

Information Letter

Building Together: A Gamification Framework for Real-Time Casual Social Interaction Among Generation Z in the Mixed Reality Metaverse

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You are invited to participate in this study.

Background

The rapid development of immersive technologies—particularly Mixed Reality (MR), which seamlessly blends physical and virtual environments—has created new opportunities for social interaction within the Metaverse. MR enables real-time, spontaneous, and embodied communication, making it a promising space for meaningful digital engagement.

Meanwhile, gamification—the application of game-like elements in non-game contexts—has proven to be a powerful method for increasing motivation and engagement in education, workplaces, and digital platforms. Prior studies have shown that game mechanics such as avatars, identity expression, achievement systems, and social collaboration can foster immersive and rewarding interactions in virtual spaces.

However, current Metaverse platforms often focus on Virtual Reality (VR) and game-centric models, offering limited support for organic, casual social interaction. There is also limited research on how these interactions unfold in MR environments, especially among Generation Z—digital natives who value self-expression, instant feedback, and immersive connectivity.

Our study aims to address these gaps by exploring how gamification can enhance Generation Z's social interaction in Mixed Reality environments. To do this, we are developing and testing a new design model—the Affordance-Driven Gamification Framework (ADGF)—to support real-time, casual, and inclusive Metaverse experiences.

We invite you to take part in an experimental prototype experience over the next few weeks (dates to be confirmed) to help us evaluate and refine this gamification framework. The project is supervised by Associate Professor Mohd Fairuz Shiratuddin, Dr Mostafa Hamadi, Dr Joo Yeon Park, and Dr Thao Duong, and has been reviewed to ensure it meets all ethical standards.

Aim of the Study

This study aims to explore how gamification can enhance casual, real-time social interaction among Generation Z users within Mixed Reality (MR) Metaverse environments. Specifically, it investigates which game mechanics—such as avatar identity, gesture-based collaboration, and immersive feedback—can foster deeper engagement and spontaneous connection. To support this, the study introduces and tests the Affordance-Driven Gamification Framework (ADGF), a design model developed to align game elements with the social and technological affordances of MR platforms. Through participant interaction with the De-buff Party MR prototype and subsequent feedback, this research seeks to refine the framework and develop practical design guidelines for socially engaging MR experiences for Generation Z.

What Does Your Participation Involve?

If you choose to participate in this study, you will take part in a supervised, in-person Mixed Reality (MR) experimental session at Murdoch University using a Meta Quest 3/3s headset. You will participate in a four-person group and interact with other participants through De-buff Party, a co-located MR prototype developed as part of this research.

As a participant, you will be asked to:

- Complete a brief online survey (approximately 5 minutes).

You will provide basic demographic information and information about your gaming habits and relevant health conditions that may affect your suitability for immersive visual technologies.

- Attend an introductory briefing (approximately 5–15 minutes).

The researcher will introduce the study procedure, explain how to use the Meta Quest 3/3s headset and MR controls, provide the necessary gameplay instructions, and allow you to become familiar with the interaction method before the experimental activities begin.

- Participate in the De-buff Party MR session (approximately 25–30 minutes).

You will participate with three other participants in a series of structured Mixed Reality activities. During the session, you will interact with virtual objects and other participants, follow gameplay rules, exchange information, make decisions, and work with or respond to other members of the group. The activities are designed to examine how gamification features support social interaction in a shared Mixed Reality environment.

- Participate in a guided focus group discussion (approximately 20–25 minutes).

Immediately after the MR session, you will participate in a guided focus group discussion with the other participants. You will be invited to discuss your experience of the MR activities, including your perceptions of the interactions, game elements, and overall experience. The researcher will facilitate the discussion.

The overall study procedure is expected to take approximately 55–75 minutes.

Inclusion Criteria

To participate in this study, participants must:

- Be between 18 and 28 years old.
- Available in Perth and able to attend Murdoch University campus in person on a weekday.
- Be familiar with VR/MR or another digital environment.
- Be fluent in English to understand instructions and participate in discussions.

Exclusion Criteria

Participants will not be eligible if you:

- Have medical or psychological conditions that could be negatively affected by immersive visual technologies (e.g., epilepsy, severe motion sickness, or visual/vestibular disorders).
- Are under 18 or over 28 years old.
- Are close friends, peers, or in a personal relationship with the investigator.
- Regularly play multiplayer or cooperative games with other potential participants, as this may influence group dynamics and affect the study's outcomes.

