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Technology Brief Development

Initial Brief

Context

Selwyn College is a school that is located in Kohimarama. Selwyn College holds an open evening twice a year to which intermediates can come into the school and look around the stuff that they can do in the school. The tech block is one of the blocks in the school that is in charge of anything technological like computers and robots. The tech block of Selwyn has recently acquired a Virtual Reality set up so that students can create projects that involve Virtual Reality. The tech block will also be showcasing what students have done throughout the years and what the current students are doing. I'd like to make an interactable digital outcome for the intermediate students that want to come along to the open evening and see how different Selwyn is to other schools. I believe that my project needs to be made in Virtual Reality as it can boost the interest for intermediate students to enrol for the school because of the fact that they can do a wide variety of projects in the school like VR. I believe that my project needs to be an interactable digital outcome made in Virtual Reality as it can boost the interest for intermediate students to enrol for the school because of the fact that they can do a wide variety of projects in the school like VR. My initial ideas were to make a game, I currently have no details on what game it's supposed to be and if it's going to be enjoyable, therefore I'm going to interview my end-users and see if they even think that Virtual Reality is something they want to do as a project in the future if they wanted to enrol into Selwyn College.

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Opportunity

The tech block of Selwyn has recently acquired a Virtual Reality set up so that students can create projects that involve Virtual Reality. The tech block will also be showcasing what students have done throughout the years and what the current students are doing. I'd like to make an interactable digital outcome for the intermediate students that want to come along to the open evening and see how different Selwyn is to other schools.

End-Users

The end-users for my digital outcome would be the people visiting the open evening. The people who usually attend open evenings for schools are intermediate students that are close to becoming Year 9 and the parents that accompany them to look around.

Attributes

The digital outcome needs to be something that can interest students to enrol for Selwyn as the main point for open evenings is to showcase what Selwyn College has to offer. The outcome I decided on was to make an interactable VR showcase to show to the students, however this VR showcase can be any digital outcome for VR and since my initial ideas were to make a VR game, I need to do more research to decide on what outcome I want to do. The outcome also needs to be legal and I need to

do further research as to what is legally okay to do and if I’m infringing any laws I had no knowledge about.

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Resources

The main resources that I would need are time, a 3D modelling software, and a software that can code games. Currently, every school computer in the tech block is equipped with a 3D modelling software and Unity which is capable of making VR games, however, I need to do further research on what kind of software is fit for my purpose. My outcome needs to be done or at least close to done on June 18 as that is the date for the Selwyn open evening. I currently have 19 weeks to finish this document and finish my outcome. I've allocated 6 weeks to finish my brief development and another 4 weeks on conceptual design, which leaves me 9 weeks to make my outcome. I think that I won't be able to keep up with my allocated time for each part of the project, however, if i take out time from home to do the document or the outcome then the project is plausible. Since this project is 19 weeks, it overlaps with my term 1 holidays which can aid in making my document or outcome because I can dedicate all of my free time onto this project.

Initial Interview with End-User: Zachary Morallos

Zachary Morallos is an intermediate student close to graduating and is becoming a year 9 next year. His parents want to see what various schools have to offer by going to school open evenings and assess their choices. As he is the main end-user for my project, I asked him about what he thought of Virtual Reality projects and he thought that Virtual Reality was cool and that he wanted to play around with it. I asked him what kind of Virtual Reality project he would want to see, he told me that I should make a game. I then asked him what kind of games he enjoys in his free time. He responded that mobile games are what he currently plays around in his free time, and he told me that his favourite mobile game currently would be Piano Tiles. With this information, I want to move on to research what students around that age do enjoy playing and create a game to the genre that the intermediates do enjoy.

Critical Analysis for my Initial Interview

I've decided to make my VR digital outcome as a game. I came to this decision because of the interview, and I also already had an idea on how to make a VR game and the first thing that comes to my mind when it comes to VR projects would be games as I find it the most appropriate as something that intermediate students would enjoy. My next steps would be to research what genres are best for my VR game.

Genre Research

I'm going to take a look at the popular game genres that are currently in the market. The genres I'll be looking at would be action games, sports games, battle royale games, action-adventure games, role-playing games, adventure games, racing games, fighting games, real-time strategy games, simulator games. These are the top 10 most popular game genres in the world for 2018 according to technavio.

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Action Games

Action games have long been one of the most popular game genres. Games in the 'action' genre put emphasis on challenging the player's reflexes, reaction time, and hand-eye coordination. The best action games include the perfect blend of everything this genre has to offer and channel it into a unique experience which only an action game can deliver. Given the longevity and popularity of the action game genre, game developers have played around with the method quite a bit. Consequently, action games have branched out into various sub-genres that include Beat 'em Ups such as Double Dragon and Final Fight, Shooter Games, and Platforming Games like Mutant Mudds, Super Mario 3D Land, and Kirby's Adventure.

Sport Games

Sports games emerged early in the history of gaming and today it remains as one of the most popular game genres in the world. Just like real-world sports, sports games simulate traditional physical sports wherein the opposing team is controlled by artificial intelligence (AI) or other real-life people. While some games emphasize playing the actual sport, others underline the strategy behind the sport like Champions Manager. One of the best-selling series in the sports genre is the FIFA series. FIFA 12 game holds the record of 'fastest selling sports game ever' with more than 3.2 million games sold in its first week of release. The franchise's latest game FIFA 19, will be released worldwide on September 28, 2018.

Battle Royale Games

As one of the best-selling game genres in around the world, Battle Royale is a completely new game genre which has taken the world by storm in just two years, driven by the massive success of the two most popular games of present-day; Fortnite Battle Royale, and PlayerUnknown's Battlegrounds (PUBG). Fortnite generates over $1 billion in total revenue, entirely from in-app purchases. Whereas, PUBG made more than $700 million in 2017, nearly as much as the entire eSports market. With the Battle Royale Games market projected to hit $20 billion in 2019, there's significant scope for game developers other than just the two big players.

Action-adventure Games

Action-Adventure game is a blend of elements of both the Action and Adventure game genres which was effectively developed in the days of 8-bit Nintendo Entertainment System with titles such as The Legend of Zelda and Metroid. Since then, the action-adventure game genre has expanded to include games in a wide range of thematic concepts, along with appearing on every single video game platform around. The essential factors of an action-adventure genre are considered to include an action game element, reflex-based gameplay, along with the puzzle-solving, item collecting, and environmental exploration, which make it one of the most popular game genres among all ages.

Role-playing Games

From simple text-based console games to visually rich 3D experiences, role-playing games (RPGs) have consistently evolved since their origin through popular games like Battletech, Star Wars and Dungeons & Dragons. It's a genre of video and online games where the player controls a fictional character that takes on a quest in an imaginary world. Since its inception, RPGs genre has been broadened to include online RPGs, adventure RPGs, strategy RPGs, and action RPGs. However, the growing popularity of the role-playing concept promises many more variations on the genre in the coming years.

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Adventure Games

Adventure games are one of the oldest game genres. Their origin dates back to the 1970s when the original Colossal Cave game based on the Mammoth Cave was released and its immediate successor Dungeon, which was later promoted commercially as the Zork trilogy. Although most commenters claim that the Adventure games genre is in its death-throes, they are still produced and bought in roughly the same numbers as before. However, the market share of adventure games is getting smaller nowadays, and elements of these games are migrating into other most popular game genres, resulting in the very successful Action-Adventure genre.

