



Faculty of Science and Technology

BSc (Hons) Games Design

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*An Analysis of the Methods and Techniques used to
Create Immersive Atmosphere in Horror games.*

by

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Abstract

Horror games have evolved significantly over the years, and their ability to create immersive experiences for the players has only grown more sophisticated over time. Designers often use a wide variety of elements and techniques that contribute towards making a successful horror game that creates an effective and immersive experience – ranging from atmospheric design to smart use of lighting and shadows or the use of auditory techniques.

This project centres around exploring the various techniques utilised in environmental storytelling, and how sound design and level design can play a big part in the impressiveness and experience of the player. An analysis will be created that will explore a variety of different research papers and professional articles that cover a range of techniques used to create a compelling horror game – this will be further reinforced through an in-depth evaluation of existing horror games and their key techniques using the knowledge gained through previous analysis.

An experimental horror game will be then developed with the aim of incorporating the most effective methods discovered during the research phase. A user study will then be conducted to evaluate the game's ability to create the desired atmosphere and environment – this will provide further insight on whether the game's environment achieved its purpose.

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1.0 Introduction

Environmental storytelling in horror games is a technique used by designers to immerse players in a terrifying, atmospheric world using environmental cues and visual storytelling. Instead of relying on basic and predictive narrative techniques such as dialogue and cutscenes, environmental storytelling gives the players the ability to explore the game world and piece together their own narrative and story on their own.

Primarily in horror games, environmental storytelling is often used to create a sense of unease and horror. Designers will often use sound, lighting, and shadows, as well as more importantly level design to create a haunting atmosphere that signifies a sense of dread and reinforces the game's story and narrative. For example, a horror game set in a school might include broken windows, decaying textbooks and papers scattered throughout the hallways, eerie shadows casted on the walls or desolate sound that feels unsettling.

Although environmental storytelling alone can perhaps achieve the aim of this project, evaluating other techniques in conjunction with environmental storytelling may result in a more impactful and immersive experience for the audience.

1.1 Aim

The aim of this project is to identify and analyse various techniques used to create an immersive atmosphere and engaging experience in horror games.

1.2 Objectives

1. Identify common techniques and methods used to create games using environmental storytelling and how and why they create immersive atmosphere for the players.
2. Analyse the key elements of games that managed to create an immersive horror game experience.
3. Create and evaluate a playable interactive horror game that employs the techniques and methods identified from the research.

2.0 Contextual Review

To gain a comprehensive understanding of horror games, it was essential to analyse and take note of information related to environmental storytelling. This project will hope to delve into the history and systems of horror games, and shed light on four crucial techniques that play a significant role in the game development of a horror game. These techniques will then be examined, and the project will set to provide a thorough understanding of these techniques by linking them to already existing popular horror games.

2.1 Visual Obscurity

“The fog and the darkness are used to hide what is not depicted ...The feeling of entrapment is very pronounced. You don’t see very far when wandering the streets of the resort town. The limits remain uncertain. You are always expecting to run into something awful” (Perron 2011 p.27)”

Visual Obscurity is not only limited to darkness and the ability to see, what Perron describes here when talking about Silent Hill, is that the use of dense fog and carefully planned out maze-like level design can create a feeling of uncertainty and strike fear into the player (Niedenthal 2009, p.6).

Perron notes that the feeling of entrapment is further enhanced by the fact that the player is never quite sure where the boundaries of the game world lie. The limits of the game environment are always left uncertain, which can create a sense of unease in the player, as they always expect to run into something terrible. As Wells (2000, pp.108-109) stated:

“the most persuasive horror is the one suggested in the mind of the viewer, rather than that which is explicitly expressed on the screen”.

The lack of ability to see creates tension and makes the players feel anxious as they are forced to use their imagination on what lies beyond the darkness.

“Obscurity in this sense enhances a sense of vulnerability (uncertainty) and is thrilling because it makes the object of terror indistinct. It should be noted that the opposite of obscurity is not light, but clarity; thus obscurity can be produced by anything that thwarts clear perception: darkness, atmospheric phenomena, or occlusion” (Niedenthal 2009, p.6)

The quote by Niedenthal highlights the importance of obscurity in creating a sense of vulnerability and uncertainty in horror. According to Niedenthal, obscurity makes the object of terror indistinct, which enhances the thrill of the experience.

This further explains that the opposite of obscurity is not light, but clarity. As anything that thwarts clear perception can produce obscurity, such as darkness,

atmospheric phenomena, or occlusion. By creating said environment of obscurity, designers can manipulate the player's perception and create a sense of unknown danger, making the player feel susceptible to unknown dangers.

Niedenthal's emphasis on the importance of obscurity in horror suggests that this technique is critical in creating a sense of fear and vulnerability in the audience.

2.2 Level Design Strategies and Narrative Descriptors

"L.A. Noire features an extensive environment that simulates the city of Los Angeles in 1947. However, only certain buildings are important to gameplay, and not all can be interacted with. The designers distinguish interactive buildings from non-interactive buildings by coloring the knobs, handles, or other entry hardware of the interactive buildings a gold color". (Totten 2014, p.172)

Design strategy reflects a thoughtful consideration of the player experience and the need to guide their attentions and actions in the game world. As Totten describes in his book, by making it clear which buildings are accessible, designers can create a more focused and streamlined experience for the player. Without this approach, players may spend time around areas of the game world that do not have any gameplay significance, which could potentially lead to frustration and cause them to lose interest in the game. This design strategy can also be further reinforced using visual cues that helps manage the player's attention and avoid cognitive overload.

"Some games convey narrative through cutscenes or text that is separate from gameplay. Some convey narrative through the art in the game itself or on the packaging. Salen and Zimmerman describe these methods as narrative descriptors, elements that give meaning to game mechanics by placing them contextually in a story." (Totten 2014 p.272)

Totten defines the work of Salen and Zimmerman (Salen and Zimmerman. Rules of Play. 2003) to describe a potential way narrative can be conveyed in video games. These methods are referred to as "narrative descriptors".

Narrative descriptors help establish a sense of immersion and engagement in the game world, which helps provide players with a context in which to understand the game mechanics and the actions they take within the game - this helps to make the gameplay feel more meaningful and may provide a sense of purpose as the player progresses through the story.

Games can use different methods to convey narrative and each method has its own strength and weaknesses: cutscenes can be effective at delivering a cinematic experience, while art and packaging can set the tone for the game and establish expectations for the player.

