

Re-imagining Classics: Evaluating the Consistency Modeling Methodology Through Game Development

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ARTICLE INFO

Received: 30 Dec 2024

Revised: 05 Feb 2025

Accepted: 25 Feb 2025

ABSTRACT

UI/UX encompasses essential principles, guidelines, and work flows critical to designing effective digital applications. In video game development, UI (often represented as HUD's) and UX play a pivotal role in shaping player experiences. A well-designed interface prioritizes relevant information, simplifies interactions, and enhances user satisfaction. This paper explores the "consistency modeling" methodology, which leverages established designs as references for crafting new interfaces. To evaluate this approach, we upgraded a classic game and conducted a user survey via Google Forms. The survey assessed in-game experience and satisfaction on a 1–10 scale, yielding a mean rating of 8.35, indicating a positive reception to the redesigned UI/UX.

Keywords: consistency modeling, user interface, user experience.

INTRODUCTION

UI/UX design plays a crucial role in the development of digital products as it directly impacts how users interact with and engage with them. A successful UI/UX design enhances user satisfaction, loyalty, and engagement, which can lead to higher conversion rates and revenue for businesses. While UI design focuses on creating visually appealing, intuitive, and user-friendly interfaces that simplify navigation and interaction, UX design emphasizes the entire user journey, from initial discovery to post-purchase support. Together, these aspects create a seamless and engaging user experience, ensuring the success of digital products [1]. A thoughtful UI/UX design has tangible benefits, such as higher conversion rates, increased customer loyalty, higher recommendation rates, and reduced abandonment rates [2]. Convenience, as a form of user response to good experiences, is one of the most valuable outcomes of well-designed UI/UX [3].

Technological advancements in the past decade have revolutionized game development, particularly in UI and UX design. In games, UI elements such as consistent colors, fonts, icons, and symbols play a crucial role in creating a visually appealing experience, ensuring that players feel immersed and engaged. Similarly, UX focuses on comfort and usability, making players feel at ease while navigating and interacting with the game. A well-designed UI/UX in games not only enhances user satisfaction but also increases loyalty and reduces frustration. In video games, UI is often represented through HUDs (heads-up displays), which are integral to providing essential information to players. Consistent design choices in both UI and UX help deliver extraordinary experiences by adapting to technological innovations and prioritizing usability [4][5].

In video games, the HUD serves as the player's primary interface with the game world, making it a vital component of UI/UX design. A good HUD design prioritizes displaying only the most relevant information, minimizing clutter, and grouping less important elements for better clarity. Developers must carefully craft interfaces to enhance player understanding and provide the intended emotional responses. Visualization plays a significant role in HUD design by improving the perception and recognition of essential data through visual elements, which aids in rapid pattern discovery and effective interaction [7]. If poorly designed, a HUD can fail to engage users, leading to a negative

perception of the game. Therefore, focusing on simplicity, usability, and responsiveness in HUD design is critical to delivering a seamless and enjoyable gaming experience [6][8][9][10][11].

This paper builds upon the classic game "Ball Breakout" by creating an upgraded version called "Sumasshu" using the Consistency Modeling methodology[14]. Consistency Modeling is a design approach that develops user interfaces and experiences by identifying and leveraging patterns from existing digital products. These patterns include foundational elements such as layouts, behaviors, fonts, icons, and color palettes, which are adapted and refined to align with the specific requirements of the new product. This methodology serves as an alternative to traditional prototyping approaches, eliminating the need for preliminary surveys or A/B testing. Designers can begin by analyzing patterns in current software and using them as a foundation for creating customized designs.

To apply this approach, the author first analyzed the original game, identifying areas for improvement such as outdated gameplay mechanics, an uninspired user interface, simplistic design, lack of engaging music, and limited immersivity. Drawing inspiration from modern games with substantial user bases—such as Honkai Star Rail, Genshin Impact[12][13]. The author examined their advanced designs to inform the upgraded game's user interface and user experience. By prioritizing minimalistic design, simplicity, responsiveness and effective feedback mechanisms, comprehensive interface documents were created to guide the development of the new version.

INTERFACE DOCUMENT

A. Information HUD

Figure 1 illustrates the Mode Select interface, left side of the screen displays a list of game modes, with the HUD dynamically updating upon selection. The right side showcases corresponding stages, each offering unique environments and enemy types for varied gameplay. A tutorial feature guides users through the HUD, highlighting key elements like game modes, stages, detailed mode information, stage effects, and the continue button, ensuring clarity and ease of navigation. Maintaining the integrity of the Specifications.

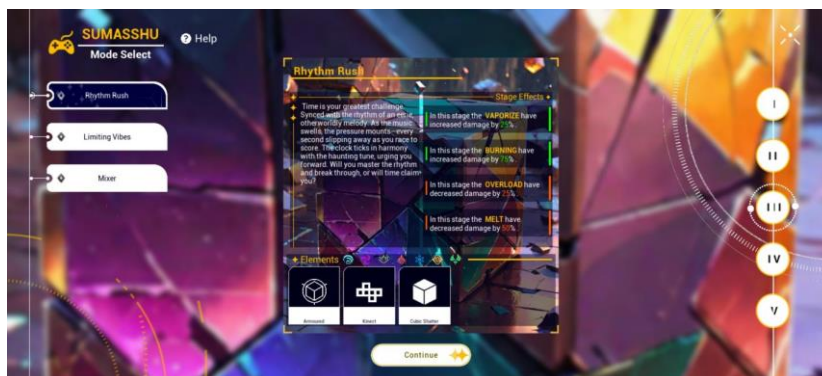


Figure 1(a) - Mode Select (main)

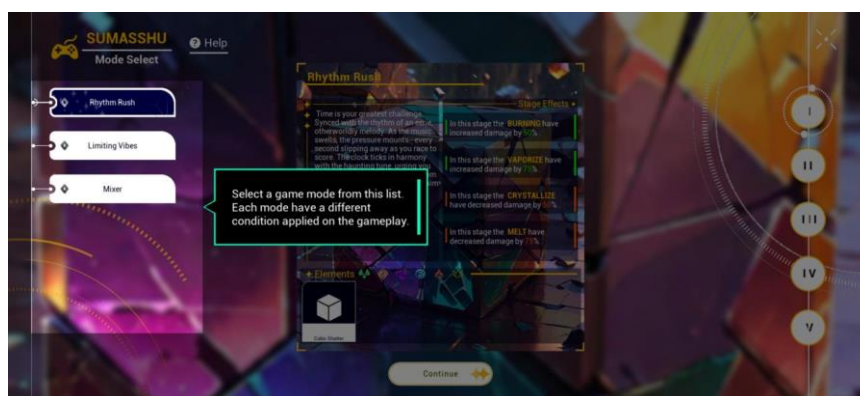


Figure 1(b) - Mode Select (Tutorial Slide -1)