Racing Games

Racing games made their debut in the mid-1970s with the emergence of Gran Trak 10 in 1974, followed by the Night Driver, Rally X, and many other games during that period. Subsequently, the racing games such as Hang-On, Final Lap, Out Run, and Nintendo's F-Zero launched in the 80s, and the Super Mario Kart and Sony's Gran Turismo in 90s contributed significantly to the evolution of the racing game genre. Over its four decades plus history, the racing game genre has branched out into many distinct paths and has always been a lap ahead of other video game genres- both in terms of innovation as well as figures, making it one of the world's most popular game genres of all times.

Fighting Games

The fighting game genre has been a bastion in the gaming industry for several decades. It has spawned eternal franchises including Tekken, Street Fighter, and Mortal Kombat that are recognized around the world. This game genre is undoubtedly here to stay with the excitement surrounding Street Fighter, Mortal Kombat X and Nintendo's Super Smash Bros. The fighting game genre has been able to evolve significantly, thanks to healthy competition and continued innovation.

Real-time Strategy Games

Strategy games are one of the best-selling and most popular game genres in the world, encompassing various types of games. The strategy game genre got its name from the producer of Dune II; Brett Sperry, who coined the term to describe the game. Strategy games are categorized into two types, real-time strategy (RTS), and turn-based strategy (TBS). Starcast, Age of Empires, and League of Legends are some of the most popular real-time strategy games that are grabbing major share in this segment, although there are hundreds of strategy games available in the market.

Simulator Games

A simulation game describes a distinct super-category of games, generally designed to simulate real-world activities. As for video games, SimCity is a perfect example of this genre. This game simulates the lives of characters along with the construction and management of the city. The economic simulators are one of the well-known sub-categories of the simulator genre. These games give players an option to manage an economic system. Simulation game genre is gradually gaining popularity in the gaming world.

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Critical Analysis of Genres

I'm going to narrow down my list of genres to genres that I can possibly do with the time I have for me this year. Action Games, Action-adventure Games, Sports Games, Adventure Games, Racing Games, Role Playing Games, and Simulator Games are definitely possible as they are pretty much more immersive if they are made into a virtual reality game. I don't think I can make a Battle Royale game, or a Fighting game because they need to have more than one player playing the game, and committing to making an online multiplayer game or a locally multiplayer game for an open evening is something I don't see necessary as I'm not looking to publish the game afterwards. Making a locally multiplayer game is a plausible idea if the school had two VR headsets, however, since they don't, I'm going to be making a singleplayer VR game. Now I have to choose between the plausible genres that I can make, however because of time constraints some genres have to be dropped like the Role Playing Game as it needs a good story for the game or good backgrounds to be enjoyable and since people only have a limited time to play it in the open evening I think something shorter would be preferable. Since what I'm looking for is a small game that is easy to create and short, I think the best-suited genre for this is the Action-Adventure genre where I can create a game with good mechanics and people can just pick up the headset and play around with it for a short while.

End-User Interview: Genema Morallos

Genema is the mother of Zachary, the intermediate that I interviewed earlier. I wanted to get her feedback as it's also the parent that thinks and helps choose the school that their child goes to. I gave her a summary that I was going to make a VR game for the open evening. I told her about the different genres and the genre that I ended up with. She told me that she wasn't too technical with all the technology currently, but she knows what games are. The feedback she gave me was that the end-product needed to be appropriate for kids.

Critical Analysis of Feedback from Genre Selection

After the interview, I realised that coming up with a game that is appropriate for students is needed as the end-users for the game are parents and children around 11 or 12 so a key attribute to have for the game would be that it needs to be appropriate for the audience. After adding another key attribute to my final digital outcome, I'm going to investigate what makes an adventure game and the key mechanics for my game. However, due to the lack of knowledge from the end-user, I received no feedback on my genre selection. I'll have to get feedback for my genre selection later from a student as they are more well versed with games than their parents.

Adventure Game

The term "Adventure game" originated from the 1970s text computer game Colossal Cave Adventure, often referred to simply as Adventure, which pioneered a style of gameplay that was widely imitated and became a genre in its own right. The video game genre is therefore defined by its gameplay, unlike the literary genre, which is defined by the subject it addresses, the activity of adventure. Essential elements of the genre include storytelling, exploration, and puzzle-solving. Adventure games have been described as puzzles embedded in a narrative framework, where games involve narrative content that a player unlocks piece by piece over time. While the puzzles that players encounter through the story can be arbitrary, those that do not pull the player out of the narrative are considered examples of good design.

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Common Mechanics of an Adventure Game

Puzzle Solving

- Adventure games contain a variety of puzzles, decoding messages, finding and using items, opening locked doors, or finding and exploring new locations. Solving a puzzle will unlock access to new areas in the game world, and reveal more of the game story. Logic puzzles, where mechanical devices are designed with abstract interfaces to test a player's deductive reasoning skills, are common.

Gathering and Using items

- Many puzzles in these games involve gathering and using items from their inventory. Players must apply lateral thinking techniques where they apply real-world extrinsic knowledge about objects in unexpected ways. They may need to carry items in their inventory for a long duration before they prove useful, and thus it is normal for adventure games to test a player's memory where a challenge can only be overcome by recalling a piece of information from earlier in the game.

Story, setting, and themes

- Since adventure games are driven by storytelling, character development usually follows literary conventions of personal and emotional growth, rather than new powers or abilities that affect gameplay. The player often embarks upon a quest or is required to unravel a mystery or situation about which little is known. These types of mysterious stories allow designers to get around what Ernest W. Adams calls the "Problem of Amnesia", where the player controls the protagonist but must start the game without their knowledge and experience. Story-events typically unfold as the player completes new challenges or puzzles, but in order to make such storytelling less mechanical, new elements in the story may also be triggered by player movement.

Goals, successes and failures

- The primary goal in adventure games is the completion of the assigned quest. Early adventure games often had high scores and some, including Zork and some of its sequels, assigned the player a rank, a text description based on their score. High scores provide the player with a secondary goal and serve as an indicator of progression.

<u>Critical Analysis of Common Adventure Game Mechanics</u>

I'd like to put these common adventure game mechanics to my digital outcome. However, I also need to keep in mind that I only have a very very limited amount of time to keep them invested as they need to move fast to see each display for the tech block. That means the time it takes for them to look around in VR is almost close to less than 2 minutes, therefore, I don't think that the story would matter for this game as the player doesn't need motivation to play for more than 2 minutes. As for the other mechanics, I'd like to keep the puzzle solving simple because again, they only have 2 minutes to look into the game. Gathering and using items is crucial to make them slightly interested in making VR projects in the future and that goes the same with goals. I'm going to keep goals simple and have a high score to challenge the players if they can beat it. I'd like to keep going with my process and start looking at other adventure VR games for inspiration for the style of my game.

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Research

I'm now going to start researching the most popular VR games for 2020 according to techradar to try and get inspiration and to attempt to create a list of attributes of what I think makes a VR game good.

No Man's Sky

The adventure survival game called No Man's Sky developed by Hello Games was one of the world's most anticipated releases. Now that they are porting it to VR, it also became the most anticipated VR release of 2019. The original game was perfectly suited to become a VR game as you traverse and discover the largely generated worlds.

Superhot VR

Superhot is an independent first-person shooter video game developed and published by Superhot Team. Though the game follows traditional first-person shooter gameplay mechanics, with the player attempting to take out enemy targets using guns and other weapons, time within the game progresses at normal speed only when the player moves; this creates the opportunity for the player to assess their situation in slow motion and respond appropriately, making the gameplay similar to strategy video games. The game is presented in a minimalist art style, with enemies in red and weapons in black, in contrast to the otherwise white and grey environment. The game translated well to VR with the interesting mechanics of the control of time when moving with your head and hands.