2.3 Horror vs Terror

Often in modern horror games, the excessive use of unexpected loud sounds or visuals is used in hopes of startling the player, these games often fail to effectively build an engaging atmosphere that eases the player in the environment around them but instead rely on jump scares to achieve that – those techniques are commonly referred to as Horror and Terror. To create a great atmosphere for the player, horror and terror are essential when developing a horror game. As Sipos states in his book:

“a talented filmmaker [developer] should balance shocks with fear, much like a skilled music composer balances high and low notes, and fast and slow movements.” (Sipos 2010, p.58)

It is important to mention that the use of jump scares and loud sounds cues is often necessary for the game, however overuse of such things could potentially have a negative effect on the player and the environment. Similarly, to how you would watch a horror movie; seeing the monster for the first time would often startle and frighten the people watching – these people over time could grow accustomed to the threat in front of them and no longer feel threatened or intimidated if they were to rewatch the movie over and over again. This is why, it is important to find the right balance between horror and terror, and effectively create an unsettling and tense environment whilst keeping repetitiveness to a minimum.

2.4 Audio

The use of sound is often created in a way to insinuate potential threats, as underlined by Sipos in ‘Horror Film Aesthetics’:

“it's often a noisy threat. Because the threat is offscreen or in the dark - heard but not seen – audiences must fill in the blanks, interpreting the sounds with their own unnerved imaginations” (Sipos 2010, p.230).

The quote by Sipos emphasized the importance of sound in creating a sense of threat and fear in horror. According to Sipos, the threat is often offscreen or in the dark, and it's heard but not seen. This creates a sense of uncertainty and vulnerability in the audience, as they must rely on their own imaginations to fill in the blanks and interpret the sounds they hear.

Sipos further notes the significance of the “less is more” approach in horror, where the use of minimal visual cues and subtle sounds can create a more profound impact on the audience.

“Sounds create continuity and presence, and as a result, confuse the borders of fiction. This is partly what makes sound such an effective shortcut to emotions.” (Lankoski and Ekman 2009, pp.187-188)”

The quote by Landoski and Ekman highlights the importance of sound in video games in creating an immersive experience. They argue that sound has the unique ability to create continuity and presence in the game environment, which can blur the boundaries between the game fiction and reality, making the experience more emotionally engaging.

Considering Niedenthal's view on visual obscurity and Sipos' opinion on the importance of audio in video games, it becomes clear that combining these techniques and design theories can significantly enhance the immersive atmosphere of a game.

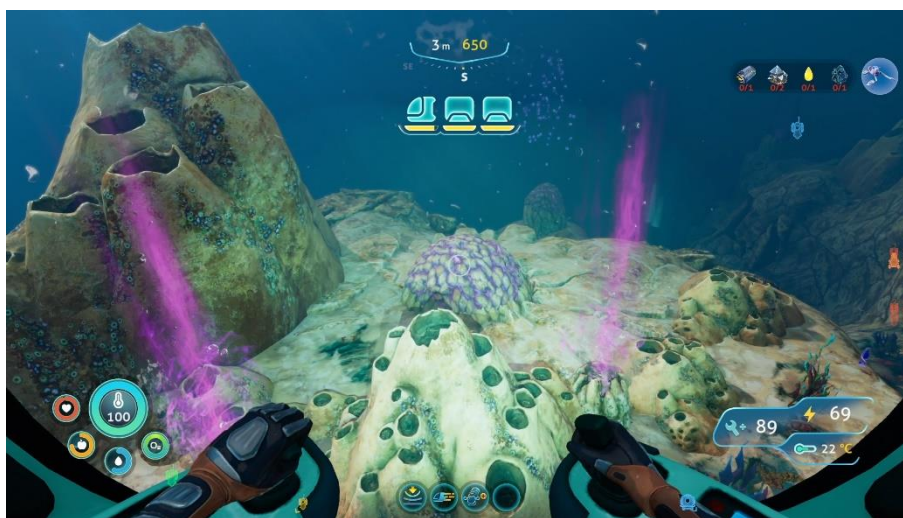
2.5 Methodology

A case study will be performed on highly popular horror games that are on the market. They will be analysed with the theories and concepts that was found in the previous research to support the design and evaluation of the horror game concept for this project.

2.6 Games Chosen for Case Study

2.6.1 Subnautica

Subnautica is a first-person open-world survival game, developed and published by Unknown Worlds Entertainment, is set on an alien planet complete submerged in water. The player plays a role of a survivor of a crashed spacecraft and his sole mission is to survive and explore the ocean depths for resources and survival. The game offers a unique and immersive underwater experience that is both terrifying and unsettling through the primary use of compelling sound design.



(Figure 1: Subnautica gameplay image (IGN. 2021))

2.6.2 Silent Hill – Playable Teaser

Silent Hill – Playable Teaser, or formerly known as PT, is an interactive psychological horror game released in 2014. The game itself was originally presented as a small “demo” or “teaser” for the developers behind Silent Hills game. Critics praised the game for its slow, yet terrifying experience that makes you want to escape from this horror experience (O’Brien 2014). Despite the release of the game being a “free teaser”, it was received incredibly well, being rewarded a Metacritic score of 8.7 (Metacritic 2014).

2.7 Analysis of Chosen Case Study Games

2.7.1 Subnautica

One place where sound design shines is in creating compelling and immersive atmosphere. Sound in games is often used to make the world feel alive and fill that empty void of nothingness when you are playing the game. In Subnautica, the sound design is everything - the subtle background music composed of electronic sounds that sound like the ocean’s currents can reinforce the environment setting of an alien planet and an otherworldly atmosphere (Goto and Von Dehn). The most prominent usage of audio in Subnautica is the used to create a sense of terror and curiosity. As the player progresses through the game, unlocking various tools and mecha machines, they can traverse into deeper and more dangerous ocean depths.

While the aesthetic and visuals of the game build slight terror in the players vision by hindering the light view angle and range, the distorted wailing screams in the gaping depths of the ocean floors that the player experiences occasionally throughout their playthrough is what creates this unsettling yet exceptional atmosphere.



(Figure 2: Subnautica Gameplay Image (Reddit))

Subnautica utilises sound in a much more interesting way than most horror games out there, the designers behind the game prioritised the aspect of “terror” in their game design. When a player hears a distant roar, it is usually so vague and unidentifiable that the player is left puzzled on what exactly that noise was, they are given so little information about almost all sources of sound around them, but at the same time it’s enough to keep them “scared” – but not to the point where it becomes too scary to continue playing.

The most memorable thing that the community has picked up on, is the screeching roars that they would hear – these roars are from the game’s “leviathan” class monsters. These monsters are essentially the “endgame” creatures which the player would experience and are by far the most dangerous enemy the player could face. In fact, what makes it even more terrifying, is that the information about the creature behind the memorable roar, the “Reaper Leviathan” is shown to the player at a later stage of the game. The “articles” – which are documented entries about sea life that the player can find, the player later reads that the distant roars that they heard previously are from this type of creature and is usually an indicator that they are nearby and are so close that they can see the player. When they find out about this, it instantly becomes clear to the player that this entire time, they were being watched.