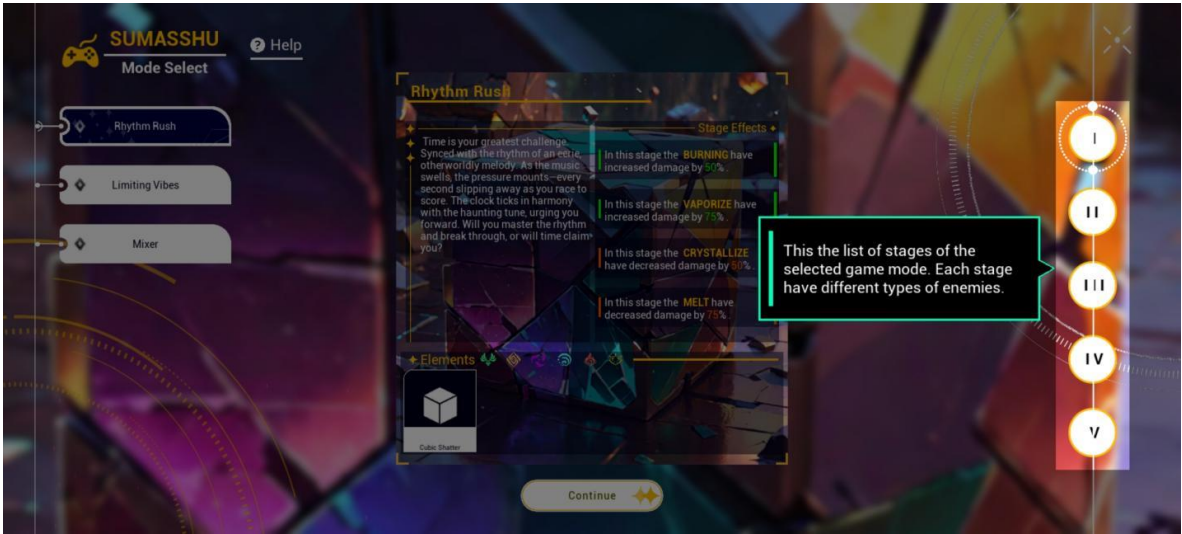


Figure 1(c) - Mode Select (Tutorial Slide - 2)

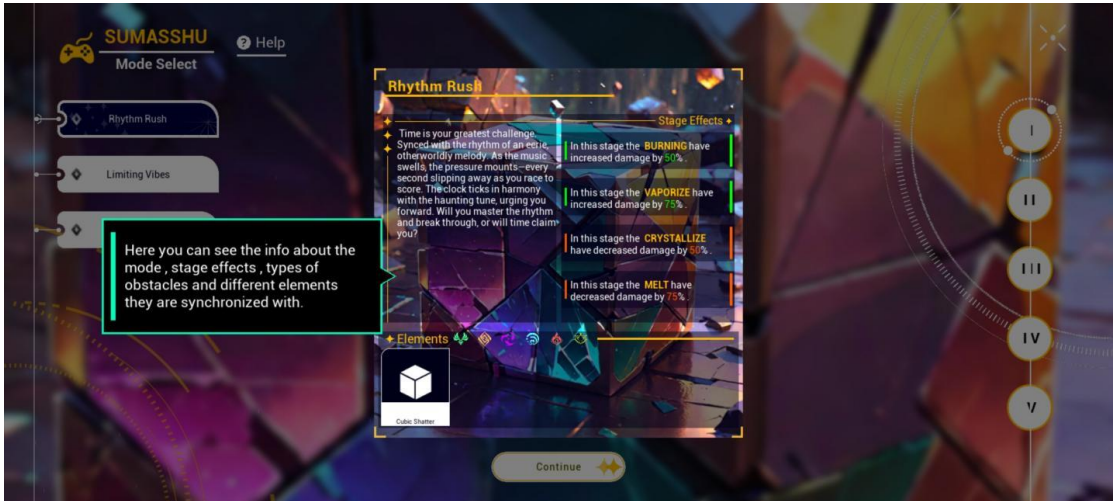


Figure 1(d) - Mode Select (Tutorial Slide - 3)

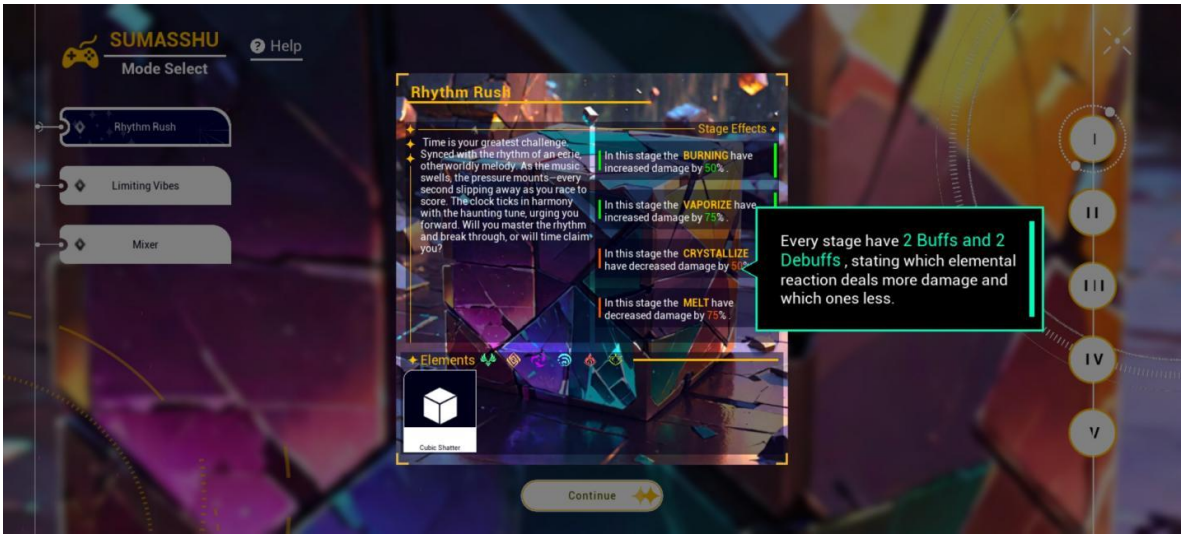


Figure 1(e) - Mode Select (Tutorial Slide - 4)

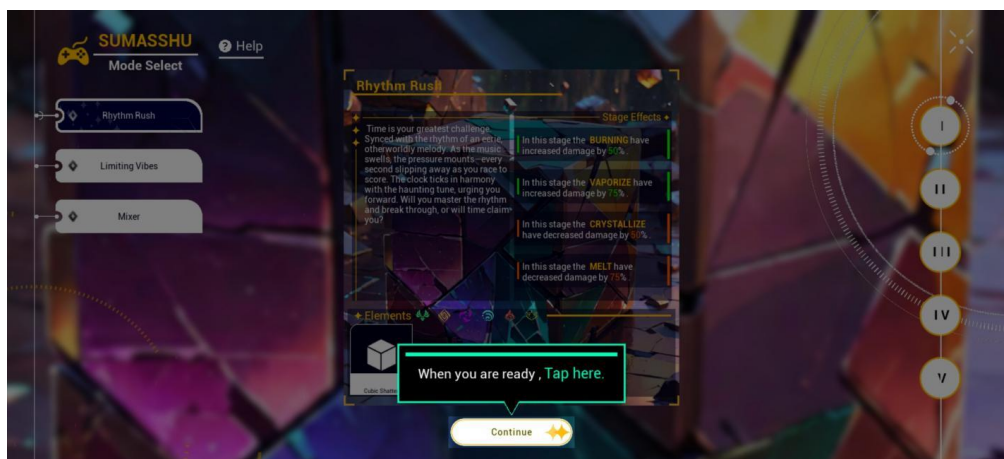


Figure 1(f) - Mode Select (Tutorial Slide - 5)

Figure 2 illustrates the Mode Info interface, designed with a layout similar to the Mode Select screen. The left panel displays a 3D obstacle mesh and a reference list of obstacles, while the right panel provides a mini-window detailing the selected obstacle, stage effects, and customization options. At the bottom, the Assignment HUD outlines the game mode objective. A Help button in the top-right corner offers a tutorial that guides users through the interface, highlighting key elements like the obstacles list, mini-window, and start button, with concise descriptions of their functions.