Space Pirate Trainer

Space Pirate Trainer is a Virtual Reality (VR) first-person shooter developed and produced by I-Illusions. It was one of the earliest wave shooters utilizing the VR game-play environment. The game places the player on a platform in space while waves of robots come down and attack. The player has a choice between a pistol, shotgun, laser, machine gun, grenade launcher and laser sword to fight off the robots.

Beat Saber

Beat Saber is a virtual reality music game developed and published by Beat Games. The game takes place in a surrealistic neon noir environment and features the player slicing blocks representing musical beats with a pair of contrasting colored sabers. The game includes several songs with up to five levels of difficulty. The player uses VR motion

controllers to wield a pair of lightsabers, the left one colored red and the right one colored blue by default.

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Critical Analysis of VR Games

Through looking at these games, I have compiled a small list of attributes that I would want to put in my game. The first attribute that I would want would be the simplicity of the art style and the overall look of the game from Superhot, I really think this would be a great addition since this would make it easier on me so that I don't have to create complicated models that would take up most of my time. I'm also taking Superhot's style of game mechanics where the player is put into a level and completes a level, however, mine wouldn't have the storyline embedded into the levels like Superhot does, all I want to take from Superhot is its action mechanics and how weapons feel. Although I want to have the same action as Superhot, I want to implement movement and teleportation around levels since it feels like it would be a pretty interesting concept of how you're defeating enemies while teleporting around the level. I'd also like to take the level design from Superhot because of its minimalistic approach and how big the contrast between the backdrop of the level looks to the enemies and because of that contrast the player can instantly tell that the heavily saturated red people are the enemies. I'll now look into what attributes that my digital outcome is going to have in the end.

Attributes

- Minimalistic and simple design aesthetics
- The feeling of being put into a level and being able to play it without knowing the story
- A goal for the player to reach
- Appropriate to show for children
- Same level design and "look" as Superhot
- A sense of movement for the players
- A short but interesting game

Further Research

I'll now start to research again to start and flesh out my attributes for them to become a specification for my end product. I'll first be researching what language and software is typically used to make a game. After doing so, I'm going to research how a game can be "interesting" and convert my current list of abstract attributes into a compilation of tangible specifications. I'll also be researching the legal and ethical implications that my digital outcome would face so as to not accidentally infringe due to my lack of knowledge of the law surrounding game development and to make a game that parents would deem appropriate for their children to play.

Software Selection

I need to do research on the softwares that is capable of making VR games, then after the software for coding the game, I would need another software to make the 3D models and entities for my game. Currently the most popular softwares that is capable of making VR games in the market are Unity, and Unreal Engine. For creating 3D models for a game, currently the most popular 3D modelling software in the market are Blender and Autodesk Maya. I'll be weighing the advantages and disadvantages between these popular softwares to determine which software I will be using for my project.

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Coding Software

Unreal has a simple pricing scheme where everything is free, however, Unreal takes five percent of the earnings you make from using it. Unity, on the other hand, is free if it is for personal use. Unreal Engine provides more built-in tools that makes game development easier. Unreal has a built-in, extensive material editor as well as a built-in cinematic editor that allows developers to easily create cinematic sequences in their games. Meanwhile, Unity relies on third-party addons from their asset store to provide similar functionalities. Based on the built-in tools provided by the engine, we can see that Unreal is the more powerful of the two options. But that also means Unity is simpler to use. The same comparison can be seen in their programming aspect. Unity is using C# for their main programming language, which is easier to use and learn. Unreal, on the other hand, is using C++, which is much more powerful, but is also harder to learn and more prone to mistakes. Fortunately, Unreal makes up for its complexity by providing an alternative, easy-to-use scripting language: Blueprint. Blueprint is a scripting language where developers can simply connect nodes together to program gameplay elements. Using this tool, non-programmers like artists and writers are able to script gameplay events without relying on programmers. The last point I'm going to address is something not directly linked to the software itself, but it is nevertheless important – the community. A big community makes it easier to find help when I struggle from a problem. Unity is the winner on this front, as can be seen with the huge amount of tutorials and third-party libraries that are created for it.

3D Modelling Software

Autodesk Maya is a licensed product which has a cost of $795 for a perpetual license, or $50 a month on a rental basis. The normal price for Autodesk's full Maya is $3,495. Blender on the other hand is freely available. Maya provides a comprehensive suite of tools of 3D creation work. Developers can edit and create 3D models in various formats and animate those models using animation tools that are already built-in in Maya. Photorealistic imagery and animated visual effects based upon animated 3D scenes can be rendered efficiently with tools offered by Maya. Blender also has a wide array of tools which are suitable for almost any kind of media projects. Animated feature films, games, interactive applications including kiosks and scientific research can be efficiently created by using Blender. Maya is more powerful, however, this power comes along with a price of a lot of complication whereas Blender can resolve some of the complicated issues faster. Since Maya is a licensed product, it comes with less bugs compared to Blender which tends to be bug-prone, resulting in fixes with each version. With Maya, rendering out an animation for the first time can be quite a challenge whereas Blender is able to make the rendering process just a little bit easier for rendering out an animation or a series of frames. Maya has extensive support from Autodesk and users around the world whereas Blender is an open source software is extensively documented on its website, with rest of support provided via community tutorials. It is widely known amongst developers that Maya is for large studio productions and that Blender is better fit for small startups and projects.

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Critical Analysis of Software Selection

I'll be using Unity due to the fact that I'm already well-versed in its interface and I'm more familiar with C# than C++, albeit I'm not very skilled at it however, the idea of learning a new coding language from scratch seems more difficult to me than just building upon my prior knowledge in C#. My decision is also influenced by the fact that Unity has a bigger community, since the size of the community means that more tutorials and forum questions means that I can find help by searching online about what problems I'm facing. The appeal of prior knowledge and knowing that if I struggle with a problem that someone already asked the question and someone from the large community already answered it and then I can just read the solution for my problems in a simple google search. My choice is also influenced by the convenience of access because I can make my game both at school and at home since the school computers already have Unity installed in them. For the 3D modelling software, I'll be using Blender for the same reasons as Unity since I also already have prior knowledge on Blender, I would feel more comfortable using it than starting from scratch with Maya and it is more convenient for me since I can work both at home and at school. Blender is also better suited to make small projects while Maya is a software that a large studio production would use.

Minimalistic Design Aesthetics

A minimalist design is a design that attempts to convey the message of simplicity by using a minimal amount of effects. Only the basic geometric forms, elements without decoration, repetitions of structures and simple materials are used here. Minimalist designs use the least hardware and software resources possible. In other words, the fewer elements the design includes the minimal the design is. Minimalist designs follow the "less is more" concept where the absence of detail is the main attraction. Minimalistic designs can be found in:

Google

Google is arguably the best example of functional minimalism applied today. The startup interface of nearly all its services is clean and minimalist. For instance, the starting page of the search engine is plain simple: a search box, 2 search buttons, and the Google logo. What's more, the logo itself is in (next to) basic colors, which is another typical feature of minimalism.

Craigslist

Craigslist is certainly not the first site you think of when you talk about 'high design'. But in many ways, the most popular site for classified ads is a minimalist's delight. It has a very straightforward structure and a color palette even De Stijl designers will love. The site is all about functionality – no fluff, no decorations, no distractions.