(Figure 3: Reaper Leviathan Sea creature (Wallpapers.com))

Due to the submerged planet the player is in, the lack of walls, mountains and cover eventually makes the experience even more frightening, because as the player learns about these leviathan class monsters, they soon find out that if they were to spot one, there is no escape – this creates constant tension as the player must plan his route back before exploring if they were to get ambushed.

Although the game's environment and audio design are impressive, it takes one little thing to ruin the player experience, and this being how grindy and story-driven the game is. The player cannot progress deeper into the ocean depths without properly crafting the necessary machines and tools for them to survive the pressure and lack of oxygen – therefore, the player must scavenge the wreck sites around the map, that are totally in random locations, and what makes this even worse is that there is absolutely no mini-map there to guide the player. If they player spends hours on trying to find a particular item in the wreckage, where would they get any idea on where to find them? It would be the games' wiki page. If the player needs to rely on external resources like a game's wiki page to progress in the game, it can break immersion and make the player feel like they are no longer part of the game world – this is because it can feel like they are breaking the “forth wall” and reminding the player that they are just playing a video game.

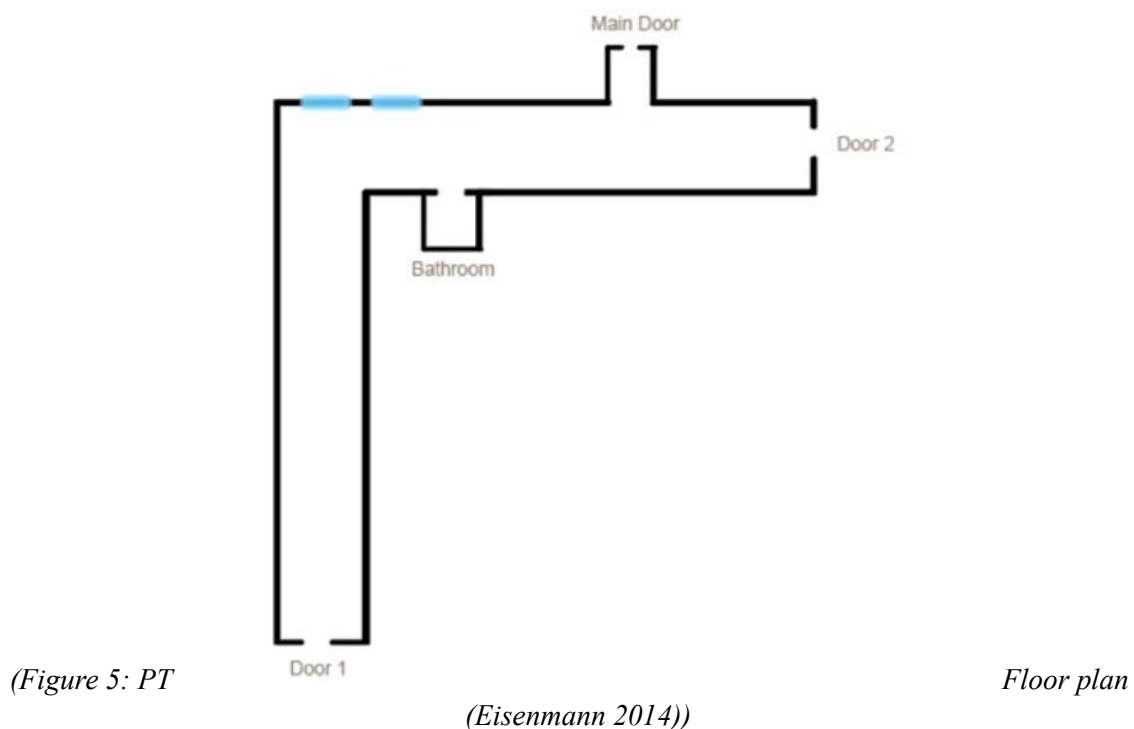
To maintain immersion, the players must be provided with hints and in-game clues on the location of the items that will lead them to progress through the game, however this must be perfectly balanced to not seem like they are being handheld through their experience.



(Figure 4: Subnautica Crash Site (Unknown Worlds))

2.8.2 Silent Hill – Playable Teaser

The most notable feature of PT is its seamless use of continuously looping environment. The player is greeted with a simple, yet complex L shaped level that would loop every time the player exited through the last door (see Figure 5). Once the player leaves the room through the Door 2, they are seamlessly transported back to the location of Door 1. This is a non-Euclidean level design where the main aim of this is to create a sense of doubt and confusion within the player, by making them disoriented and question whether anything has changed.



Although at the beginning of the game, the player isn't greeted with much information about who they are, what their purpose is here, and for what reason they are in this loop. The designers drip feed small bits of information bit by bit, every time they go through the loop. This is seen through various methods, most prominently the Radio which is located near the Door 2 (see Figure 6). Using this form of narrative design, the player sparks a reason to continue going forward because as they keep going through the loops, the more they uncover about the sinister plot – this being that the supposed broadcaster from the radio mentions a reporting of a father who brutally murdered both his wife and children – this creates a sense of unease and tension as the player is not sure whether they are currently in this man's house or whether they are being watched.



(Figure 6: Image of a radio on a stand in the hallway (PT-Kojima.Fandom))

As important is narrative and level design, the audio plays a huge part in PT's atmosphere. The use of ambience, and the complete lack of any type of "music" often improves the player experience by clearing out unnecessary audio in the game, and making these subtle, and more ambient sounds such as water dripping, floorboards creaking and knocking to be more apparent and focused. This also means that any sudden bursts of sounds, such as phone ringing or loud banging against the doors is even more effective because the player is not distracted by any other source of audio.

The minimal use of lights and giving the player only a flashlight to work with, is the most notable visual obscurity technique. The flashlight itself is very limited in its range, angle, and power, therefore most of the time when the player looks at something, the outer edge of the screen is shrouded by darkness – which further reinforces the feeling of unease and fear in the player. As the player traverses forwards through the level loops, the use of subtle sound and decreasing visibility forces the player to frantically move the flashlight around to illuminate their surroundings, this is deliberately designed to create a sense of vulnerability and fear of the unknown.

PT manages the balance between horror and terror quite well, this is obvious in the first few loops of the game where the player would hear loud banging against the wall as they are walking past the bathroom (see Figure 5). Several of these moments are then later turned into actual jumpscare, most notable one is the bathroom door scare, during one moment of the loop the Door 2 would slowly close as the player walks towards it and as that happens the bathroom door slowly creaks open. The player has no choice but to backtrack and find out if the cause of the door closing is behind whatever is lurking in the slightly opened bathroom

door. However, only if the player zooms through the crack in the bathroom door would they encounter a monster/woman that quickly shuts the door (see Figure 7) – this then leads to the main Door 2 to be opened again.