Figure 2(a) - Mode Info (Enemy Info Window)



Figure 2(b) - Mode Info (Stage Effects Window)



Figure 2(c) - Mode Info (Select Elements Window)



Figure 2(d) - Mode Info (Tutorial Slide - 1)

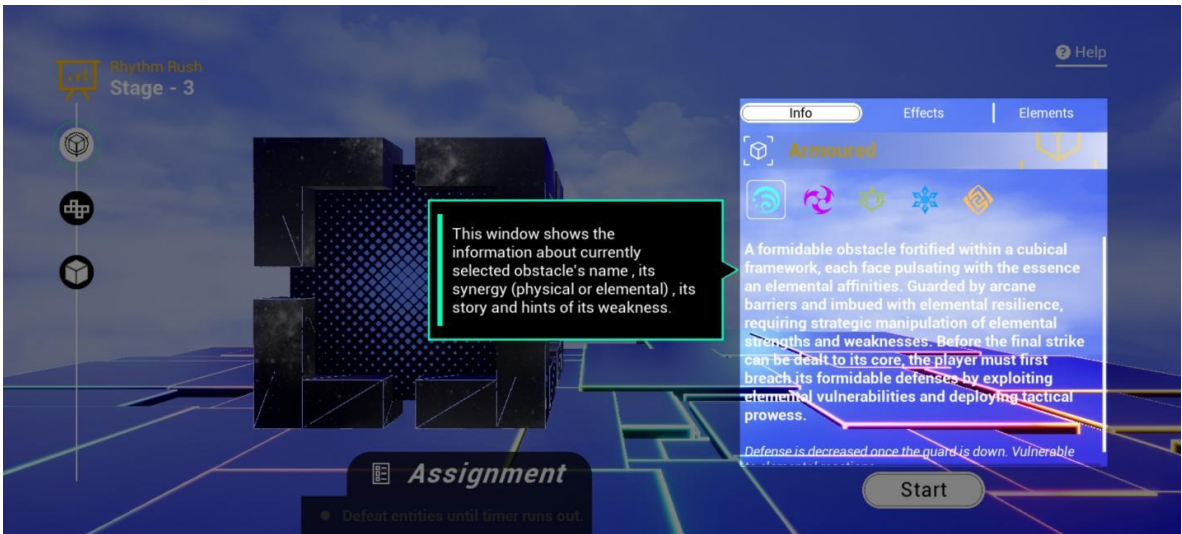


Figure 2(e) - Mode Info (Tutorial Slide - 2)

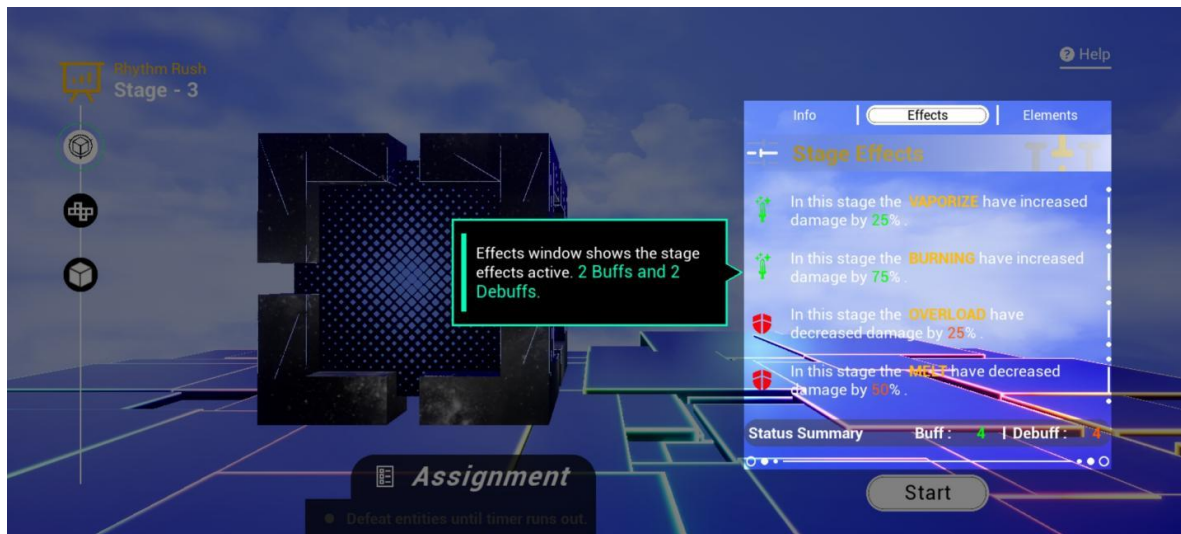


Figure 2(f) - Mode Info (Tutorial Slide - 3)

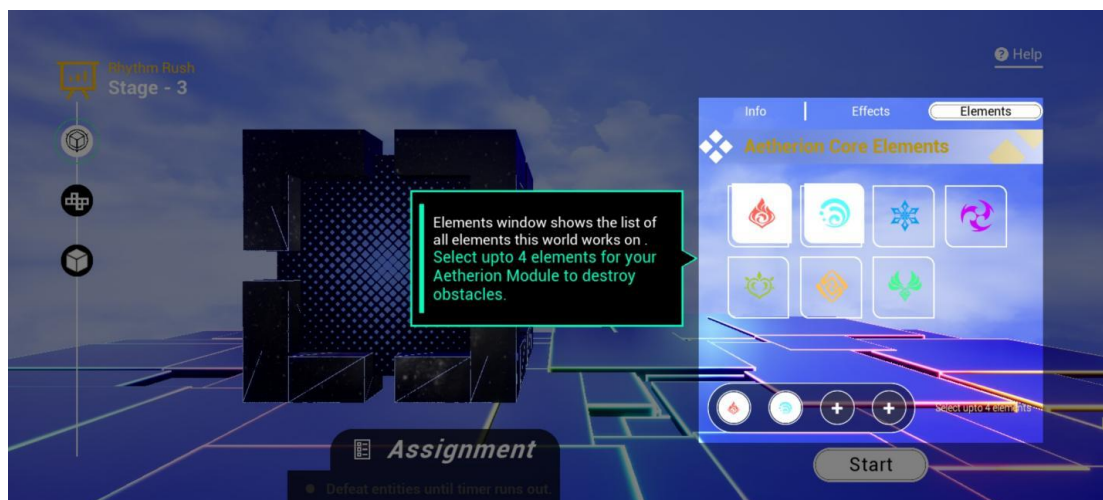


Figure 2(g) - Mode Info (Tutorial Slide - 4)



Figure 2(h) - Mode Info (Tutorial Slide - 5)

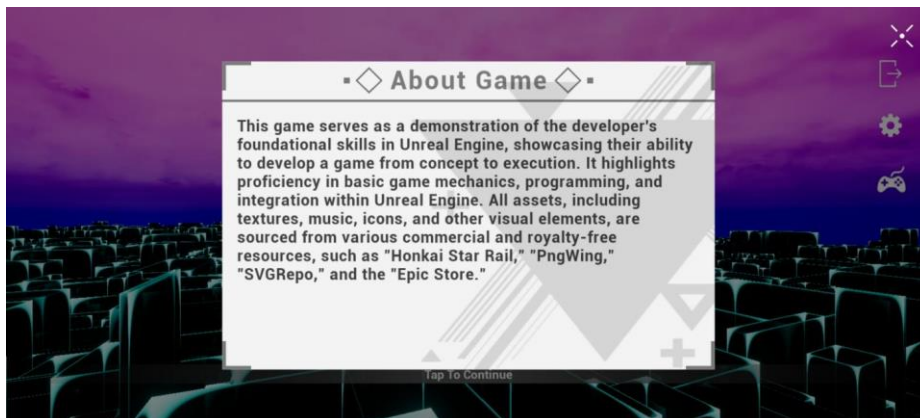


Figure 3 - About the Game

The HUD in Figure 3 conveys key information about the game, including the developer's motivations, asset sources, and the technologies used, along with explanations of their functions.