Modern Architecture

Modern architecture can give numerous examples of minimalism. For instance, IBM Plaza in Chicago and House Grangegorman are two good examples of minimalism in architecture – the first one from the 20th century and the second one – from the first decade of the 21st century.

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Critical Analysis of Minimalism

A good minimalistic design is when the absence of detail is what makes the visuals look good. Minimalism aims for simplicity and objectivity. It wants to reduce works to the fundamental, the essential, the necessary, and to strip away the ornamental layers that might be placed on top. When you remove all unnecessary elements, you end up with far fewer things, which will make the user feel freer and it makes it less nauseating as there are less things to look at. The idea is to keep the colors in a space simple and neutral, which is why so many minimalist houses and buildings are all white, black-and-white, or in light shades of neutral colors. It's actually one of the most easily recognizable and memorable aspects of minimalism, but most people wouldn't know just how essential it is to the design. By keeping colors neutral or using only white, you let the eye "breathe" and reduce the number of distractions, so, depending on the room, you feel more relaxed or more focused on what you have to do which is why I want to keep the bright and saturated colours in my game to a minimum. A specification for the game to be more minimalistic would be to have the background colour as white-ish grey like Superhot and have the enemy a saturated and aggressive colour like red and some of its shades. This way, the user would be more focused on what they are supposed to be doing and can tell apart what object is which.

Building "Interest" in Games

Since the users will only play for a couple minutes before leaving, I need to make the game more explosive and build interest in the first few seconds they step into my VR game. To do that, I need to investigate what makes a game "interesting" or "fun". According to a researcher from Carleton College, five aspects of a game are what makes a game good, these are continuous challenges, interesting storyline, flexibility, immediate and useful rewards and combining fun and realism.

Continuous Challenges

"A good game designer gives his players continuous challenges, each of which leads to another challenge, to keep them hooked on playing a game. This can be done by setting clear, short-term goals appropriate to the level of the player and the context within the game. Each challenge should satisfy some kind of learning objective. For example, answering a question, identifying a sample or completing a measurement or a portion of a map could be a challenge, part of a larger game. "

However, since they only have a short while to play this game, the only goal and challenge they would have is to clear the level by defeating the enemies. I need to implement some kind of puzzle system into the game to make it more interesting for players and I need to do more research as to level design to make an interesting game.

Interesting Storyline

"In various Internet forums and game-magazine columns about video and board games, a good plot or storyline is cited as essential to a good game. Oddly enough, a fantasy context makes players more motivated to succeed at a game. So instead of having students memorize types of ores, have them play as miners prospecting for minerals and needing to identify profitable sources."

I, however, have no time for an interesting storyline, but I can make the game fantasy-esque and have fantasy-like powers and weapons against opponents with similar fantasy type weapons.

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Flexibility
“Make sure that there are many different ways to accomplish each goal. Simply plotting out a step-by-step progression through the goals can be stifling. As much as possible, let each player (or team) work out their own strategy to the endpoint while still keeping the game challenging and achieving the learning objectives.”

I can design the levels in the game to have branching paths and have enemies that differ in difficulty and puzzles that can have multiple answers so that the players have their own strategy in tackling the game.

Immediate and Useful Rewards
“Instead of just points towards victory, successful players (or the pieces or characters they're in charge of) can be rewarded with new capabilities, a new part of the board to explore or even a new task. These are surprisingly motivating, as the point of the game is not just to win it, but to keep playing.”

I can have it so that the players unlock a new type of ability each time they defeat a certain amount of enemies and they “level up” along the way. To my knowledge, I can make a level up system, however since the user only has a limited amount of time, I can associate this level up as a highscore that other people could try and beat in their short time there.

Combining Fun and Realism
“Many so-called games are actually simulations without goals and challenges. Excessive realistim can also be boring. But even good games often incorporate incorrect assumptions (i.e. SimCity favors public transportation) or reward unrealistic behaviors, such as giving players too much time to make decisions”

Since combining fun and realism is already something that Virtual Reality does innately, I have an advantage in this area. However, since the main means of movement is teleportation it could take the players out of their immersion. Unfortunately, there is no solution to this non-immersive game mechanic since the only means of movement in Virtual Reality is walking in real life, otherwise developers make stationary action games like Superhot. I need to make the controls for the game intuitive like when they press the grip buttons on the controller, the hand will grip whatever the object the hand was hovering on.

<u>Critical Analysis of Game Design</u>
Different players enjoy different games. Not everyone likes Call of Duty and not everyone likes story-driven games like The Last of Us but they both accomplish what they’re trying to provide for the player while having enough of each key element to be successful. I’ve now narrowed down most attributes into specifications, like how to make a game interesting. I need to make my game fantasy-based as that’s what makes an interesting storyline according to the researcher at Carleton College. I need to have a variety of ways to solve puzzles and allow players to have their own way of approaching challenges. I need to have a level up system that also functions as a scoring system where each player can try to beat other players’ highscores. I need to add intuitive controls like having the grip button as a way to pick up stuff and maybe having the trigger button trigger different actions like firing a bow or firing a spell since the game is fantasy based.

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Level Design

I now need to research how to make a great level for the players to play since the main gameplay will revolve around the levels in the game. I've set the aesthetic for the levels as minimalistic and would have as close to no details as possible, now I only need to focus on the content that the level would have, e.g enemies, puzzles and terrain. According to the blog mad-gfx, good level design is composed of the level being fun to navigate, good sound effects and ambience, constantly teaching new mechanics, empowers the player, and players can set their own difficulty dynamically. There are other more guidelines for level design, however, I deemed them to be not worth nothing as the players only have a short time to play the game and I don't have time to elicit emotions and do things that need any sort of attachment between player and game. The only thing I need is the interest and intrigue from the player to the game as the purpose of this game is to showcase how you can do an array of projects in Selwyn College's technology department.

Navigation

"For a smooth and enjoyable experience the player should always know exactly where to go, which is why it's important to develop a consistent visual language that clearly guides the player through the critical paths (through the use of light, geometry, colour and animation)."

I'll design pathways so that they are clearly the right way (i.e making the pathways contrast against the normal ground) or have animations that reveal certain paths along the way to invite the players to go through that path. However, I don't want to limit the player's way of going through a level since I want them to solve it on their own. Therefore, I'll make a waypoint by having a pillar of light that the player needs to go towards so that they always know their way and it's up to them on how to go towards that location. This can encourage freestyle exploration and they can explore the level as they go along. I also need to make sure that the teleportation's range is not too far since I don't want them to skip objectives or puzzles by allowing them to teleport through it or around it, I also don't want it to be too short of a range since I don't want them to be constantly teleporting to move around the level. I need to have a balance of having a puzzle or an enemy encounter every few teleportations (e.g two teleportations or three teleportations). It is better to have teleportation as the main source of navigation as walking using the trackpad of the Vive controllers feels like you're in a car and sometimes doesn't feel intuitive to be moving in game without moving in real life.

Sound Effects and Ambience

"Sound effects exist specifically to give feedback to players, immerse them inside the virtual realm, and provide an entertaining experience. Since a game is nothing more than lines of code and pixels of colored light, the sense of sound is what adds warmth and familiarity to what is happening on the screen. Although many current games employ 3D and even hyperrealistic images, the player is still only looking at pixels; the only "real" sense fully experienced by the player is sound. "

For sound effects, I'll be searching through the internet on different sound effects since sound effects and ambience are important to the game. These sound effects are what gives the player feedback on what they've done and in turn makes it feel satisfying to do a certain action. Either I create my own sounds at home with applications and instruments, I can also search for them on the internet.