(Figure 7: Bathroom door jumpscare (IGN.2014))

Nevertheless, this entire encounter could be missed if the player does not zoom through the bathroom door (see Figure 8). This works as a double-edged sword as the player can potentially miss key parts of the scares, but at the same time increases the terror aspect of the game as the player is not sure whether every creak, sound or object can be a potential trigger for a scare.



(Figure 8: Bathroom door slightly opened (IGN. 2014))

Although the premise of the game has the player walk in a continuous loop of the house, it is often stopped by an oddly confusing and tedious puzzle that can destroy the overall pacing of the game and its atmosphere. This is seen during another bathroom scene where visibility of the path ahead of the player is too dark (see Figure 9), so they are forced to enter the bathroom which is opened on the right.



(Figure 9: Missing light source in the hallway with open bathroom door on the right (IGN.2014))

In this bathroom, it may seem that all you do is pick up the flashlight that is obviously placed right in the centre of the bathroom and leave (see Figure 10), it is however abruptly stopped by the door suddenly closing the moment you pick it up.



(Figure 10: Flashlight on the ground inside a dark bathroom (IGN.2014))

The only real way of getting out of the locked bathroom is by specifically looking at the contents inside the bathroom sink and the mirror for a specific number of seconds for the door to slowly creak open. Although this is an effective way of narrative due to the baby crying in the sink, this event seems too forced and can be seen as frustrating puzzle due to specific conditions you must meet to solve the puzzle – this can have an undesirable effect on the player's immersion.

3.0 Development

3.1 Project Specification

For this project, it was deemed appropriate to utilise an existing asset pack from the Unreal Engine marketplace. The asset pack was chosen for its decaying and abandoned building assets, which took in the theme of the soviet-era architecture (Shirk, 2019, Figure 11). This was particularly perfect for the theme and the environment the project was aiming for, as seen in Figure 11 - it showcases a modern, decaying school building that was abandoned. Figure 11 shows a well-lit environment, however for this project, the lighting intensity will be lowered to accommodate the desired effect of the horror game genre.



(Figure 11: Image of a built 3D Environment in Unreal Engine)

3.2.1 Pre-Production Planning

The development begins with the pre-production planning. The use of Miro and Figma were used to create notes and mood-boards which helped establish a proper environment design path the project needed (see Figure 12). The images in the mood-board were directly taken from a real-world location, in one of the school buildings in the city of Pripyat in Ukraine, near the explosion site of Chernobyl Power Plant.



(Figure 12: School Moodboard)

With the theme of a school building in mind, the next step was to design a floor plan of a school building. Photoshop was used to draw a basic top-down floor plan, utilising existing school floorplans as inspiration, taking note of the handpicked mood-board images and the layout of traditional Russian schools.

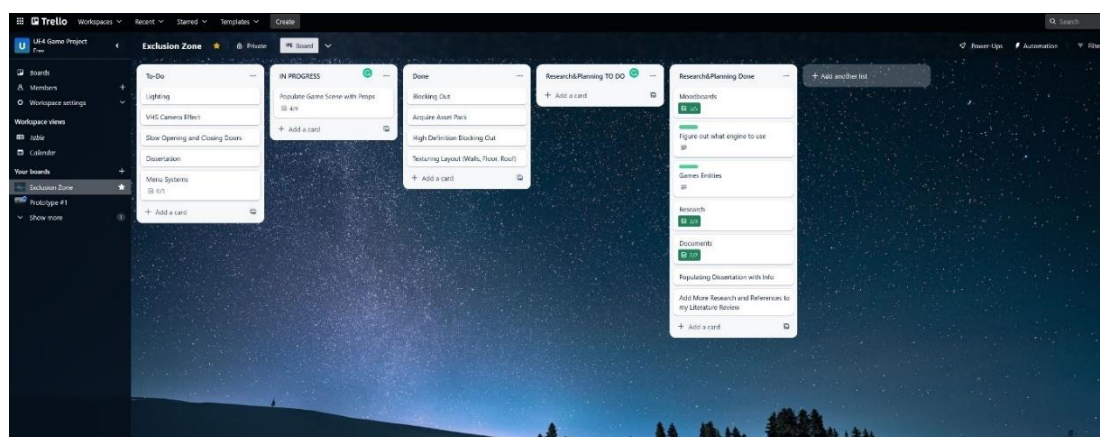
In total, there were two iterations of a school floorplan that was created (see Figure 13). The first iteration used a variety of different rooms – this being the classrooms, the gym, and the cafeteria. However, looking closely at the asset pack that was chosen, it was clear that the specific assets for the first iteration were not found – this being, benches, gym assets and cafeteria assets. To make the first iteration work, additional time would have to be put in developing these additional assets, whilst keeping the same style and texture design as the original asset pack chosen – this could have proven to be challenging as keeping the same texture design as the original creator of the asset pack would take too much time, or in the worst case make certain 3D Models out of place.



(Figure 13: Floorplan iterations)

The second and final iteration (see Figure 13) was then created to make use of the asset pack to eliminate the need of creating additional models – it introduces a more open floorplan, that includes more classrooms which would make reusing assets an easier task.

Trello website was also used in the pre-production and development side of things. Trello is a visual tool that allows for creation and sorting of tasks and objectives that the person needs to do, thus, a quick draft was made (see Figure 14) which was used and updated throughout the entire development of the project to ensure the tasks were completed in the correct order and timely fashion.



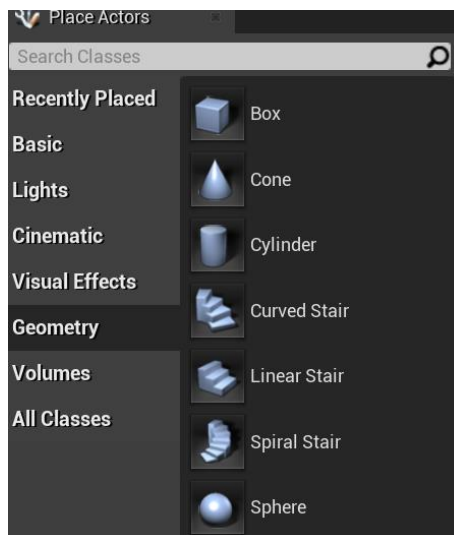
(Figure 14: Image of a Trello board with tasks)

3.2.2 Level Design

The development process started off with a Whitebox level in the Unreal Engine. The purpose of the Whitebox was to design, test and create the feel of the level environment.