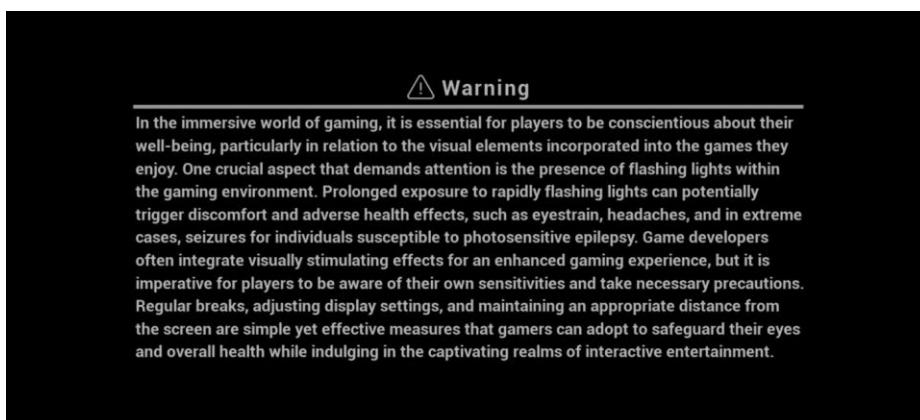


Figure 4 - Warning

The HUD in Figure 4 is designed to encourage users to limit their gaming sessions, promoting healthier habits. It appears at the start of each game launch.

B. Gameplay HUD

The gameplay HUD (figure 5) offers a structured layout for the user's session. The bottom-left displays the selected elements, while the bottom-right features a projectile launch button and count, based on the game mode. The top-right contains pause and help buttons, and the top-center shows a mode-specific timer. A gameplay tutorial guides users through the HUD and mechanics, highlighting key sections like the timer, projectile count, and elements list.

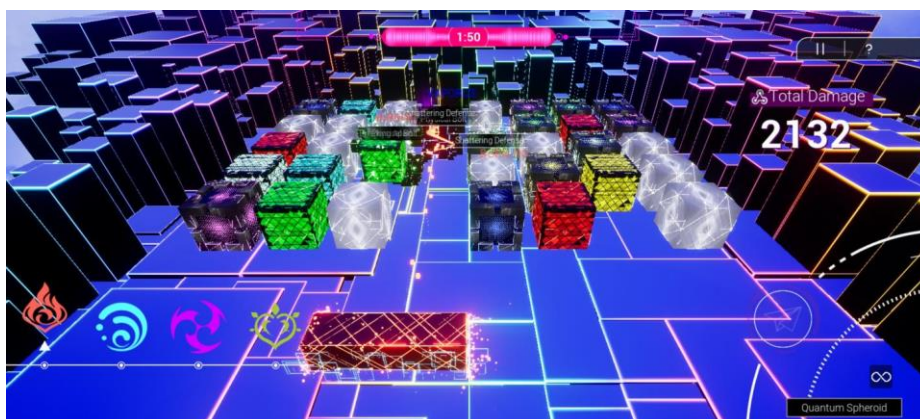


Figure 5(a) - Gameplay (main)



Figure 5(b) - Gameplay (Tutorial Slide - 1)



Figure 5(c) - Gameplay (Tutorial Slide - 2)

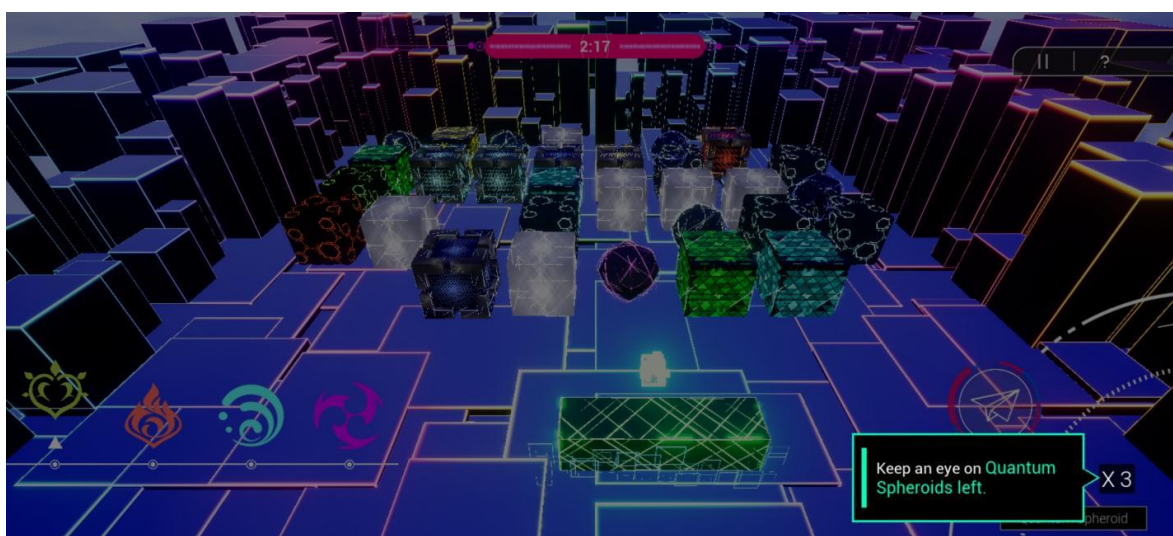


Figure 5(d) - Gameplay (Tutorial Slide - 3)



Figure 5(e) - Gameplay (Tutorial Slide - 4)

C. Settings HUD

This settings panel (figure 6) is displayed upon game launch, providing configuration options such as enable vibration, show tutorial, motion sensitivity, audio parameters, and UI border offset. These settings were determined by the developer during the game's creation.

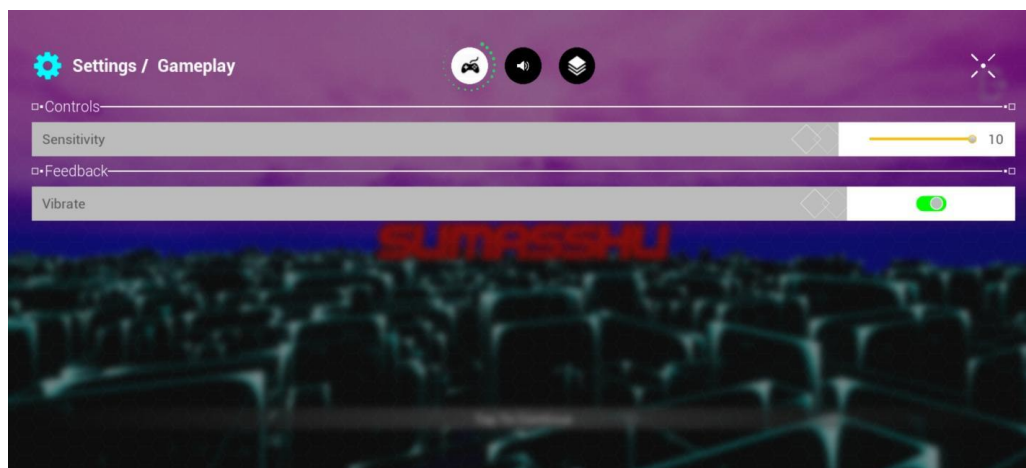


Figure 6(a) - Settings (Gameplay Window)

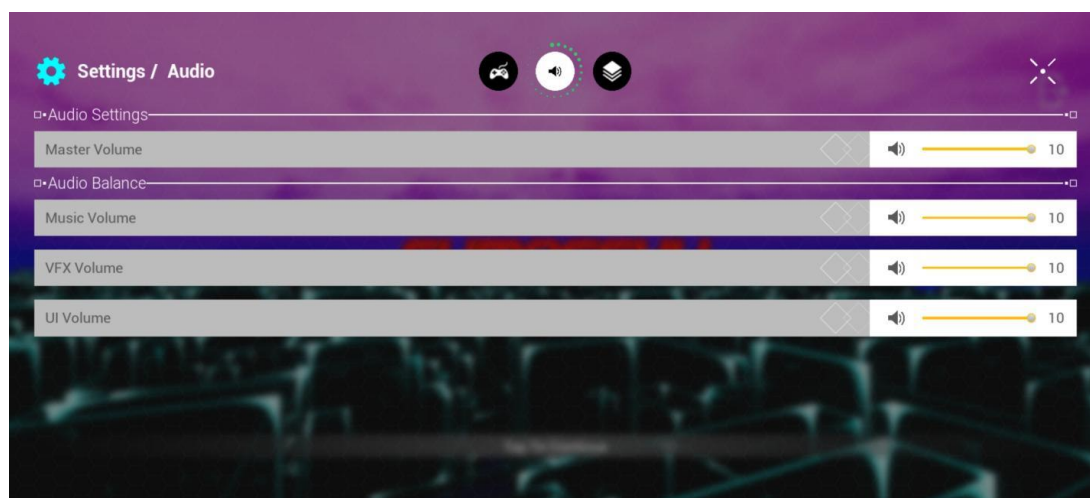


Figure 6(b) - Settings (Audio Window)



Figure 6(c) - Settings (Others Window)

D. Game Pause HUD

The game pause HUD features a user-friendly interface with buttons on the left side for quick access to options such as Stage Effects, Audio, Show Tutorial, Motion Sensitivity, Reaction Chart, and Enable Haptic Feedback, as shown in figure 7.