Louise Branzuela

Mechanics

"Teach the mechanics explicitly, provide a safe area for the player to experiment with the new mechanics, introduce a threat or compelling objective to challenge the players mastery of that mechanic, when the player feels comfortable with the mechanics surprise them in some way."

I plan to introduce a mechanic level by level and base the puzzles around the use of each mechanic. For the first level, they will be introduced to the mechanic of teleportation, the next would be the mechanic of using a bow and each of these mechanics will be the main theme of the level. Every start of the level, there will be a window that teaches them the controls of how to do different skills and the area where they spawn will be devoid of enemies and will have space to play around with their new skills.

Empowering the Player

"Video games are escapism, let the player feel the impact of their actions. Deliver the fantasy, avoid dull menial tasks. Design levels to show the players influence on the world illustrating the consequences of choices."

To not take them out of immersion, I've stated earlier that I would make it so that their teleportation would neither be too far or too near as having a teleportation too far would make it too easy while making the teleportation too near would be annoying and it would take them a long time to travel distances.

Difficulty Dynamics

"Design multiple pathways through levels. 'Basic Path' - easy/medium challenge, clearly called out 'High Risk' paths with an obvious reward. Use a layered approach (increases replayability) with rewards in clear view that provide navigational risks. Provide alternate paths for flanking or bypassing tough challenges (perhaps with a puzzle)."

With this advice, I'm going to design the levels so that the players can choose whether they want to challenge themselves. I'm going to clearly indicate through colour and sound how hard each pathway is. In this way, the player can restart and retrace their steps to choose another difficulty if they find it too hard or if they want to see what the other difficulties have to offer.

Summary

I've narrowed down all of the attributes that the game mechanics and design would have into specifications for my final game. Different players will approach the same puzzle differently. Each person is unique to their own thinking, therefore I need to supplement for their own thinking's uniqueness and allow flexibility in my puzzle's solutions. I need to implement branching pathways that can adjust each person's difficulty. I'll experiment while making the game to see what seems to be the perfect distance for the teleportation mechanic. I'll introduce a new mechanic like a weapon or magic into the game every time the player completes a level, this builds a constant goal for the player to be intrigued and interested. I'll now need to look into what legal and ethical concerns I might have making the game.

Louise Branzuela

End-User Feedback - Zachary Morallos

I described to Zachary the thought process behind my genre of choice, the aesthetic design, and the mechanics of the finished game to receive feedback from a potential player for the game, he told me that apparently kids around his age loves action games and that the concept of being in a fantasy world fighting detail-less enemies due to the minimalist design with magic and adventuring around the level to solve puzzles in VR sounded really interesting and was very excited to how the game would turn out. He was slightly disappointed that there would be no heroic stories about the main character. He suggested that I put the game to the school so that he and his friends could play the game when they enrol as students of Selwyn College.

Critical Analysis of Feedback on Genre Selection, Level Design and Aesthetics

I managed to confirm the reasoning of the selection of my chosen genre and managed to intrigue an end-user only by describing it which means that I attained an attribute that I set for my game which was that it needed to be interesting. However, his disappointment towards the lack of narrative is something that I can not fix due to the time constraints, I planned to make a game with no narrative which means that there is no space to slot in time for me to write a plot. Since the main purpose of this VR project was to encourage people to enrol into Selwyn College and showcase the technology block, I thought that it was fitting to put all of my work into the computer that is responsible for handling VR so that future students can look at how I coded and designed certain models and by doing so it can help them on how to go through the design process and make their own VR project in the future. In doing so, I don't need to put as much emphasis towards the short playtime for the players as I am putting the game into the school computer and future players can play as long as they want, I decided to put the aspects from my research in level design that had an emphasis of 'replayability' into my game, such as the advice of making a layered approach of making a level from the mad-gfx blog. However, since a 'layered-approach' to a level is something that I did not define earlier in my research, I would need to define it here so that I can turn it into a specification. After that, I would need to research what kind of considerations I need to make legally as I need to know if what I'm doing is legal, so I don't make any legal trouble for myself.

The Layered Approach in Level Design

I found a quote from the lead level designer of the game Dishonored 2 Christophe Carrier said to Eurogamer in an interview about level design. "You know, the thing that is really awesome for us is to see players talking to other players saying 'what did you do? I went there but had to do this – no! You could do this and you know, take this window' and they go 'oh I'll try this next time', I'm so happy to hear that from players; that they're not playing the same game." A layered approach would mean that the game has several layers that a player can play through, which means that a player can play the same level in various unique ways. This can be done through having "hidden" paths and "hidden" content spread throughout the level. Using this method, my final outcome increases its replayability as the players can play the game to the end in one way then restart the game to complete it in a whole another way. This goes back to the branching paths in a level that I researched earlier, to make the paths even more distinguishable from one another I would develop the game so that you gain a unique game mechanic from going either path, this can build interest as the players would want to know what kind of mechanic they would get if they went into the other path.

Louise Branzuela

Refined Brief

Context

Selwyn College is a school that is located in Kohimarama. Selwyn College holds an open evening twice a year to which intermediates can come into the school and look around the stuff that they can do in the school. The tech block is one of the blocks in the school that is in charge of anything technological like computers and robots. **[1]**

Opportunity

The tech block of Selwyn has recently acquired a Virtual Reality set up so that students can create projects that involve Virtual Reality. The tech block will also be showcasing what students have done throughout the years and what the current students are doing. I'd like to make an interactable digital outcome for the intermediate students that want to come along to the open evening and see how different Selwyn is to other schools. **[1]**

End-Users

The end-users for my digital outcome would be the people visiting the open evening. The people who usually attend open evenings for schools are intermediate students that are close to becoming Year 9 and the parents that accompany them to look around. **[1]**

Attributes

The game needs to be something that can interest students to enrol for Selwyn as the main point for open evenings is to showcase what Selwyn College has to offer **[1]**. The game's genre is an Action-Adventure game **[5]**. The game needs to have a minimalistic and simple design aesthetic. The game needs to have the feeling of being put into a level and being able to play it without any need for a narrative. The game must have a goal for the player to reach, the game needs to be appropriate for children, it needs to have a sense of movement for the players and it needs to be a short, but interesting game **[6]**. The game also needs to be legal and I need to do further research as to what is legally okay to do and if I'm infringing any laws I had no knowledge about **[1]**. I also need to further research towards what is ethically right to put into my game **[6]**.

Specifications

I'll be using Unity due to the fact that I'm already well-versed in its interface and I'm more familiar with C# than C++, albeit I'm not very skilled at it however, the idea of learning a new coding language from scratch seems more difficult to me than just building upon my prior knowledge in C#. For the 3D modelling software, I'll be using Blender for the same reasons as Unity since I also already have prior knowledge on Blender, I would feel more comfortable using it than starting from scratch with Maya **[10]**.

My final game's design would need to be simple to attain a minimalistic aesthetic. The simplicity can be achieved by using the absence of details in the design and using basic geometric forms which can be done by having trees as low polygon as possible and still maintaining the visual cue that it is a tree. Minimalism is also achieved through the use of neutral colours, I need to design backgrounds and environmental objects to have simple and neutral colours like making the colour of the background white, having trees green at the top and brown at the bottom, having pathways to progress through the level more distinguishable than the neutral colours and having dangerous enemies coloured as a saturated red to visually imply the entity's aggression **[11]**.