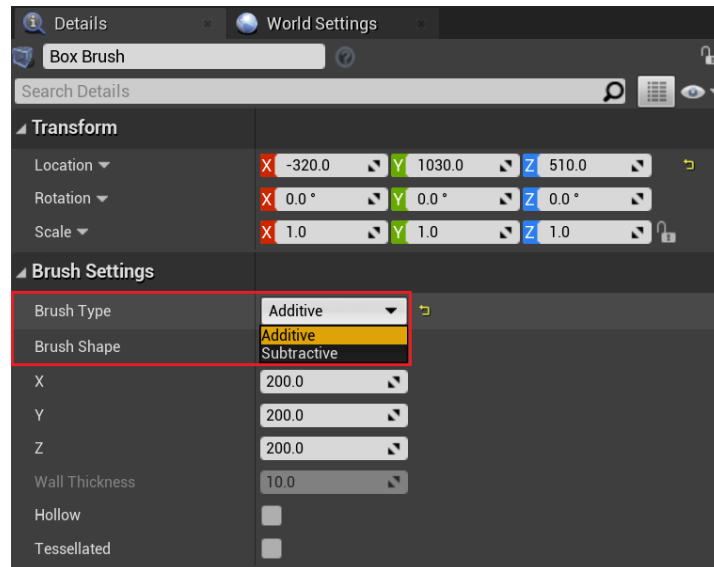
Instead of installing additional plugins that would allow me to create Whitebox levels, a choice was made to stick to the original Geometry Brush Actors that comes standard with the engine (See Figure 15), to reduce project file size. Geometry actors act in a similar way to an existing plugin that is widely used called 'Super Grid', it allows for a much more fluid workflow, utilising a more modern and cleaner interface, and tileable material compared to its counterpart Geometry Brush Actors.

After the setup was completed, the next step in the process was to import the final iteration floorplan image and set it as a material for a ground plane object.



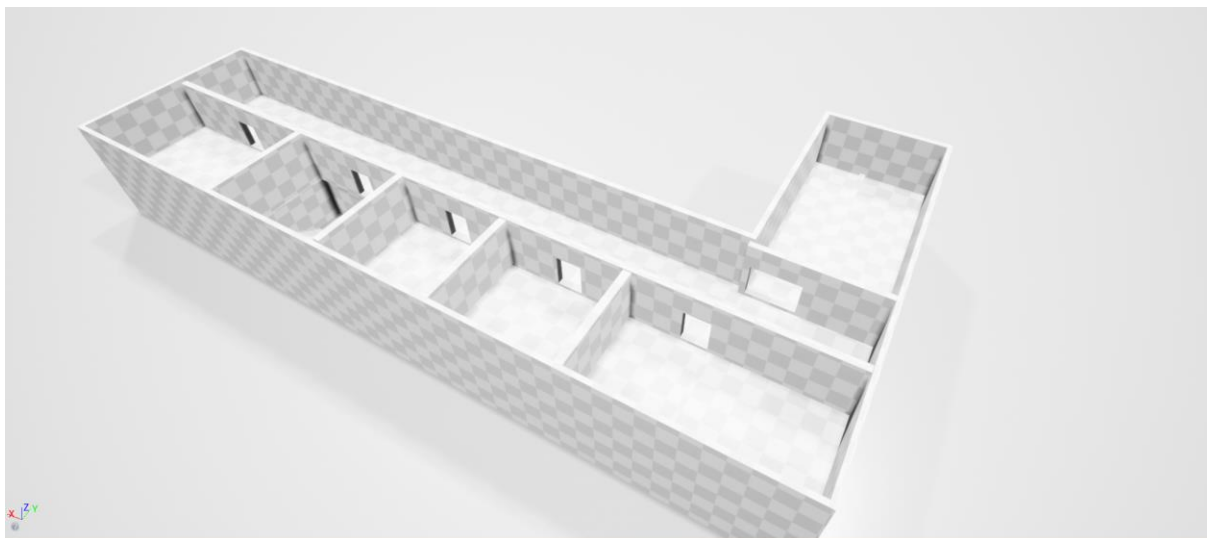
(Figure 15: Image of geometry brush actors available in the editor.)

Once that was done, the next step was to start creating rooms and working through the floor plan starting from the first floor of the building - utilising Geometry brush actors to create all kinds of primitive objects. Furthermore, geometry brush actors were also capable of subtracting themselves from other brush actors. To reiterate, it is possible to carve out or remove solid space to create doors, windows, and so on. This was as easy as setting the actor you want to act as a "subtractive" actor and drag it inside another brush actor you want to make a hole inside of (see Figure 16).



(Figure 16: Image of Brush types and shape options)

With the Whiteboxed designed level completed (see Figure 17)., multiple tests were made to ensure the flow and the size of each room were appropriate for the project.



(Figure 17: Image of completed Whiteboxed level environment)

Due to the way the level been laid out through the whiteboxing method, the creation of the actual level using proper wall, ceiling and floor meshes were an easy and steady process that required a simple replacement of the previous Geometry brush actors. The asset pack contained a variety of different sizes and shaped walls that allowed for a much easier time in making sure every single wall seamlessly fit together. To ensure the walls, floors and ceiling were always correctly placed, with no seams or holes in between each other, the values for location, rotation and scale of the actors that were being placed in the scene were snapped. This meant that when the actor is moved around, rotated, or scaled in

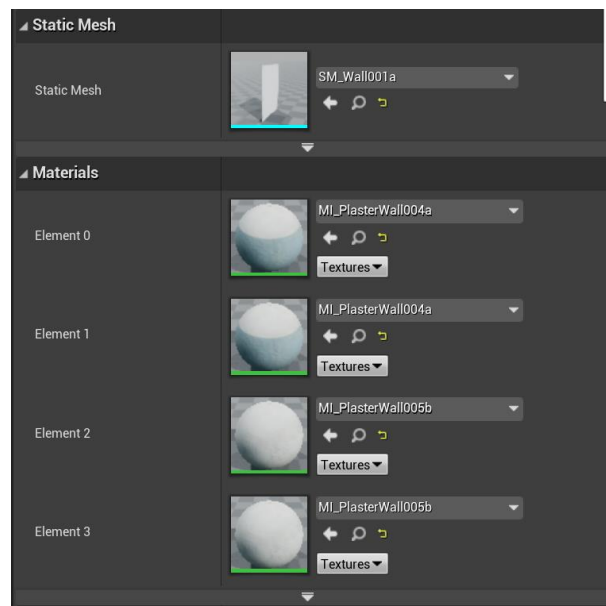
the scene, those values will be snapped and only increase in the intervals that they were set in (See figure 18).