Figure 7(a) - Game Pause (Stage Effects Window)



Figure 7(b) - Game Pause (Audio Window)

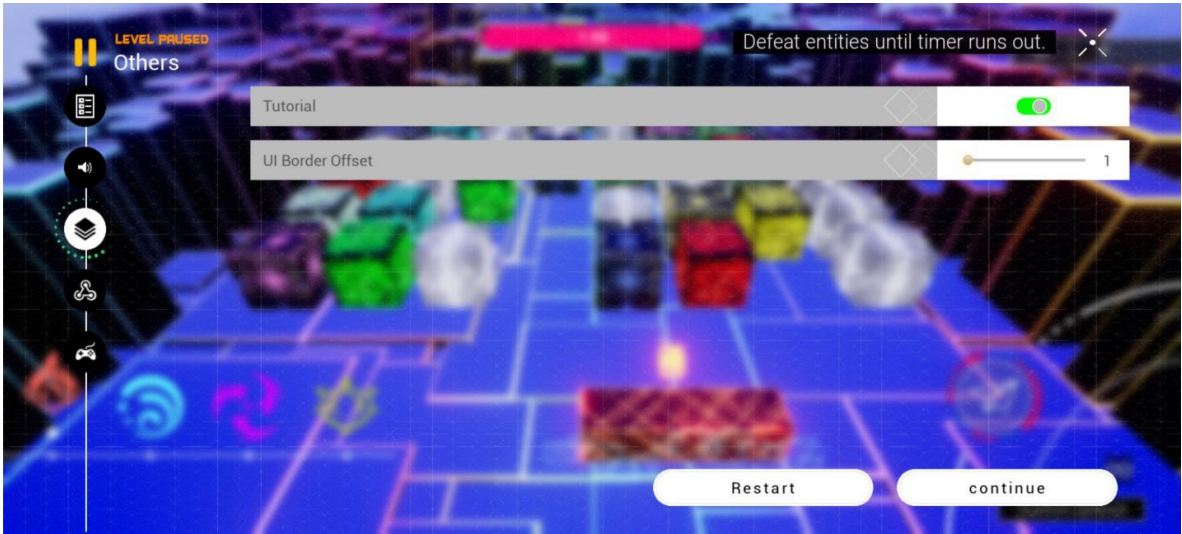


Figure 7 (c) - Game Pause (Others Window)

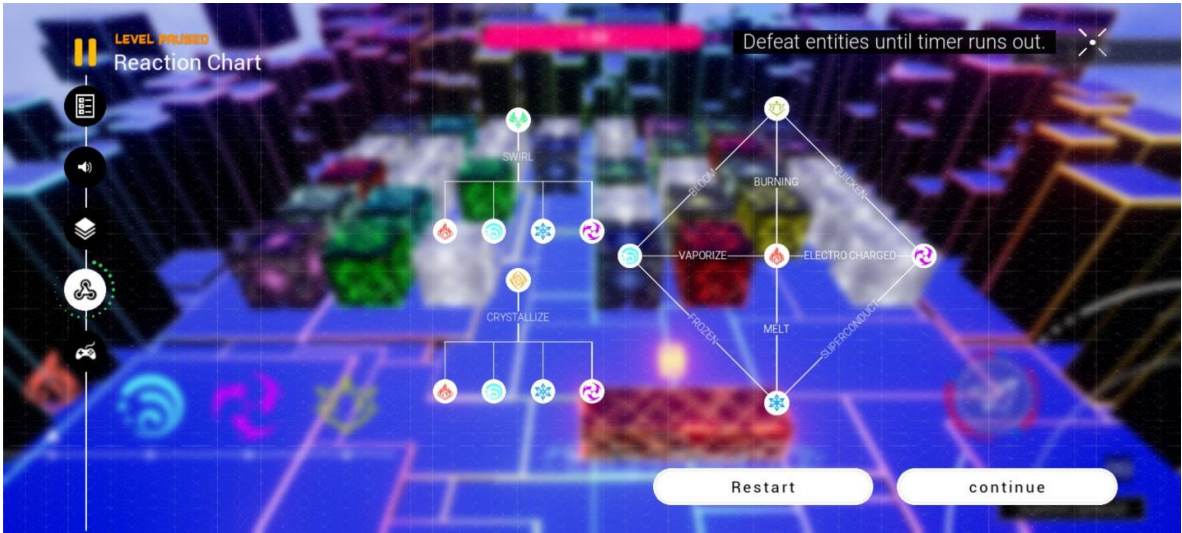


Figure 7(d) - Game Pause (Reaction Chart Window)



Figure 7(e) - Game Pause (Gameplay Window)



Figure 7(f) - Game Pause (Restart Warning Modal)

E. Score HUD

The score finalization HUD (figure 8) informs the user that the challenge has ended and that their score is being calculated. It also features displays for the best score, new records, and the user's current score, depending on the conditions. At the bottom of the screen, a set of buttons is provided, allowing the user to select another game mode, replay the current session, or proceed to the next stage if available.

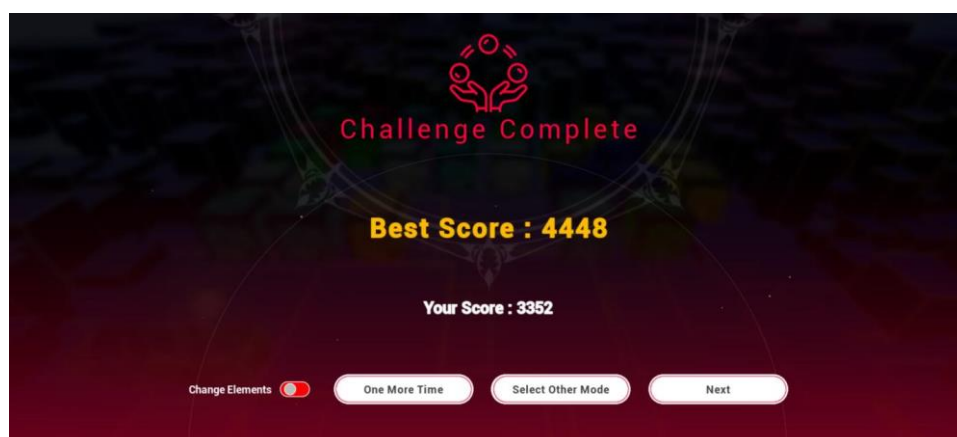


Figure 8 - Score Finalization

F. Other HUD

Figure 9 illustrates the Home Level HUD, displayed immediately after the Warning HUD. The top-right corner features buttons for Quitting, Settings, and About the Game.