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval No. 2026/003).

With your consent, screen recordings will be captured during the Mixed Reality (MR) experience for research purposes. These recordings will only capture on-screen activity within the MR environment and will not include participants' faces, voices, or physical surroundings. All collected data will be securely stored and used solely for the purposes of this study. Your responses and any recorded materials will

remain confidential. Only the research team will have access to the identifiable data, and any publications or presentations will use de-identified information so that you cannot be personally identified.

The guided focus group discussions will be audio recorded to ensure the accuracy of transcription and thematic analysis. Each participant will be assigned a unique pseudonym (e.g., P01, P02, P03) prior to the session, which will be used throughout the discussion and in all subsequent documentation to protect participant identities. Participants will be reminded at the beginning of each session not to disclose personally identifying information such as names, student numbers, workplaces, or contact details.

Audio recordings will be transcribed verbatim by the research team; no external or third-party transcription services will be used. Any identifiable references that may arise incidentally during the session will be replaced with neutral placeholders (e.g., “[name removed]”) during transcription. Once draft transcripts are prepared, participants will be invited to review and verify the accuracy of their own contributions to ensure their views are correctly represented before analysis begins.

The raw audio recordings will be stored securely on encrypted, password-protected University servers and Murdoch University’s OneDrive for Business and will be accessible only to the Chief Investigator and research team. Following completion of transcript checking and verification, the raw audio recordings will be permanently deleted within 30 days and will not form part of the long-term research dataset.

Following transcript verification, the research transcripts will be de-identified by removing or replacing information that could reasonably identify individual participants. The de-identified transcripts, screen-recording annotations, and other derived research data will be stored securely in accordance with Murdoch University’s Research Data Management Policy and retained for a minimum of five years following publication arising from the research.

Given that each session involves four participants, complete anonymity cannot be fully guaranteed, as participants’ voices may be recognisable. To mitigate this risk, transcripts will omit or generalise any contextual details that could inadvertently identify participants. Findings will be reported in aggregate form, and no direct quotations that could reasonably identify an individual will be used.

In addition, screen recordings captured during Mixed Reality (MR) gameplay sessions will be reviewed and annotated for behavioural analysis (e.g., gestures, movements, interactions). These recordings will not include facial images or identifiable voices, as they capture only the in-headset MR environment. The purpose of the screen recordings is to complement verbal data from the focus groups by providing objective behavioural context for how participants interact within the MR environment.

All transcripts, annotations, and de-identified data will be stored securely and handled in full compliance with the Australian *National Statement on Ethical Conduct in Human Research* (NHMRC, 2023) and Murdoch University’s Human Research Ethics Procedures.

In accordance with Murdoch University requirements, de-identified transcripts, screen-recording annotations, and other derived research data will be securely stored on password-protected University systems and retained for a minimum of five years following publication arising from the research. Identifiable administrative records, such as signed consent forms, will be stored securely and separately from the research dataset and managed in accordance with applicable University retention requirements. Raw group audio recordings will not be retained as part of the long-term research dataset and will be permanently deleted within 30 days following completion of transcript checking and verification.

De-identified research data may be retained securely for future research related to immersive technology, gamification, or social interaction design. Any future use of these de-identified data will require approval from a recognised Human Research Ethics Committee and will not include material that could reasonably identify individual participants.

Voluntary Participation and Withdrawal from the Study

Your participation in this study is entirely voluntary. You may choose not to take part or may withdraw from the study at any time without needing to provide a reason. Choosing not to participate or deciding to withdraw will not affect your relationship with Murdoch University or any services or support you receive.



However, the \$50 AUD gift card is provided upon successful completion of the full study procedure; participants who withdraw before completing the full study procedure will not be eligible to receive the gift card.

If you withdraw from the study, individually identifiable data collected specifically from you will be removed from the research dataset where it is reasonably practicable to identify and remove those data. During transcript checking, you may also request corrections, clarifications, or the removal of statements you have made before the transcript is finalised for analysis.

Because the study involves a shared four-person Mixed Reality session and a group discussion, your actions, interactions, or voice may also be captured as part of shared MR screen recordings or group audio recordings involving other participants. It may therefore not always be technically possible to remove only your contribution from a shared recording without also affecting data relating to other participants. Where selective removal is not reasonably practicable, the shared recording will continue to be managed in accordance with the study's approved confidentiality, de-identification, storage, and deletion procedures, and your identifiable contribution will not be used in research outputs.