(Figure 18: Transform Tools and Snapping Settings)

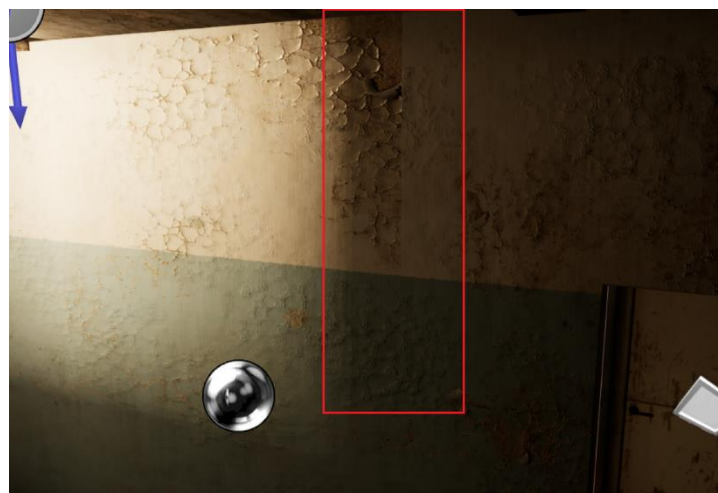
3.2.3 Texturing

Once the foundation of the building's first and second floors were completed, the subsequent step was to apply textures to all the models within the scene. The process was quite straightforward, as it involved simply dragging and dropping the appropriate and relevant materials into the corresponding locations of the actor in the editor (see Figure 19). Due to the way the 3D models were textured, it was possible to use a single material for multiple 3D assets. All 3D wall models were created with 4 material instances that you can fill – two for the front and two for the backside of the model. This approach was applied to almost every 3D asset, except for the props, allowing walls and floors to appear less repetitive.

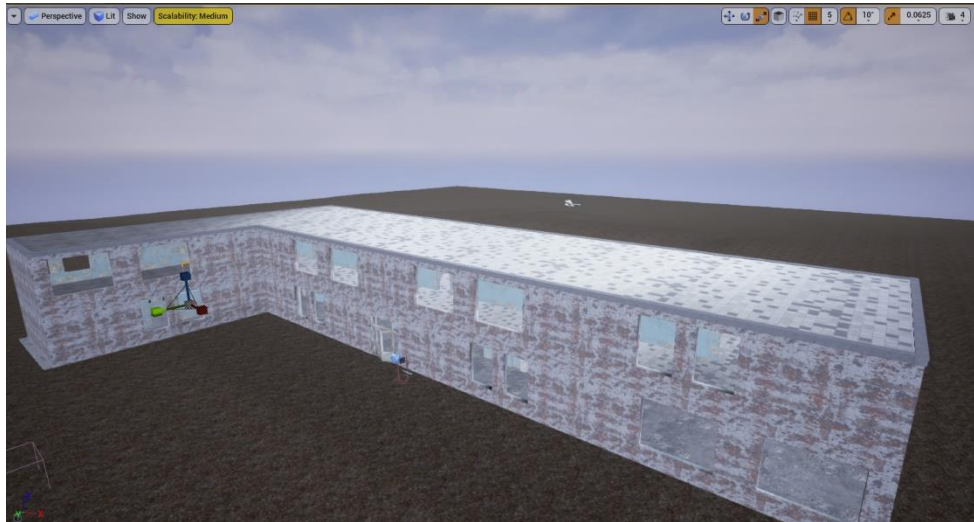


(Figure 19: Shows a wall static mesh and four material elements it can use.)

When the texturing part of the scene was almost finished, there appeared to be obvious texture seams between walls and the doorway (see Figure 20). However, this problem has been planned for and the way to solve this issue is to cover the seams, primarily between the door wall frame and the wall its connected to with support columns. These columns did in fact bring a little bit more infrastructure sense into the level.



(Figure 20: Image shows seams appearing between two 3D asset walls of different type)



(Figure 21: Completed Textured building)

3.2.4 Level Building

To achieve the expected outcome and expression that this project was going for, the level building had to be perfected. Due to the limitation of the asset pack that was used for this project, the variety of 3D models for each classroom were limited, there were only a handful of models that could have been reused enough until it became repetitive – however an additional attempt was made to ensure that the rooms differed from each other and the player didn't feel like they were walking into the same room over and over again. Each room was designed differently – from the overall layout of the room, to how messy and packed the classroom would appear (refer to Figure 22).



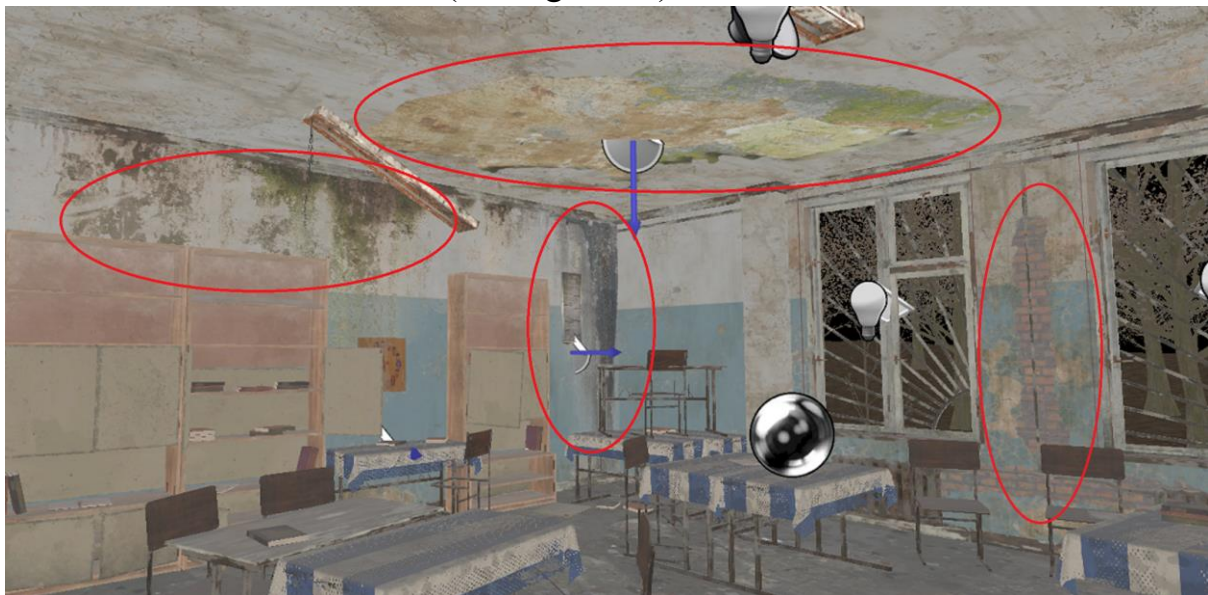
(Figure 22: Image of one of the rooms in the building (using lit mode for clarity))

During the level building process, the foliage tool was used to scatter all kinds of small assets such as papers, books, and the like around the scene. Although this tool is mostly used for foliage type assets such as trees and bushes, it was possible to use static meshes and make them act as a foliage type. Foliage tool lets you select however many assets you want to place and scatter them with a random rotation with a simple painting tool (See Figure 23).