Figure 9 - Home

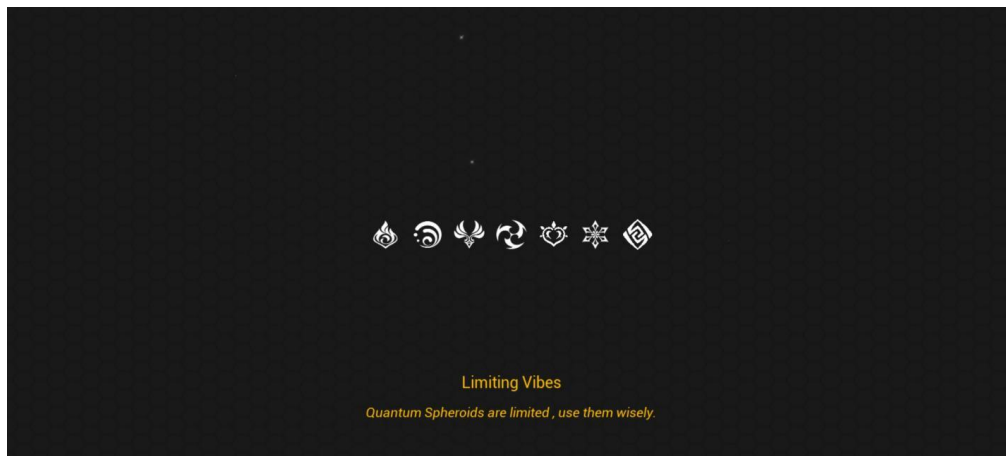


Figure 10 - Loading

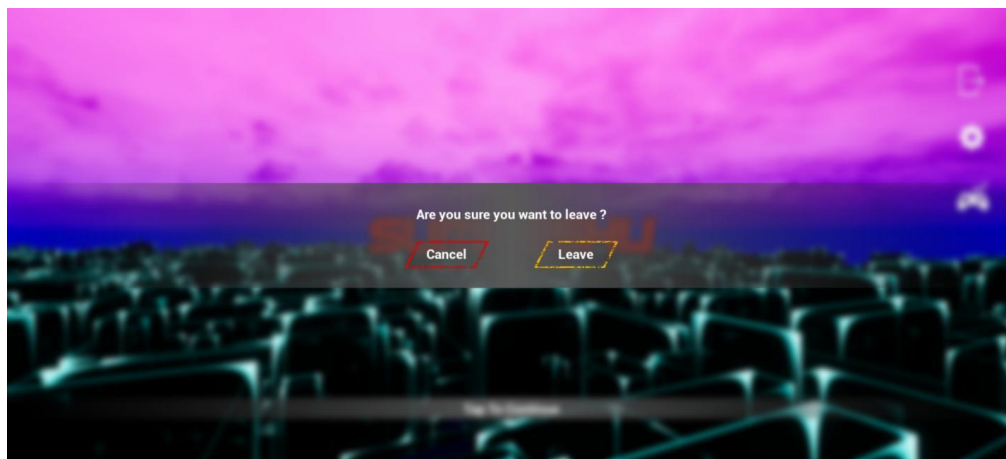


Figure 11 - Exit

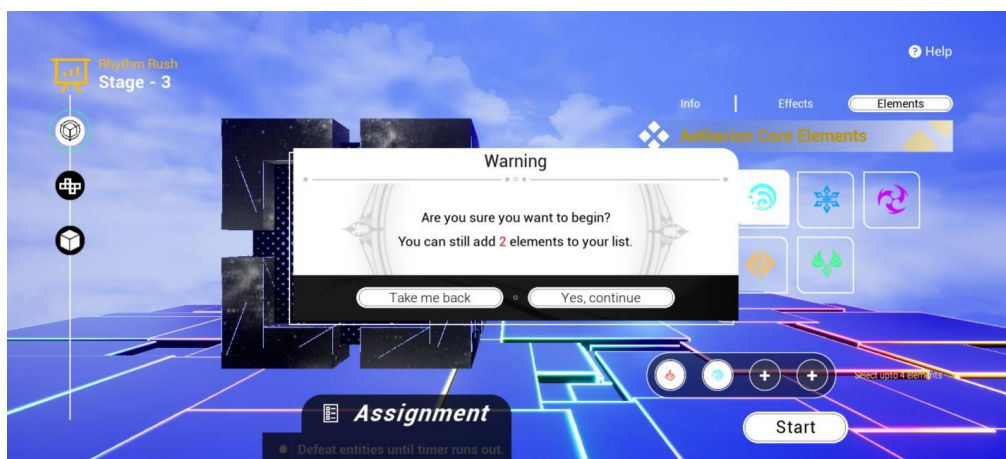


Figure 12 - Elements Warning

The loading HUD (figure 10) displays loading of the selected game mode progress and allows players to tap anywhere for developer messages, including tips, hints and relevant information. Figure 11 depicts the Quit HUD displayed when the user presses the back button on their device. Figure 12 illustrates a special HUD that appears when a user selects fewer than four elements for their player, prompting them to confirm their choice or select additional elements.

RESULT AND DISCUSSION

A survey was developed to collect data on players' in-game experiences, featuring Likert scale questions ranging from 1–5, 1–3 and 1–10. These questions were designed to assess various aspects of the game, including design, aesthetics, player engagement, and challenge.

Responses were gathered from 30 participants and categorized based on their answer to the question, "Have you played the game?" Of these, 23 individuals had played the upgraded version of the game, while 7 provided feedback based solely on screenshots. To ensure accurate analysis, the focus was placed on the responses from the 23 participants who directly engaged with the upgraded version.

Further segmentation of the data occurred based on the question, "Have you played the classic version of the game?" Among the 23 respondents, 17 had prior experience with the classic version, while 6 had not. The analysis primarily focused on the responses from the 17 individuals with prior experience, enabling a deeper examination of the impact of the upgraded version.

Likert scales were used to assess various aspects of the game, including its design and aesthetics, engagement elements, in-game challenges, and overall user experience.

The survey collected valuable data on players' perspectives regarding the key elements that contribute to making a game engaging. Respondents identified a range of factors, including immersion, story narration, gameplay mechanics, HUD design, engaging content, music, visual effects, short playtime, level design, and brief puzzles. These aspects represent essential areas of focus for developers seeking to establish a successful presence in the industry.

The survey consists of multiple questions, including those designed to gather insights into users' experiences. The specific experience-related questions are outlined below.

1. Is the design easy to understand ?
2. How easy was the concept of gameplay to understand?
3. Is the tutorial feature helpful?
4. How would you rate design and aesthetics of upgraded version?
5. How would you feel upgraded version compared to classic version in terms of keeping you engaged?
6. Do you feel upgraded version is more challenging than original one?
7. How would you rate the overall UI/UX design?
8. What specific UI element contribute to positive gaming experience?
9. Which specific feature do you believe enhances engagement?

A.Question 1 - Is the design easy to understand ?

The players were asked to evaluate the ease of understanding the design through the survey question. Among the 17 respondents, 100% confirmed that the design of the upgraded version was easy to understand.

B.Question 2 - How easy was the concept of gameplay to understand?

Players were asked to evaluate the clarity of the gameplay. Among the 17 respondents, 82.35% indicated that they could understand the gameplay at a glance through the user interface, while 17.64% required guidance from the tutorial feature.

C.Question 3 - Is the tutorial feature helpful?

The players were asked to evaluate the helpfulness of the tutorial feature. Among the 17 respondents, 100% affirmed its usefulness.

D.Question 4 -How would you rate design and aesthetics of upgraded version?

The players were asked to rate the design and aesthetics of the game. On a 3-point scale, where 1 represents "Average," 2 indicates "Good," and 3 signifies "Excellent," 47% of the 17 respondents rated the aesthetics and design as "Excellent," while the remaining 53% rated them as "Good" as shown in figure 13. The calculated mean rating for the design and aesthetics is found to be 2.5.