You will have two weeks after receiving your transcript to review your own contributions and request corrections, clarifications, or the removal of statements you do not wish to be included in the final dataset. Once this review period has ended and the research data have been de-identified and incorporated into the analysis, it may no longer be possible to identify and remove an individual participant's contribution.

Your privacy

Your privacy is very important to us. Your participation in this study and any information will be treated in a confidential manner. Your name and identifying details will not be used in any publication arising out of the research.

Transcript Checking

Once the guided focus group discussions have been transcribed, each participant will be invited to review the transcript of their own contributions. This process, known as transcript checking, allows participants to confirm that their statements have been accurately captured and represented. Each participant will receive a copy of their transcript (identified only by their assigned pseudonym, e.g., P01, P02, P03) via a secure, password-protected file.

Participants will have two weeks to review their transcript and may suggest clarifications, corrections, or request the removal of any statements they do not wish to be included in the final dataset. The research team will incorporate these revisions before data analysis begins. If no response is received within this two-week period, the transcript will be considered accurate and will be included in the analysis.

This procedure ensures that participants have full oversight of their own contributions, that the data accurately reflect their intended meaning, and that all content used in analysis has been voluntarily verified. Transcript checking also supports ethical transparency and participant agency, in line with Murdoch University's Human Research Ethics Procedures and the National Statement on Ethical Conduct in Human Research (NHMRC, 2023).

Possible Benefits

While there may be no direct personal benefit to you from participating in this study, your involvement will contribute to important research on how gamification and Mixed Reality (MR) technologies can support meaningful, casual social interactions among Generation Z users in immersive environments.

By participating, you may:

- Gain firsthand experience with emerging MR technologies and social interaction designs.
- Reflect on your own social preferences and engagement styles in digital environments.
- Contribute valuable feedback that will help shape future MR experiences and gamified platforms in the Metaverse.
- Help researchers and designers develop more inclusive, engaging, and user-centered immersive environments for future generations.
- Gain firsthand experience with Mixed Reality technology using the Meta Quest 3/3s.



Your participation may also support broader advancements in immersive technology, education, and digital social design.

Possible Risks

No risks beyond those ordinarily associated with the use of immersive technologies and participation in group-based research are anticipated. However, if you find that you are becoming distressed or overwhelmed during the Mixed Reality experiences such as due to motion discomfort, sensory overload, or social anxiety, you will be advised to receive support from the university's wellbeing services. Alternatively, we will arrange for you to see a counsellor at no expense to you.

Support is available if you experience any emotional or psychological discomfort:

- **Murdoch University Counselling Service** – Free and confidential support for students.
 - Phone: (08) 9360 1227
 - Email: counselling@murdoch.edu.au
 - Website: www.murdoch.edu.au/counselling

Alternatively, if you prefer to speak with an external service, you may contact:

- **Lifeline** – 13 11 14 (24-hour crisis support and suicide prevention services)
- **Beyond Blue** – 1300 22 4636 (24-hour mental health support line)

You may also request that we connect you with the university's wellbeing team or arrange a counsellor appointment at no expense to you.

Reimbursement

Each participant who successfully completes the full study procedure will receive a \$50 AUD gift card as a token of appreciation for their time and contribution. Participants who withdraw before completing the full study procedure will not be eligible to receive the gift card. The gift cards will be funded from the student investigator's annual research funding provided by Murdoch University.

Questions

If you would like to discuss any aspect of this study, please feel free to contact either Kris Xie via email at Kris.Xie@murdoch.edu.au or Associate Professor Mohd Fairuz Shiratuddin via email at F.Shiratuddin@murdoch.edu.au. Either of us would be happy to discuss any part of the research with you.

Once we have analysed the information from this study, we will email a summary of our findings. You can expect to receive this feedback in 2-3 months.

We would like to thank you in advance for your assistance with this research project. We look forward to hearing from you soon.

If you are happy to participate in the study, please contact Kris via email at Kris.Xie@murdoch.edu.au (Kris Xie) to arrange a suitable time for your participation session.

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2026/003). If you have any reservation or complaint about the ethical conduct of this research, and wish to talk with an independent person, you may contact Murdoch University's Research Ethics & Integrity on Tel. 08 9360 6677 (+61 8 9360 6677 for overseas studies) or e-mail human.ethics@murdoch.edu.au. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.