

AdamWilliams_IP_CW1

by Adam Williams

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<Incremental Development of a VR Game>

Research Proposal

<Adam Williams>

<Dr Nik Whitehead>

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1. Introduction

The individual project I have decided on is the incremental development of a VR game. The reasoning for choosing the development of a VR game is due to the unexplored nature of VR games allows for limitless possibilities, and the limitless possibilities means there's a high potential to target a gap in the current VR games market. VR's unexplored nature is also the reason for this project being an incremental project as there are there is a high risk of running into unforeseen obstacles when it comes to VR games development compared to standard games development. This allows for the game to be built upon its most basic features and added upon depending on how the unpredictable nature of VR games development goes.

2. Background to the Proposed Research

Virtual Reality is the platform I have decided to research and create a game for. With the IDC¹ stating that VR shipments are expected to grow up to 26.6% in 2022, I concluded it's a good category to build a game for due to its growing interest. The IDC¹ later state that Meta has 90% of the market and acclaims a lot of that to the Oculus Quest 2. Being one of the most popular headsets making a VR game with primarily the Quest 2 in mind is a good decision as this is what platform most my target audience owns.

VR games have an exciting future for gaming due to its increased immersion compared to standard game consoles, and increased possibilities of user input through the mixture of gesture-based tracking and using the buttons on the controllers.

When making any product its important to see what similar products have done well and taking from that so I have made a table of the VR games with the most concurrent players at this moment.

Game Name	Genre	Average Player Count (Past 30 Days)
Bonelab		1163.8
Beat Saber		753.6
Blade and Sorcery		661.7
Pavlov VR		450.4
Half-life: Alyx		438.5

Table made using the top 5 VR only games from the Steam popular tab under the VR section, and numbers taken from steamcharts² as of 20/10/2022.

From the list of games from the table a pattern can be noticed that the most popular VR games fall under the action genre. This makes sense as action genre would most benefit from VR's input methods, as they can have the player physically take part in the action.

Excluding Beat Saber³ the four other games⁴⁻⁷ allow the player precise control over their weapon this enables the player to really feel immersed in the game world through tiny interactions whether it be with meaningless object in the environment or individually interacting with different parts of a gun to reload it the add up to the player immersion. It is important to note that these tiny interactions between the player and the game world are what make VR games feel special compared to your standard console games. VR Space³ back this up with their own list containing the most reviewed VR games, in this list the top 20 games are primarily games that fall under the action genre. Out of these action game a lot of them can be classed as shooters, whilst there may be a lot of shooters in the market, the gap I spotted and have decided to target is the looter shooter genre. Doing a looter shooter would follow what has worked for successful VR games with a focus on action combat, whilst also providing something unique that has not been successfully done before in VR being a looter shooter. Being a shooter game also allows me to implement the tiny interaction I noticed the successful VR games do and implement them into my own project to build that play immersion.

3. Aims & Objectives

My main aim is to fully develop a VR game.

To reach this main aim I will have to successfully complete these objectives:

- Investigate the current state of VR games
- Complete a full design of the game
- Develop the game
- Evaluate the game and the process of making it

4. Project Design

4.1 Outline of Project Process

The project will start with my literature review of what current VR games are finding success with. With the literature review I will have a list of features that I had found in other games that I may want to have in my own game. I will then filter the list into different categories of prioritisation using the “MoSCoW” method. This will give me a clear image of what I want in my game and allow me to complete the design for the game. After completing the design of the game, I will start the development process. This will allow for me to take a feature driven development process for this project.

4.2 Data Collection

To complete my first objective of investigating the current state of VR games I will be doing a literature review features or ideas that might work from other games. This is important as understanding why something worked for someone else’s game may open ideas up to what could work in your game. With this also being an incremental development of a VR game having a review of features makes it a lot easier to make a list of features you would want in the game and will help you rank them in priority.

When designing the game, I will refer to my literature review to get a good grasp in what direction I will want to push this game. Throughout the design and development process of the game I will conduct a playtest followed by a questionnaire with participants to gather feedback for certain game features to help push the game in the right direction. This will also help find features that are only intuitive to me and not new players, finding the mistakes early will allow me to make changes to fix these mistakes.

4.3 Data Evaluation

When writing questions for the questionnaire I must make sure the questions are fair and will not lead to biased answers due to poor written questions. When possible, I will make the questions close-ended as this guarantees certain questions producing valid data, but I will also need to make sure to leave open-ended questions so the participants can give their feedback.

4.4 Risks & Limitations

When developing in VR there is risks of running into issues that there may not be much support for fixing found on the internet, compared to standard game development where there are many online forums which offer help for common issues that people may run in to. To limit this risk the project is the incremental development of a VR game so one step is taken at a time and allows for flexibility around these issues, are certain features aren’t guaranteed and can just be avoided if the time versus reward does not add up. Another risk is the risk of harm, with having participants playtest the game I must make sure the play area is clear of any object the player could collide with and make sure that within the software of the headset the players “guardian” feature is set up, so they don’t step outside of their designated play area.

4.5 Ethical Issues

I must make sure I get the play testers signed consent to be a participant of the playtest and questionnaire.

5. Resources & Planning

5.1 Resources Required

5.1.1 Hardware Resources

These are the hardware I will require to make the game:

- Computer (High enough specification to run Unreal Engine 5)
- VR Headset (Oculus Quest 2)

5.1.2 Software Resources

These are the software I will require to make the game:

- Unreal Engine 5
- Maya
- Blender

5.1.3 Other Resources

These are the other resources I will require to make the game:

- Human Participants for the playtests

5.2 Planning Chart

To accurately plan the timescale at which certain objectives must be met I have made a Gantt Chart.

[illegible]

6. Reference List

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FINAL GRADE

GENERAL COMMENTS

Instructor

77 / 100

Intro / A&O (400 words)		
Project title; Identification of a specific problem to be investigated; Well-defined aims and SMART objectives; Explaining why this project is worth doing; Discussion of what the project needs to do in order to be a success; Description any deliverables that will be produced at the end of the project The report was informative and included useful information from a wide range of reliable sources. The analysis was precise and considered both theory and practise while critically examining the larger context. The work was presented logically, demonstrating the well-organized growth of professional standards and skills. The style of the report had good structure and flow and balance of content.	20	13
Background to the Project / Literature Review (400 words)		
Description of how the work to be done by in the project relates to the work identified in the literature review; Discussion of any ethical issues raised by the project Identifying what has already been done within the field; Topic familiarity; Brief literature	20	14

ure review using appropriate sources – 6-8 journal papers and book chapters rather than just websites; Selection of relevant models & concepts The literature review had critical analysis and synthesis. The existing work falling within the scope defend by aim and objects.		
Project Design (500 words)		
Clear statement of which development methods are to be used and why they are appropriate; Clear statement of which tools are to be used and why they are appropriate; Clear description of how data collected will be analysed The creation and use of the product were precise. With a clear critical application of theory and practise, the problems at hand were assessed. It demonstrated the capacity for productive and competent work regarding ideas and standards from the professional world.	30	25
Resources / Planning (200 words)		
List of any deliverables; Clear diagram showing both timing and resource use; Completed ethics form; Limited and relevant appendices You made a major contribution toward finishing a difficult project. You had abstract representation. The documentation demonstrates the project's careful execution and in-depth reflection.	15	12

Document Presentation		
Correct spelling, grammar and punctuation; Flow of narrative/fluency; Coherence; Word processed ; Correct use of referencing with bibliography; Strict word limit Using a variety of techniques and media, the project's output is presented to the right audience. Consideration of the work's broader implications leads to findings and suggestions.	15	13
TOTAL	100	77

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