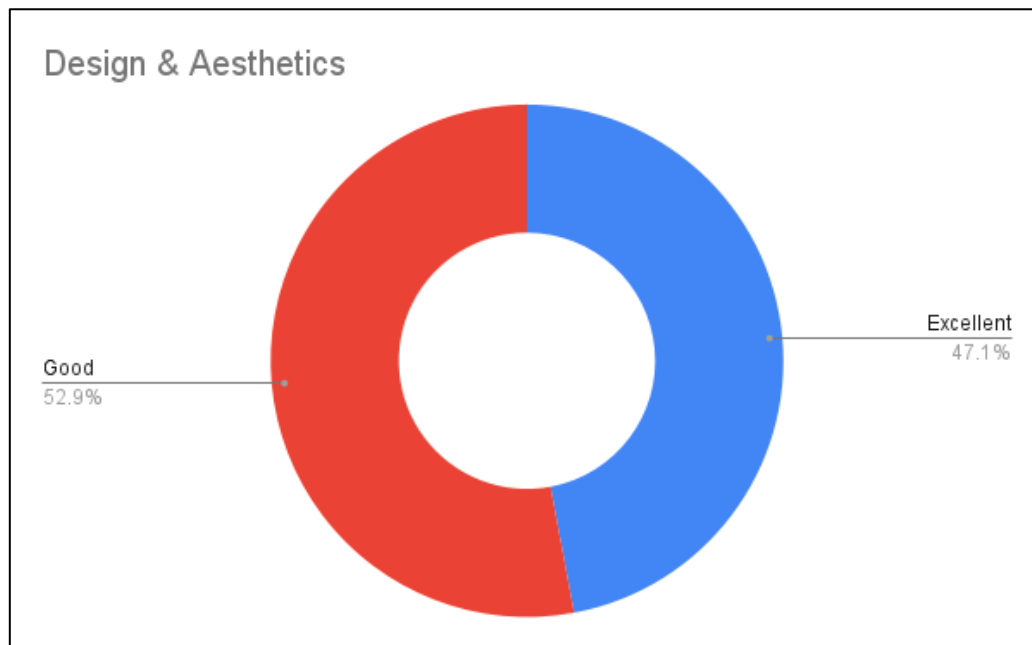


Figure 13 - Design & Aesthetics

E.Question 5 - How would you feel upgraded version compared to classic version in terms of keeping you engaged?

Figure 14 illustrates the engagement ratings, measured on a scale from 1 to 5, where 1 represents "Very Less Engaging," 2 indicates "Less Engaging," 3 signifies "About the Same," 4 corresponds to "Slightly More Engaging," and 5 denotes "Very Much Engaging." Selected 17 respondents feedback says, 29.4% rated the experience as 5, 47% as 4, and 23.5% as 3. The mean engagement rating is found to be 4.

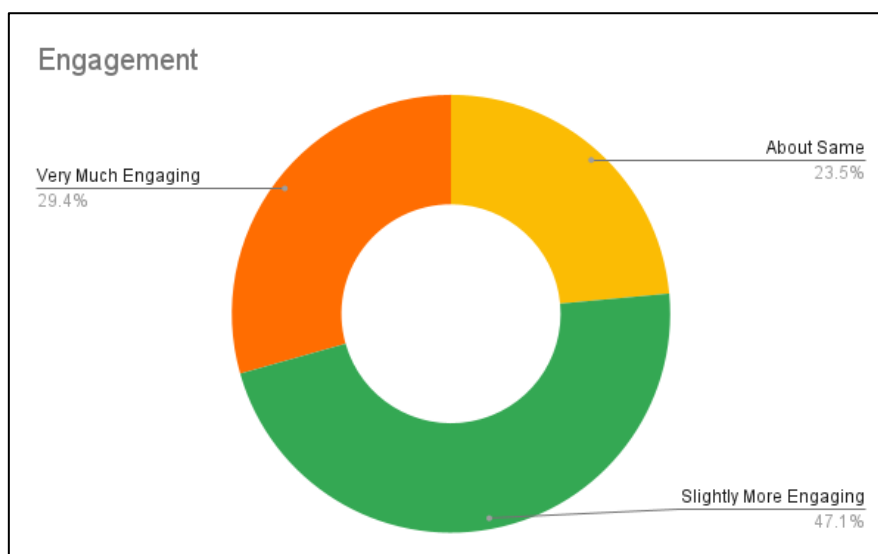


Figure 14 - Engagement Rating

F.Question 6 - Do you feel upgraded version is more challenging than original one?

Figure 15 illustrates the challenge ratings, measured on a scale from 1 to 5, where 1 indicates "Much Less Challenging," 2 denotes "Slightly Less Challenging," 3 represents "About the Same," 4 corresponds to "Slightly More Challenging," and 5 signifies "Very Much Challenging." A total of 17 respondents provided feedback. Of these, 17.6% rated the challenge as 5, 64.7% rated it as 4, 11.7% rated it as 3, and 5.88% rated it as 2. The mean difficulty rating is found to be 4.

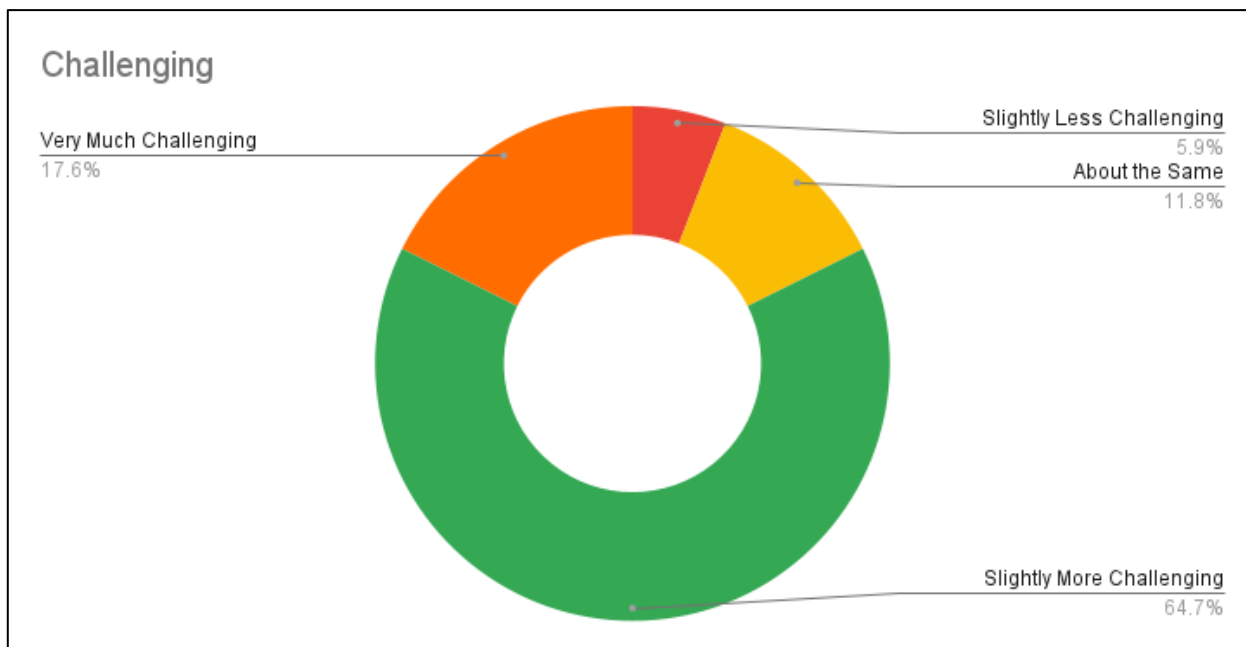


Figure 15 - Game Difficulty Rating

G.Question 7 - How would you rate the overall UI/UX design?

Figure 16 illustrates the overall design and user experience ratings, measured on a scale from 1 to 10. Among the selected 17 respondents, 17.6% assigned a rating of 10, 11.7% gave a rating of 9, 58.8% rated it as 8, and 11.7% scored it as 7. The mean rating is found to be 8.

