and game players. Recruitment strategies included outreach through social media platforms and community forums, ensuring a diverse participant pool. Participant details and demographics are provided in Table 1.

Table 1. Participant Details & Demographics.

Pseudonym	Gender & Sexual Identity	Race/Ethnicity	NeuroIdentity	Involvement
Lavender	Non-binary, Asexual, pansexual, trans	White	Autistic	Gender Identity and Queerness Interviews
Summer	Non-binary Trans, non-binary, butch lesbian	White	ADHD, dyslexia	Gender Identity and Queerness Interviews
Alexis	Female	White	ADHD	Music Impact Interviews
David	Male	White	ADHD, suspected autism	Music Impact Interviews

Oliver	Non-binary	White	Autism spectrum, Depression	Music Impact Interviews

3.5 Data Sources

Two sets of interview data were gathered.

Gender Identity and Queerness Interviews. Separate interviews were held to understand how gender identity and queerness intersect with the participants' gaming experiences. These interviews aimed to uncover how these intersections influence game preferences, experiences, and the perceived inclusivity of game narratives and communities.

Music Impact Interviews. Separate interviews focused on the role and impact of music in games, specifically how different auditory experiences affect neurodiverse gamers. These interviews sought to gather insights into how music can enhance or detract from the gaming experience, particularly for those with sensory sensitivities. Each interview session lasted approximately 45 minutes and was conducted by trained researchers to ensure a supportive and understanding environment. All interviews were audio-recorded and transcribed for detailed analysis.

3.6 Data Analysis

Data analysis was conducted using thematic analysis according to Braun and Clarke's [32] methodological framework, which involves identifying, analyzing, and reporting patterns within the data. The process included iterative phases of coding to meticulously categorize and refine themes. Initially, multiple researchers independently coded the data to ensure reliability. This was followed by collaborative sessions where the team discussed and reconciled differences in interpretation to achieve a consensus on emerging themes.

4 Results

4.1 Results from Interviews on Gender, Queerness, and Neurodiversity

The thematic analysis revealed significant insights into the intersections of gender, queerness, and neurodiversity. Participants described various experiences of marginalization exacerbated by societal misunderstandings [19]. Lavender highlighted the alienation caused by societal expectations around sexualization and gender identity, noting "I think the world in general is not very accommodating for people who are not like neurotypical and able bodied" and "...I sort of came out as non-binary when I met someone else who is also going through that... I've never thought of myself as like female or male, and like, I'm just me". Summer shared frustrations about common misconceptions surrounding queerness, particularly the erroneous belief that their identity is a form of attention-seeking, stating "I think that's one of the bigger ones, that sort of like, that misconception, that's kind of haunted me and made me. That makes me feel defensive around people who aren't in the queer community" and "I think it also relates really strongly to neurodivergent and like these disabilities, but that you're doing it for attention". Both participants emphasized the empowering effect of receiving formal diagnoses [4, 6], which provided them with a deeper understanding of their identities and the challenges they face. This was paralleled by their experiences in community settings where connecting with others who share similar identities facilitated a crucial sense of acceptance and empowerment [6].

Participants also discussed the impact of physical sensory sensitivities on their interactions, with Lavender specifically mentioning discomfort with a touch due to their autism and asexuality: "... with like physical interaction, like, just to like, have a partner that doesn't get upset, that I'm like, I don't want to be touched. I'm sorry I don't want to hug you right now, like I just doesn't feel good. I don't want my face that close to you". These sensory challenges intersect intricately with their queer identities, influencing their social interactions and personal boundaries. Critiques of media representation were common, with both participants advocating for more nuanced portrayals of neurodiverse and queer characters in media [9, 10], particularly in video games. Lavender said, "I would say that the focus needs to be on making them like a full, rounded character, so like their neurodivergence isn't all that they are like. They are neurodivergent, but they're also all these other things like". They stressed that character customization could provide gamers more control over representing their identities, advocating for representations that view neurodivergent and queer identities holistically rather than as defining features. Finally, both acknowledged some societal progress in accepting diverse identities but recognized substantial gaps in truly understanding and accommodating the complexity of their lived experiences [7].