(Figure 23: Brush settings available for foliage painting)

Due to how rundown the environment is, decals were used to add a unique detail to the environment. Decals serve as a projecting tool that allows texture to be applied on the surface of the mesh. The asset pack that was chosen however contained many different decals specifically for this type of environment. Stains and damage decals were strategically placed to augment the environments level of abandonment and age, alongside with additional use of man-made graffiti and deteriorated brick decals (see Figure 24).



(Figure 24: Image of multiple decals projected on top of meshes)

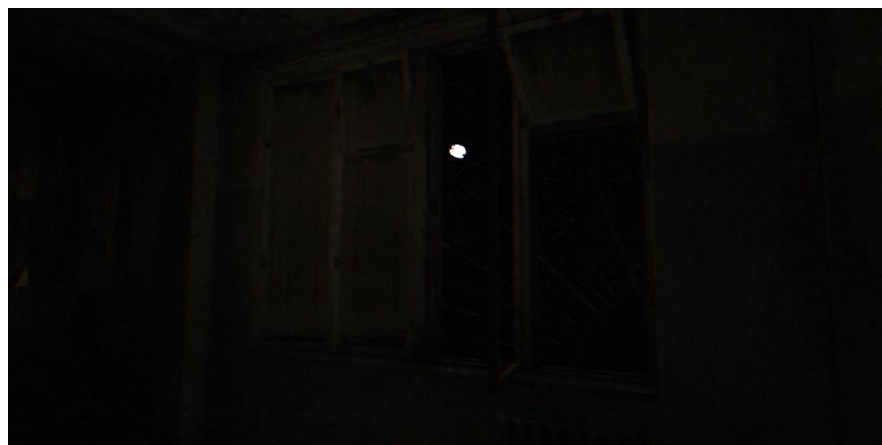
3.2.5 Lighting

Lighting was the most essential aspect of the game development, it has the power to alter the perception of a level, set the mood and tone of the environment and above all, determine the visibility of various parts of the level – this was the most important part to focus on due to the nature and focus of this project. There were 3 most vital parts that created the lighting needed, the directional light, sky atmosphere and exponential height fog (See Figure 25).

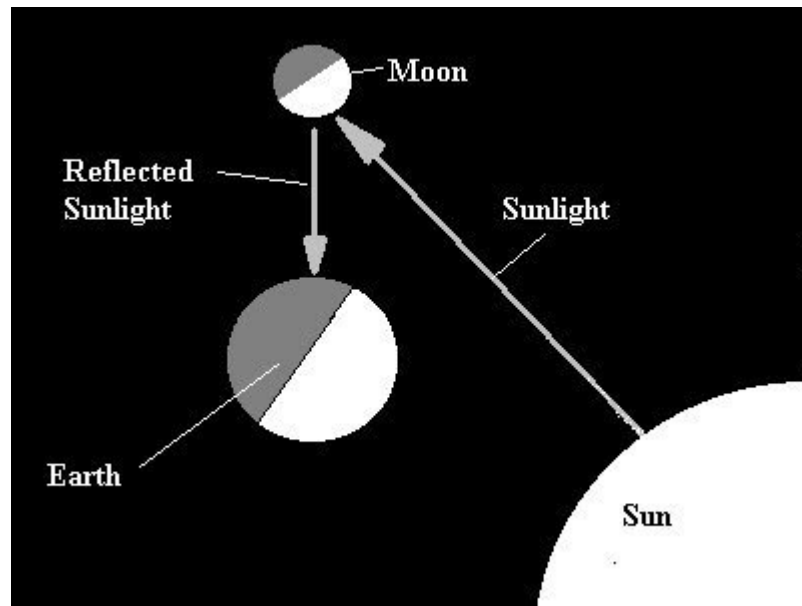


(Figure 25: Lighting actors placed in the scene)

To begin with, directional light is the main source of sunlight, albeit limited in intensity, it was used to simulate realistic lighting in the scene. However, it may be clear that the environment does in fact look quite dark for the position of the sun been quite high (see Figure 26). This is because the white “sun” that the player sees is not actually the sun, but a fake moon. It is there to simulate the sunlight that falls on the moon’s surface and bounces back to planet earth (refer to Figure 27).

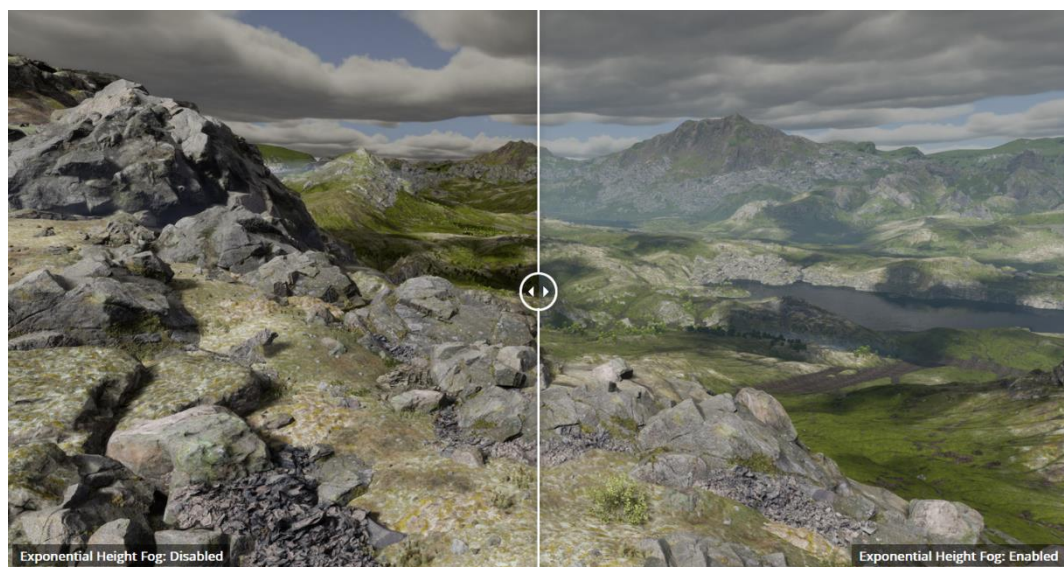


(Figure 26: Image of the moon through the window)



(Figure 27: Diagram showing how the moon reflects sunlight to earth (Krishna Moorthy. Quora, 2019))

The exponential height fog is an actor that creates dense fog around low places of the map, and less density in high places. As seen in Figure 28, the fog is highly customisable and allows for different coloured fog colours, one for the hemisphere that faces the directional light, and the other colour is for the opposite side of the hemisphere. Due to the level being not that big, the performance cost of such fog isn't too costly to use.