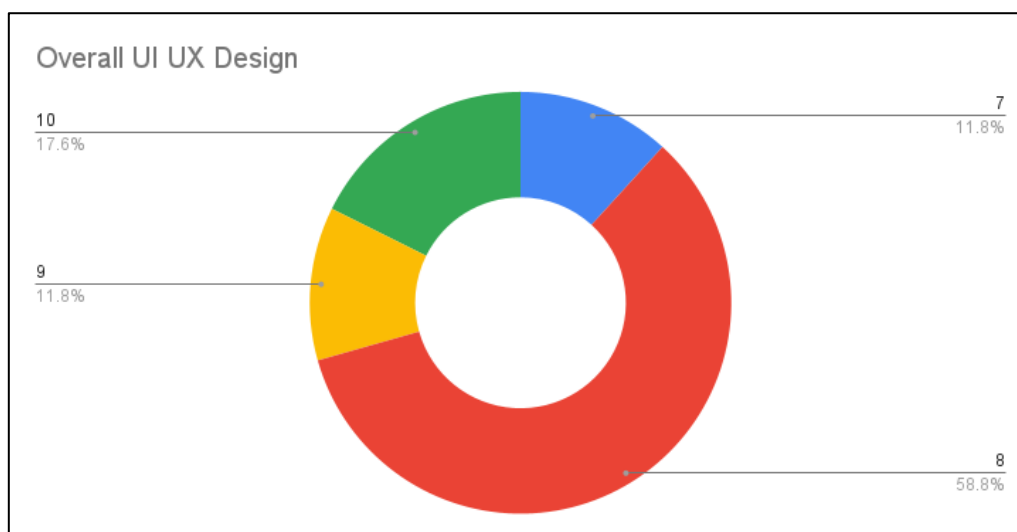


Figure 16 - Overall UI/UX Design Rating

H.Question 8 - What specific UI element contribute to positive gaming experience?

Figure 17 presents survey data on specific UI elements contributing to the overall user experience. Participants could select multiple elements, revealing that 35.3% highlighted menu navigation, 41.2% emphasized graphics, 53% chose animations, 47% valued user-friendly controls, 35.2% selected music, and 5.8% expressed uncertainty or no preference.

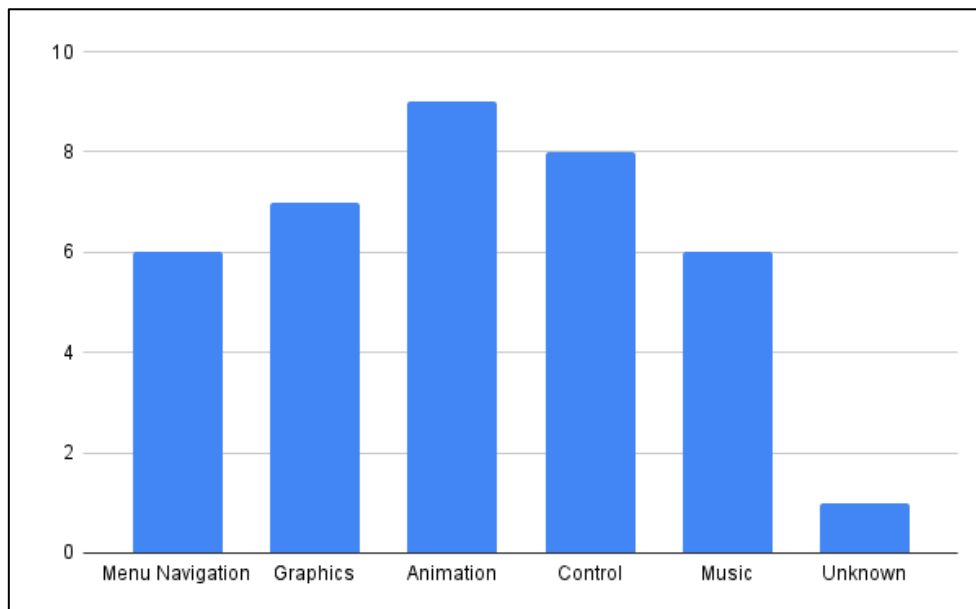


Figure 17 - UI Element Contribution to Positive Experience

I.Question 9 - Which specific feature do you believe enhances engagement?

Figure 18 presents the results of a multiple-choice survey where respondents selected the features they believe contribute to player engagement. The findings revealed that 53% appreciated the new gameplay, challenges, and short completion time; 47% favored the music; 35.3% valued the visual effects; 29.4% highlighted haptic feedback; and 23.5% showed interest in motion controls.

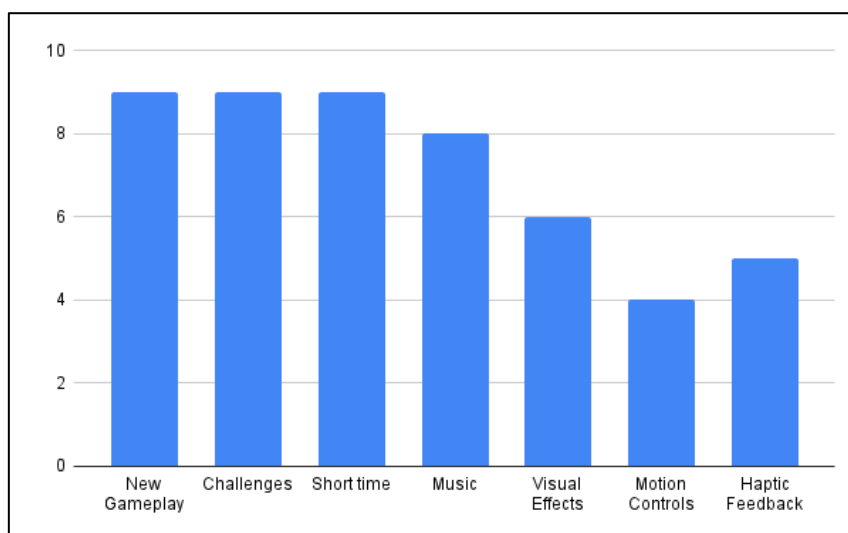


Figure 18 - Game Feature Contributing to Player Engagement

CONCLUSION

Survey provided valuable insights into players' experiences with the upgraded game. Among the 23 participants, 17 had prior experience with the classic version. The feedback highlighted positive evaluations of design, engagement,

and challenge. The mean rating for the design and aesthetics was 2.5 on a scale from 1 to 3. Specifically, 47% of respondents rated the design and aesthetics as "Excellent" (3), while 53% rated them as "Good" (2). The scale used was: "Excellent" = 3, "Good" = 2, and "Average" = 1. The mean engagement rating was 4, and difficulty was also rated 4 on a scale of 1 to 5. The overall user experience received a mean rating of 8 on a scale of 1 to 10. Key UI elements, such as graphics, animations, and user-friendly controls, enhanced the experience. Players also appreciated the new gameplay, challenges, and music. Additionally, 100% found the design easy to understand, and the tutorial feature was helpful. These findings suggest that the upgraded version successfully captured player interest and engagement. The results confirm that the "Consistency Modeling" approach effectively met player expectations, leading to a positive and engaging experience.

FUTURE WORK

While the "Consistency Modeling" approach has been found to be a promising alternative to other UI/UX design methodologies, the author recommends incorporating additional methodologies to gain a broader perspective on user needs. A comprehensive investigation should be conducted to finalize the digital product's interface, ensuring that all user requirements are met. The analysis of the "Consistency Modeling" methodology is still ongoing and should be expanded to more thoroughly evaluate its effectiveness in interface design.

The author encourages future research to include various techniques, such as user interviews, observations, A/B testing, and other evaluation methods, to ensure that no user pain points are overlooked and that the final design meets the highest standards of usability.

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