4.2 Results from Interviews on Music in Video Games

The interviews provided insights into how music in video games significantly affects neurodiverse individuals. Participants reported that music serves as a crucial emotional anchor, enhancing the immersive experience of gaming [12]. For instance, David described how the music in *Legend of Zelda: Wind Waker* evoked a strong emotional connection that enhanced his engagement with the game, stating, "the music really made it what it was. When I completed it, I felt like I'd actually done those things". Oliver found the music in *Octopath Traveler* memorable and emotionally stirring, recalling "Whenever I think back to my favorite games I've ever played, the soundtrack is something that helps me retain my memories of it". Music also played a vital role in aiding focus and productivity [33], with Alexis using video game soundtracks like those from *Mario Kart* to enhance concentration while studying, explaining, "for *Mario Kart*, that really keeps me focused. I'll use that music to like study sometimes even just cause it like gets me in the zone." The necessity for customizable sound settings was a recurrent theme, underscoring the need to accommodate neurodiverse players' varying sensory sensitivities. Alexis emphasized the importance of such features, stating, "sometimes I like when I can change the volume of the music without having to change the volume of the sound effects in the game". Furthermore, music was described as a memory anchor that enhances the retention of game narratives and experiences, with recurring themes or leitmotifs reinforcing character and story engagement. The quality of a game's soundtrack was pivotal in determining player retention [13], illustrating that impactful music can compensate for other gameplay deficiencies.

5 Discussion & Conclusion

The insights derived from our interviews not only elucidate the complex intersection between gender, queerness, and neurodiversity but also respond to the research questions concerning the representation of these identities within video games. Participants like Lavender and Summer highlighted persistent stereotyping and a lack of nuanced characters, underscoring an urgent need for more authentic representations [10]. This finding aligns with the literature that accurate media portrayals can significantly influence societal perceptions and self-identification among marginalized groups [19, 24]. The emotional and cognitive engagement experienced by neurodiverse players in response to video game music addresses our second research question and emphasizes the pivotal role of sound design in enriching gameplay immersion [12]. This is particularly pronounced in neurodiverse audiences, who may utilize music not only as a gameplay enhancer but also as a tool for focus and emotional regulation. The findings also suggest that customizing sound settings to accommodate diverse sensory needs can significantly improve accessibility. This corroborates Plut and Pasquier's [14] findings on adaptive sound settings in educational software, advocating for similar adaptive features in video games to accommodate diverse sensory needs [11]. Such enhancements not only promise a richer gaming experience but also exemplify the potential of video games as tools for social change and educational outreach. Considering the gaps identified in current game design and representation, future research should explore the impact of diverse character narratives and inclusive soundscapes on player engagement and empathy. Collaborations between game developers, cultural theorists, and neurodiversity advocates are key to ensuring video games evolve as culturally responsive and technically advanced platforms.

References

1. DePass, T.: Why Authentic Diversity, Consultants and Research Are Needed in Narrative Design. In: The Advanced Game Narrative Toolbox. CRC Press (2019).
2. Phillips, B.R., Amanda: Special Issue -- Queerness and Video Games Not Gay as in Happy: Queer Resistance and Video Games (Introduction). Game Stud. 18, (2018).
3. Shaw, A., Friesem, E.: Where is the queerness in games?: Types of lesbian, bisexual, transgender, and queer content in games. (2016).
4. Botha, M., Gillespie-Lynch, K.: Come as You Are: Examining Autistic Identity Development and the Neurodiversity Movement through an Intersectional Lens. Hum. Dev. 66, 93–112 (2022). https://doi.org/10.1159/000524123
5. Parishani, Z., Glaser, N., Shangman, E. (Li), Whalen, D., AlZoubi, D., Mendoza, K.R., Palmer, H.: Doctoral Colloquium—Challenging Stereotypes Around Neurodiversity Through Co-Design in a 2D Videogame, The Things Left Behind. Immersive Learn. Res. - Acad. 177–184 (2024). https://doi.org/10.56198/U6C0WYMC2
6. Barnett, J.P.: Neuroqueer frontiers: Neurodiversity, gender, and the (a)social self. Sociol. Compass. 18, e13234 (2024). https://doi.org/10.1111/soc4.13234
7. Chapman, R., Carel, H.: Neurodiversity, epistemic injustice, and the good human life. J. Soc. Philos. 53, 614–631 (2022). https://doi.org/10.1111/josp.12456