Louise Branzuela

The best way to make my game interesting is to have continuous challenges, an interesting storyline, flexibility, rewards and combining fun and realism. To achieve that, I specified that:

- I would need to make my game fantasy-based to make the game interesting without any storyline. **[11]**
- I would need to allow each player's unique way of solving a problem by allowing them to have their own way to approach a puzzle and still solve it even with their differing solutions. **[12]**
- I need to have a level up system that also functions as a scoring system where each player can try to beat other players' highscores. **[12]**
- I need to add intuitive controls such as having the grip buttons as a way to pick up objects and having the trigger button activate different actions like firing a bow or firing a spell. **[12]**

The best way to design an 'interesting' level for the players is for the level to: be fun to navigate, have good sound effects and ambience, to be constantly teaching new mechanics, empower the player, and players can set their own difficulty dynamically. To have those in a level design I need to make sure that:

- I design a pillar of light as a waypoint that they can see at any time and indicate the direction they need to be moving to reach the end of the level. This is to encourage roaming around the area and reaching the destination in their own unique way. **[13]**
- The main way of navigation is through teleportation of the player model with the camera to have an intuitive sense of moving because it transports them to the location that they choose. **[13]**
- Sound effects and ambience will be taken from non-copyrighted sources from the internet. The sound effects are what gives the player feedback on what they've done and makes simple interactions feel satisfying. **[13]**
- A new game mechanic will be introduced every time the player clears a level. The first mechanic will be teleportation, the next would be using a bow, the next level they'll acquire a unique magic. Every time that the player clears a level, they will receive mechanics that add on to previous mechanics. **[14]**
- I would develop the mechanics of teleportation so that their teleportation would neither be too far or too near as having a teleportation too far would make it too easy while making the teleportation too near would be annoying and it would take them a long time to travel distances. **[14]**
- I'm going to design the levels so that the players can choose whether they want to challenge themselves. I'm going to clearly indicate through colour and sound how hard each pathway is. **[14]**
- I'm going to put secret pathways and hidden content spread throughout each level to increase the replayability of the game. **[15]**

Louise Branzuela

Resources

The main resources that I would need are time, a 3D modelling software, and a software that can code games. Currently, every school computer in the tech block is equipped with a 3D modelling software and Unity which is capable of making VR games, however, I need to do further research on what kind of software is fit for my purpose. My outcome needs to be done or at least close to done on June 18 as that is the date for the Selwyn open evening. I currently have 19 weeks to finish this document and finish my outcome. I've allocated 6 weeks to finish my brief development and another 4 weeks on conceptual design, which leaves me 9 weeks to make my outcome. I think that I won't be able to keep up with my allocated time for each part of the project, however, if i take out time from home to do the document or the outcome then the project is plausible. Since this project is 19 weeks, it overlaps with my term 1 holiday which can aid in making my document or outcome because I can dedicate all of my free time onto this project.

Legal Consideration

Intellectual Property rights, or IP, are what comes to mind when developing games and the laws that associate with it. IP comes in a few different types that appear similar but are in fact very different. The relevant ones for my digital outcome that are in effect for New Zealand are:

- Copyright
- Patent
- Trademark

Copyright

According to the Intellectual Property Office of New Zealand, copyright is created automatically with original work like artwork, books, websites, computer programs, drawings, plays, films, music, and sound recordings. The creator may use the symbol © to help them demonstrate that they claim copyright in a particular work, but it is not required for them to do so. Copyright applies to intellectual property cited above for as long as the creator's lifetime plus 50 years added on to it. Before a person can use copyrighted work, they'll need to contact the owner and request permission, also known as 'licence' or 'clearance'. If granted, the licence will usually specify the ways in which the work can be used. Usually the licence holder will have to pay the copyright owner for the use of the copyright work. The copyright owner can take legal action against any person who infringes their copyright by, for example, copying, selling, performing, or communicating the copyrighted work without permission in New Zealand or in most countries overseas. There are also times where copyright doesn't apply. These exceptions are known as "fair use" and this defense can only be used for the following:

- Research
- Private study
- Criticism or review
- Reporting current events

The amount copied should be deemed 'fair'. For example it might be fair for an individual to copy an entire poem or article if it is relevant to their study topic. On the other hand, it is unlikely to be fair to copy an entire book if only a section relates to the study. In education, teachers are permitted to copy the following from an original hardcopy:

- A single copy (for lesson planning purposes)
- Multiple copies to up to 3% or three pages (whichever is greater)

Louise Branzuela

Evaluation of Information

The relevance of this to my digital outcome would be if I wanted to use a model or design that someone else copyrighted. If I chose to use their work, then I would need to cite their work in the credits of the game or not only cite their work, I would also need to ask for their permission for me to use it in my game. However, this is only for pieces of work that are copyrighted, for pieces of work that are uploaded to the internet and are for public use then I would not need to ask for permission to use their work in my game. If I use someone's work that is copyrighted and I haven't cited or asked for their permission, I can not take the defense of fair use as the defense of fair use can only be used for research, private study, criticism or review and reporting on current events, therefore I definitely need to look out if the piece of work that I'm using in my game is copyrighted or not.

Patents

According to the Intellectual Property Office of New Zealand, a patent gives the creator legal right to stop others from making, using, or selling something they have invested for up to 20 years. Their rights only exist in the country or region where the patent is granted. Inventions are effectively the concept residing in a new product or process. A patent gives the owner an exclusive right for a specific term to prevent others from using the patented invention. In most countries, including New Zealand, the term is 20 years. A patent protects the concept residing in a product or process, but you can not get a patent for an idea without also explaining how to put the idea into practice. For example, a person can not get a patent for the idea of something abstract, unless they can demonstrate how it can be made to work. Most patents are filed for new products, machines, electronics, compositions, processes, and software. I have not found any enforcements or penalties towards the infringing of patents in New Zealand, as such, I will be referring to the penalties that, Abbott Laboratories, a company from the US received when it infringed on the patent of an arthritis treatment that Centocor, a subsidiary of Johnson & Johnson, already claimed a patent for:

- **Lost Profits** - If the patent holder proves that they have lost profits because of the infringement, the patent holder can recover money from the sales that they would have made, as well as interest on the money owed.
- **Royalties** - Patent owners who license their inventions to other companies receive royalty payments, money paid by licensees for the right to use the patent. When an infringer loses a patent case, that party inadvertently becomes a licensee and may have to pay the royalty for any future sales that are from the patented product, both device or technology.
- **Court Costs -** In most patent infringement cases, both parties named in the suit are responsible for their own court costs. In some cases, however, the infringer may have to pay the patent holder's court costs.
- **Treble Damages -** A court may decide to award treble damages to a patentee, especially in cases of willful infringement. This refers to a financial award worth three times the amount of the actual financial losses suffered. This is because the government wants to impose stiff penalties to discourage individuals or companies from using someone else's ideas in the first place.

According to Dan Rosenthal who is an Executive Director of GamesLaw.net that provides legal analysis for the game industry, "Where copyright protects tangible expressions, patents protect the ideas themselves. Where copyright provides a long term with relatively weak protection, a patent provides a very strong protection for a short term. Where copyright occurs automatically and is very cheap to register, patents must be applied for and are typically expensive. As developers, [one] will be dealing with patents less often than [they] will be dealing with copyright."

