

1. Introduction

The VR space is a new and growing space within the games industry, with lot of unexplored potential. The unexplored nature of the VR space means that there's lots of gaps in the VR games market, but comes with the drawback of lots of unknowns when developing a VR game. For this reason I have chosen the project of incrementally developing a VR game.

2. Aims & Objectives

The aim of this project is to develop a VR game. To reach this aim I looked to complete this objectives:

- Investigate the current state of the VR space.
- Investigate what makes a game good.
- Apply my findings to my design philosophy to ensure a fun and engaging game.
- Develop the game.
- Evaluate the game and the process of making it.

3. Research into VR

Research into the VR Space

Firstly I looked into the VR space to see what VR headset should be my target platform. I found that Meta had captured 90% of the VR market [1]. Steam's hardware survey also showed similar results with Meta headset making the majority, and the Quest 2 being the most popular. [2]

Research into Top VR Games

Game	Genre	Avg Player Count
Bonelab	Action	1163.8
Beat Saber	Rhythm, Music	753.6
Blade and Sorcery	Action, Swordplay	661.7
Pavlov VR	Action, Shooter	450.4
Half-life: Alyx	Action, Adventure	438.5

I conducted my own research into finding trends within the VR games with the most average concurrent players using data from SteamCharts [3]. My main finding was that amongst the top 5 VR games, 4 of them were action games.

4. Research into Gaming

Research into What Makes a Game Successful

The first study I looked into found that variety, cohesion, social, and user interaction were the categories most valued when deeming a game good [4]. On the contrary another study deemed gameplay to be the most influential factor [5]. This sparked interesting discussion as it is arguable that some of the sub sections of those main categories given by the first study can fall under "gameplay."

Research into UX in Gaming

I looked into UX in gaming and found that correct use "feedback" and "signs" would lead to a "fair" game, that has a good feel to it [6].

5. Design & Implementation

Based on the findings in my research I decided that the platform I was going to make the game for was the Oculus Quest 2. I also decided to make the game an action game based on the findings.

I then used "MoSCoW" method to rank the list of features for the game in priority.

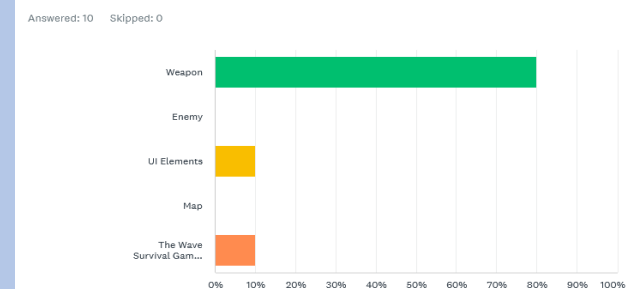
Mo	S	Co	W
1. Player Weapon 2. Player Controls 3. Melee Enemy AI 4. Hit Detection 5. Player & AI Damage 6. Enemy Spawning	1. Immersive VR HUD 2. Hand Animations 3. Ranged Enemy AI 4. Enemy Wave System	1. Weapon Sockets 2. Additional Weapons	1. Gesture-based Controls 2. Multiple Levels 3. Player Progression System 4. Realistic Weapon System

I then developed the game using the game engine Unreal Engine 4.

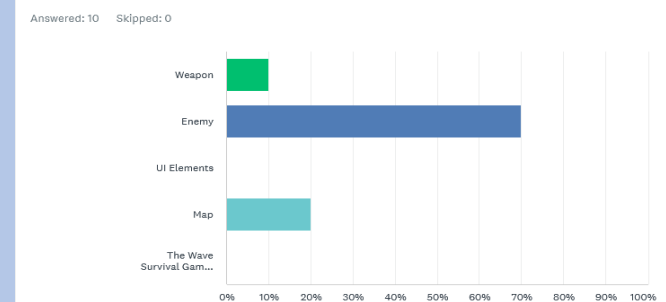
6. Results

When the game was fully developed I then ran a playtest, and had play-testers fill out a survey anonymously. I used the results of this survey to gauge how successful certain aspects of the game were, and these results can also be compared to what my research suggested were important aspects of a game.

What is the feature that you enjoyed the most in the game?



What is the feature that disappointed you the most in the game?



Images provided by SurveyMonkey [7].

7. Conclusion

To conclude I was able to develop a VR game that did have a basic gameplay loop, and had aspects that were received well. The results of the survey backed my research showing that gameplay elements which were introduced using strong feedback such as the weapon was well received. It also showed that missing the key element of variety costed as the game's AI was not well received, and did in fact lack variety.

8. References

- [1] IDC, "Meta's Dominance in the VR Market will be Challenged in the Coming Years, According to IDC," IDC: The premier global market intelligence company, Jun. 30, 2022. <https://www.idc.com/getdoc.jsp?containerId=prUS49422922>
- [2] Steam, "Steam Hardware & Software Survey," *Steampowered.com*, Dec. 2022. <https://store.steampowered.com/hwsurvey> (accessed Dec. 2022).
- [3] Steamcharts, "Steam Charts - Tracking What's Played," *Steamcharts.com*, 2018. <https://steamcharts.com/>
- [4] M. Bond and R. Beale, "What makes a good game?: using reviews to inform design," Sep. 2009.
- [5] M. Federoff, "HEURISTICS AND USABILITY GUIDELINES FOR THE CREATION AND EVALUATION OF FUN IN VIDEO GAMES," 2002.
- [6] A. Harbuzinski, "Introduction to UX in Game Design," *Medium*, Mar. 02, 2021. <https://uxdesign.cc/ux-and-video-game-design-5d8bcc50be67>
- [7] Surveymonkey, "SurveyMonkey: The World's Most Popular Free Online Survey Tool," *Surveymonkey.com*, 2018. <https://www.surveymonkey.com/>