8. Meinen, L.E.: Share the Experience, Don't Take it: Toward Attunement With Neurodiversity in Videogames. Games Cult. 18, 919–939 (2023). https://doi.org/10.1177/15554120221149538
9. Dias, L., Schneider, B., Bohrer, R.: Neurotype Cafe: A Case Study in Neurodiverse Self-Representation. In: Proceedings of the 19th International Conference on the Foundations of Digital Games. pp. 1–4. Association for Computing Machinery, New York, NY, USA (2024).
10. Haines, C.: Race, Gender, and Sexuality Representation in Contemporary Triple-A Video Game Narratives, http://hdl.handle.net/10919/94573, (2019).
11. Jones, D.: Narrative Reformulated: Storytelling in Videogames. CEA Crit. 70, 20–34 (2008).
12. Ng, P., Nesbitt, K.: Informative sound design in video games. In: Proceedings of The 9th Australasian Conference on Interactive Entertainment: Matters of Life and Death. pp. 1–9. Association for Computing Machinery, New York, NY, USA (2013).
13. Zehnder, S.M., Lipscomb, S.D.: CHAPTER 17 The Role of Music in Video Games. In: Playing Video Games. Routledge (2006).
14. Plut, C., Pasquier, P.: Generative music in video games: State of the art, challenges, and prospects. Entertain. Comput. 33, 100337 (2020). https://doi.org/10.1016/j.entcom.2019.100337
15. Mcgee, M.: Neurodiversity. Contexts. 11, 12–13 (2012). https://doi.org/10.1177/1536504212456175
16. Kapp, S.K. ed: Autistic Community and the Neurodiversity Movement: Stories from the Frontline. Springer Nature (2020).
17. Olson, C.J.: Conclusion: Destigmatizing mental illness and neurodiversity in entertainment media. In: Normalizing Mental Illness and Neurodiversity in Entertainment Media. Routledge (2021).
18. Shaw, A.: Do you identify as a gamer? Gender, race, sexuality, and gamer identity. New Media Soc. 14, 28–44 (2012). https://doi.org/10.1177/1461444811410394
19. Cabrales, E.: Normalizing the Representation of Marginalized Communities (the Physically and/or Mentally Disabled, LGBTQ+), Ethnic Minorities, and People of Colour in Video Games, https://hdl.handle.net/10292/14631, (2021).
20. An Intersectional Critique of Tiers of Scrutiny: Beyond.
21. Bertilsdotter Rosqvist, H., Chown, N., Stenning, A. eds: Neurodiversity Studies: A New Critical Paradigm. Taylor & Francis (2020).
22. Le, L.: "I Am Human, Just Like You": What Intersectional, Neurodivergent Lived Experiences Bring to Accessibility Research, https://arxiv.org/abs/2408.04500v1
23. Moutafidou, A., Bratitsis, T.: Digital storytelling: giving voice to socially excluded people in various contexts. In: Proceedings of the 8th International Conference on Software Development and Technologies for Enhancing Accessibility and Fighting Info-exclusion. pp. 219–226. Association for Computing Machinery, New York, NY, USA (2018).
24. Shaw, A.: Identity, Identification, and Media Representation in Video Game Play: An audience reception study, https://www.proquest.com/docview/858351960/abstract/1FD84A5A64BC4635PQ/1
25. Kilmer, E., Spangler, J., Kilmer, J.: Therapeutically applied Minecraft groups with neurodivergent youth. F1000Research. 12, 216 (2023). https://doi.org/10.12688/f1000research.129090.2
26. Rickson, D.: Music therapy for autistic children – responding to contemporary understandings with new research approaches. In: Arts Therapies in International Practice. Routledge (2021).
27. Reeves, T., McKenney, S.: Design-based research. In: The Sage encyclopedia of educational technology. pp. 189–191. SAGE Publications Inc. (2015).
28. Nussbaum, M.: Educational Games and the Design Based Research Approach. In: 2015 IEEE 15th International Conference on Advanced Learning Technologies. pp. 1–1 (2015).
29. Waszkiewicz, A., Bakun, M.: Towards the aesthetics of cozy video games. J. Gaming Virtual Worlds. 12, 225–240 (2020). https://doi.org/10.1386/jgvw_00017_1
30. Kelley, K., Clark, B., Brown, V., Sitzia, J.: Good practice in the conduct and reporting of survey research. Int. J. Qual. Health Care. 15, 261–266 (2003). https://doi.org/10.1093/intqhc/mzg031
31. Naderifar, M., Goli, H., Ghaljaie, F.: Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research. Strides Dev. Med. Educ. 14, (2017). https://doi.org/10.5812/sdme.67670
32. Braun, V., Clarke, V.: Using thematic analysis in psychology. Qual. Res. Psychol. 3, 77–101 (2006). https://doi.org/10.1191/1478088706qp063oa
33. Kahar, N., Abalos, C.A., Manero, H.N., Mosquera, D.S.R., Gonzales, L.B., Asoy, V., Estrellan, J., Marcell, A.M.: Perceptions of Music and its Effect on the Productivity of Students. ASEAN J. Educ. Res. Technol. 3, 81–92 (2024).