Louise Branzuela

Evaluation of Information

The relevance of this to my digital outcome would be that if I wanted to create an algorithm or copy a software algorithm I found online, I would need to be on the lookout if the algorithm is patented to avoid having to pay for the fines associated with infringing someone else's patents. According to the quote from Dan Rosenthal, I would deal with patents less often than I will be dealing with copyright, therefore I don't need to watch out for patents as much as copyrights. Patents can only be filed when they are new and inventive and it is not possible to get a patent for something that is already in use or published about, because of that I think most of the codes online that serve the purpose of helping developers to find a solution to problems would most likely not have a patent.

Trademark

According to the Intellectual Property Office of New Zealand, trademarks are used to distinguish goods or services in the marketplace. A trademark could include words, logos, shapes, colours, sounds, smells or any combination of these. A trademark identifies a unique product or service. For example, the term "BUDGET SUPERMARKET" for retail services in relation to food and household items is unlikely to identify one trader from any other in that trade channel. The advantages of registering a trademark include:

- Exclusive right to use the trademark throughout New Zealand to promote the goods and/or services it covers.
- Use of the ® symbol with the trademark
- Legal protection to deter others from trying to imitate one's brand.
- A good way to distinguish a business from others.
- Added value to the business can increase over time as the mark becomes established on the market.
- The ability to sell or assign the trademark to another person or business, or license its use to other parties.

Once a person has a registered trademark, no one else can use that name or logo or sign for similar goods or services. Trademarks seek to protect the commercial source of a product, or its branding. Trademarks do not expire like the other forms of Intellectual Property Rights. The civil enforcement and existing criminal offences and penalties of Trademarks fall under the Trademarks Act of 2002. Under the Trade Marks Act 2002 the courts have a wide range of civil remedies available to them (under the respective Act and under common law) to compensate aggrieved owners of registered trademarks for infringement of their trade marks. These include damages, injunctions, orders to account for profits, and orders to deliver up infringing goods to right holders. The Trade Marks Act 2002 also contains criminal offences for the infringement of copyright works and counterfeiting of registered trademarks for commercial gain. A person convicted for such activity may be imprisoned for up to five years or fined up to NZ$150,000. The New Zealand Police are able to investigate and prosecute trademark counterfeiters.

Louise Branzuela

Evaluation of Information

Within the gaming industry, a game is normally connected to several trademarks. Not only will it be associated by the producers' and distributors' trademarks but it may also be distinguished by the game's trademark itself. It is also plausible to safeguard the videogame's characters through independent trademark registration. Since I am making a game, I need to be careful not to infringe another company's trademark. I can do so by designing my own logo and trademark for the game, I don't necessarily need to file for a trademark to the logo or to the game as it is only a project for the school and will not be used for commercial purposes like most trademarked games.

Wider Stakeholder Feedback

I called the law firm Simpson Grierson to ask for feedback on my research and the choices I made to avoid legal damages. They explained to me that the protection and enforcement of intellectual property rights are the core to the successes of many businesses, therefore the dangers of accidentally infringing a large company's copyrighted material can cause serious legal issues. They also explained to me that if I wanted to create a game or any kind of media, then I would need to be more cautious of using copyrighted material compared to trademarks and patents as I would not be making this game for any monetary value and patents for software are rare in New Zealand. They clarified to me that New Zealand is clear on how the defense of Fair Use could be used compared to the vague Fair Use policy from the US where I can take the legal defense that my game is for educational purposes and get away with using copyrighted material for my game as opposed to the stricter guidelines of the Fair Use policy in New Zealand where the defense of educational purposes won't work. They explained that the research that I've done is enough to keep me safe from the ignorance of the accidental infringement of the Intellectual Property rights, however they reminded me to always keep my guard up on downloading models on the internet as it could be someone's intellectual property and might be protected. They also gave me a piece of advice that if I wanted to use someone else's work online into my game, then the best way to be safe from legal issues is to take the aspects that I like about it and then design it from scratch while adding the aspects that I liked.

Critical Analysis of Feedback on Legal Considerations

In conclusion, I need to try and keep an eye out to not copy other people's intellectual property, however I can take inspiration from them. I can avoid any infringement or the penalties for infringing by just making my own design and code, however, since taking other people's codes as inspiration and then writing my own code is legally not infringement, I can do so if I encounter a problem due to my lack of knowledge in coding for a VR game. I can also do the same for my design since I am lacking in technical skills or time to make all of the design for my game by myself. I don't need to register for any of these Intellectual Property rights either as I will not be using my game for monetary purposes.

Louise Branzuela

Ethical Consideration

When it comes to ethical considerations that game developers in the gaming industry make when they decide the content to put into their game, they face the same ethical issues that artists in any other communication mediums have to deal with. A game developer must balance their rights of the freedom of expression to the tastes of consumers and at the same time also consider the effects that their content would have on their audience. Legally, a game is considered as a form of expression that is protected by the New Zealand Bill of Rights Act 1990 where everyone has the right to freedom of expression, including the freedom to seek, receive, and impart information and opinions of any kind in any form. However, in a recent court case in the US, a judge passed a state law that restricted the sales of M-rated games to minors, specifically games that illustrated violence against law-enforcement officers. The ethical judgement of what's right or wrong is up to the audience, if the expression aligns with society's and their moral compass then the object of which they are criticising is ethically right. Hence, I will be researching what is deemed morally right or appropriate to show to intermediate students.

Classification Labels for Games

There is a classification label that is usually placed on the back of game covers, this typically shows the 'appropriateness' of the media for the audiences. It provides the players the information on the type of content that may be of concern to the player, the label is usually accompanied by a descriptive note that contains subject matter that may be deemed inappropriate for someone not of age to view. These rating labels are E for everyone, E_{10+}, for everyone above the age of 10, T for teens (thirteen and above), M for mature (seventeen and above), and A^{O} for adults only (eighteen and above). If I want to make a game that is 'appropriate' for intermediate students then I would need to adhere to the guidelines of getting an appropriate rating from ESRB as it is the company responsible for rating and labelling games worldwide. ESRB has content descriptors which indicate content that may have triggered a particular rating and/or maybe of interest or concern. ESRB's list of content descriptors that can influence a game's ratings are as follows: substances (references or direct use), blood/gore (realistic or discolored), violence (realistic or otherwise), humor (vulgar or mature), language (explicit or vulgar), nudity (partial or full), gambling (simulated or real), sexuality (explicit or otherwise).

Evaluation of Information

Since my game is inspired by the mechanics and action of the game Superhot, the expectation is that my game would be classified as Teen as it is the rating that Superhot is labelled as. Ethically, it is inappropriate for me to show the game that I'm making to children as they are roughly around 11 to 12 and are not teens. Fortunately, I can get a better rating than Superhot since the game's rating has been influenced by the content descriptor of drug reference. Since my game has no deep narrative nor messages of the use of substances like Superhot, it is possible for me to only have the content descriptor of only Violence. An example of a game that is rated E_{10+} with only the content descriptor of violence is Real Heroes: Firefighter, a firefighting simulation game in which players work with a team to extinguish fires in buildings and navigate through debris to encounter disaster victims in life-threatening situations. Even though the game depicts characters that can be seen succumbing to the fire and collapsing to the ground, it managed to get an E rating albeit with the 10+. If I were to create a game similar to Superhot without the drug reference, it would be possible for the game to be rated E_{10+}, the 10+ part of the rating has insignificant relevance to my project since the age range of the students that are visiting are roughly around 11 to 12.

Louise Branzuela

Stakeholder Feedback - Genema Morallos

I contacted the same parent that told me that the game should be appropriate for kids. I presented her the criteria of how a game is rated by the ESRB. She critiqued the fact that the game I'm basing my game off of had the label of drug references, however I assured her that I'm not making a game where any references to drugs exist, she told me that I should be very careful with the content I put in the game and asked me to try to have the least amount of content descriptors, if any, possible. She reasoned that no matter how short the exposure of violence is to the kids, it would still make an impression on them as they are still young and would lead to the desensitisation of violence in the mind of the child.

Critical Analysis of Feedback on Ethical Considerations

I need to be extra careful and take extra measures to make sure that my game would have the least amount of content descriptor as possible as it could anger the parents and discourage them from enrolling their children into the school. Since the minimalistic style from Superhot is what I'm aiming for, the minimalist style perfectly reduces the amount of violence that is in the game since there is no blood or gore and when the enemies die, they shatter like glass. Another extra measure I'd need to take would be to remove any kind of guns that can be put into the game as a weapon because of the fact that guns are typically a symbol for violence and desensitising kids to guns would be another thing that parents would want to do for their child.

Louise Branzuela

Final Brief

Context

Selwyn College is a school that is located in Kohimarama. Selwyn College holds an open evening twice a year to which intermediates can come into the school and look around the stuff that they can do in the school. The tech block is one of the blocks in the school that is in charge of anything technological like computers and robots. **[1]**

Opportunity

The tech block of Selwyn has recently acquired a Virtual Reality set up so that students can create projects that involve Virtual Reality. The tech block will also be showcasing what students have done throughout the years and what the current students are doing. I'd like to make an interactable digital outcome for the intermediate students that want to come along to the open evening and see how different Selwyn is to other schools. **[1]**

End-Users

The end-users for my digital outcome would be the people visiting the open evening. The people who usually attend open evenings for schools are intermediate students that are close to becoming Year 9 and the parents that accompany them to look around. **[1]**

Attributes

The game needs to be something that can interest students to enrol for Selwyn as the main point for open evenings is to showcase what Selwyn College has to offer **[1]**. The game's genre is an Action-Adventure game **[5]**. The game needs to have a minimalistic and simple design aesthetic. The game needs to have the feeling of being put into a level and being able to play it without any need for a narrative. The game must have a goal for the player to reach, the game needs to be appropriate for children, it needs to have a sense of movement for the players and it needs to be a short, but interesting game **[8]**. The game also needs to be legal and I need to do further research as to what is legally okay to do and if I'm infringing any laws I had no knowledge about **[1]**. The game needs to be appropriate for Year 8 intermediate students to play **[5]**.

Specifications

I'll be using Unity due to the fact that I'm already well-versed in its interface and I'm more familiar with C# than C++, albeit I'm not very skilled at it however, the idea of learning a new coding language from scratch seems more difficult to me than just building upon my prior knowledge in C#. For the 3D modelling software, I'll be using Blender for the same reasons as Unity since I also already have prior knowledge on Blender, I would feel more comfortable using it than starting from scratch with Maya **[10]**.

My final game's design would need to be simple to attain a minimalistic aesthetic. The simplicity can be achieved by using the absence of details in the design and using basic geometric forms which can be done by having trees as low polygon as possible and still maintaining the visual cue that it is a tree. Minimalism is also achieved through the use of neutral colours, I need to design backgrounds and environmental objects to have simple and neutral colours like making the colour of the background white, having trees green at the top and brown at the bottom, having pathways to progress through the level more distinguishable than the neutral colours and having dangerous enemies coloured as a saturated red to visually imply the entity's aggression **[11]**.

Louise Branzuela

The best way to make my game interesting is to have continuous challenges, an interesting storyline, flexibility, rewards and combining fun and realism. To achieve that, I specified that:

- I would need to make my game fantasy-based to make the game interesting without any storyline. **[11]**
- I would need to allow each player's unique way of solving a problem by allowing them to have their own way to approach a puzzle and still solve it even with their differing solutions. **[12]**
- I need to have a level up system that also functions as a scoring system where each player can try to beat other players' highscores. **[12]**
- I need to add intuitive controls such as having the grip buttons as a way to pick up objects and having the trigger button activate different actions like firing a bow or firing a spell. **[12]**

The best way to design an 'interesting' level for the players is for the level to: be fun to navigate, have good sound effects and ambience, to be constantly teaching new mechanics, empower the player, and players can set their own difficulty dynamically. To have those in a level design I need to make sure that:

- I design a pillar of light as a waypoint that they can see at any time and indicate the direction they need to be moving to reach the end of the level, this is to encourage roaming around the area and reaching the destination in their own unique way. **[13]**
- The main way of navigation is through teleportation of the player model with the camera to have an intuitive sense of moving because it transports them to the location that they choose. **[13]**
- Sound effects and ambience will be taken from non-copyrighted sources from the internet. The sound effects are what gives the player feedback on what they've done and makes simple interactions feel satisfying. **[13]**
    - I need to make sure that these sound effects are non-copyrighted as it can lead to a lot of legal implications if I don't make sure to check if the piece is claimed as an intellectual property of someone. **[21]**
- A new game mechanic will be introduced every time the player clears a level. The first mechanic will be teleportation, the next would be using a bow, the next level they'll acquire a unique magic. Every time that the player clears a level, they will receive mechanics that add on to previous mechanics. **[14]**
- I would develop the mechanics of teleportation so that their teleportation would neither be too far or too near as having a teleportation too far would make it too easy while making the teleportation too near would be annoying and it would take them a long time to travel distances. **[14]**
- I'm going to design the levels so that the players can choose whether they want to challenge themselves. I'm going to clearly indicate through colour and sound how hard each pathway is. **[14]**
- I'm going to put secret pathways and hidden content spread throughout each level to increase the replayability of the game. **[15]**

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The best way to make sure that I don't infringe any laws is to keep an eye out to not copy other people's intellectual property, however I can take inspiration from them. I can avoid any infringement or the penalties for infringing by just making my own design and code, however, since taking other people's codes as inspiration and then writing my own code is legally not infringement, I can do so if I encounter a problem due to my lack of knowledge in coding for a VR game. I can also do the same for my design since I am lacking in technical skills or time to make all of the design for my game by myself **[21].** I need to be extra careful and take extra measures to make sure that my game would have the least amount of content descriptor as possible as it could anger the parents and discourage them from enrolling their children into the school **[21].** Since the minimalistic style from Superhot is what I'm aiming for, the minimalist style perfectly reduces the amount of violence that is in the game since there is no blood or gore and when the enemies die, they shatter like glass **[8][22].** Another extra measure I'd need to take would be to remove any kind of guns that can be put into the game as a weapon because of the fact that guns are typically a symbol for violence **[23]**.

Resources

The main resources that I would need are time, a 3D modelling software, and a software that can code games. Currently, every school computer in the tech block is equipped with a 3D modelling software and Unity which is capable of making VR games, however, I need to do further research on what kind of software is fit for my purpose. My outcome needs to be done or at least close to done on June 18 as that is the date for the Selwyn open evening. I currently have 19 weeks to finish this document and finish my outcome. I've allocated 6 weeks to finish my brief development and another 4 weeks on conceptual design, which leaves me 9 weeks to make my outcome. I think that I won't be able to keep up with my allocated time for each part of the project, however, if i take out time from home to do the document or the outcome then the project is plausible. Since this project is 19 weeks, it overlaps with my term 1 holidays which can aid in making my document or outcome because I can dedicate all of my free time onto this project.