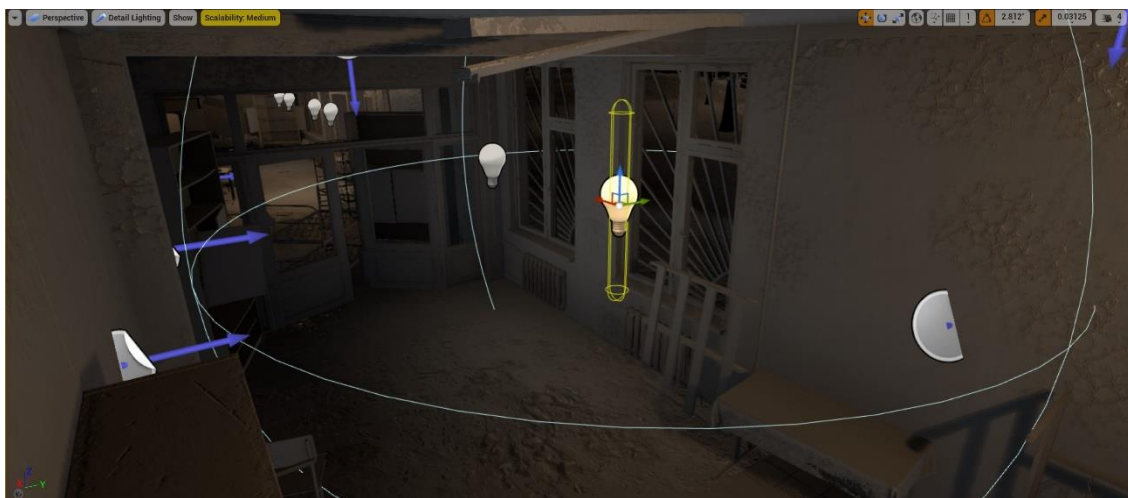


(Figure 28: Exponential Height Fog editor settings)

And lastly, the Sky Atmosphere actor is used to create an Earth-like atmosphere. This system was used alongside exponential height fog to create realistic lighting scenario, and due to the system being highly customisable it proved quite useful – allowing the sky atmosphere to be set to any time of day needed.

During the process of the lighting setup, upon building the environments lighting using preview quality (preview quality was chosen for its speed in rendering), it was found that the scene became too dark, to the point where it was hard to navigate throughout the level. This was probably since the directional light wasn't reaching the inside of the building as much as it needed to because of the windows blocking the sunlight.

A cheap way of fixing this issue was creating “fake lighting” in place of where the windows are (see Figure 29). Fake lighting was used around every single window that faced the moon directly – the lighting intensity for these fake lights were very minimal and were only used to slightly illuminate an area around them as seen in Figure 29. Similar lighting method was used for the windows that did not face the moon; however, the intensity of the light was further reduced to mimic the reflections of the light bounced from the outside environment.



(Figure 29: Fake sunlight actor previewed in detail lighting mode)

As seen in the Figure 30, Unreal Engine editor includes many visualisation modes to help see the data being processed in the scene. This is especially useful for debugging or diagnosing any errors and unexpected results that may appear during development. The usage of “detail lighting” and “lighting only” mode as seen in the Figure 29 above allowed for a proper visualisation of how the light bounced around in the scene and whether some parts were too dark or too noisy.



(Figure 30: Different visualisation modes)

After the fake lighting was full setup to every window in the scene, the next step is to build the lighting for the entire scene – this was done on medium quality (higher was not possible due to the limitation of the hardware the project was on). At first glance the lighting seemed appropriate, with the intensity not being too high, and the shadows not being too dark. However, looking closer there seemed to be clearly visible seams between the tiled floor (see Figure 31).



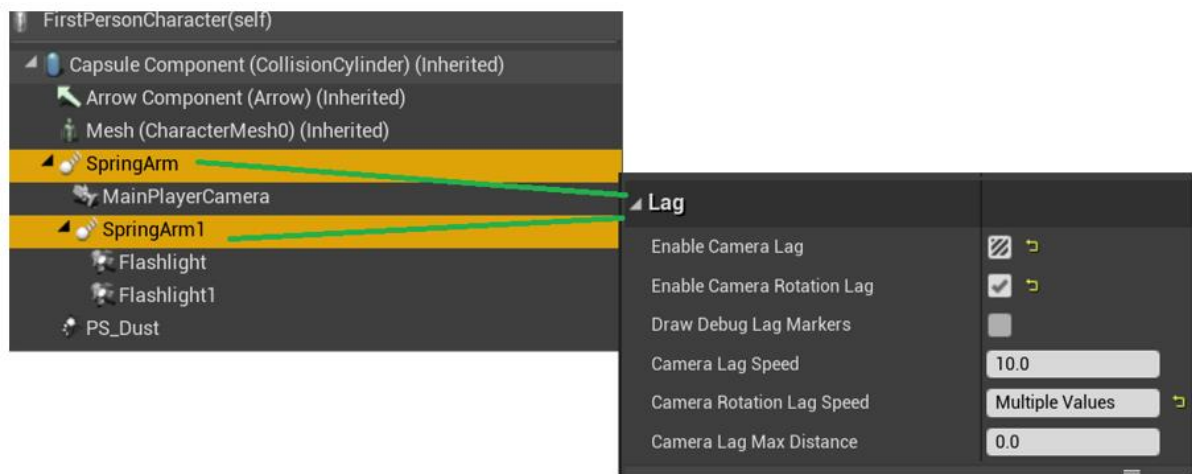
(Figure 31: Image of tiled floor lighting seams)

This was later discovered to be one of the issues with how each mesh is baked during lighting build – the solution to this problem was to increase the indirect lighting quality and static level scale values (or in this case decrease as lower is better), to remove the seams (see Figure 32).



(Figure 32: Image of tiled floor seams fixed after rebuilt lighting)

Finally, the final step was to create a realistic flashlight that the player can use to illuminate the scene they will explore. At first, it was as simple as dragging and dropping a Spot Light onto the players camera, which would illuminate in a cone in front of where the player is looking. However, upon testing, the camera and flashlight were a bit too responsive for the theme this project was going for. And thus, by attaching both the player camera, and the Spot Light (flashlight) to a spring arm actor. This actor helps provide further functionality to the camera or anything attached to it so it can expand or retract based on gameplay situation. A spring arm, in this case was used to add camera lag to both the flashlight and camera (see Figure 33), camera lag helps smooth out the movement of the mouse, so it doesn't feel jittery or too responsive.

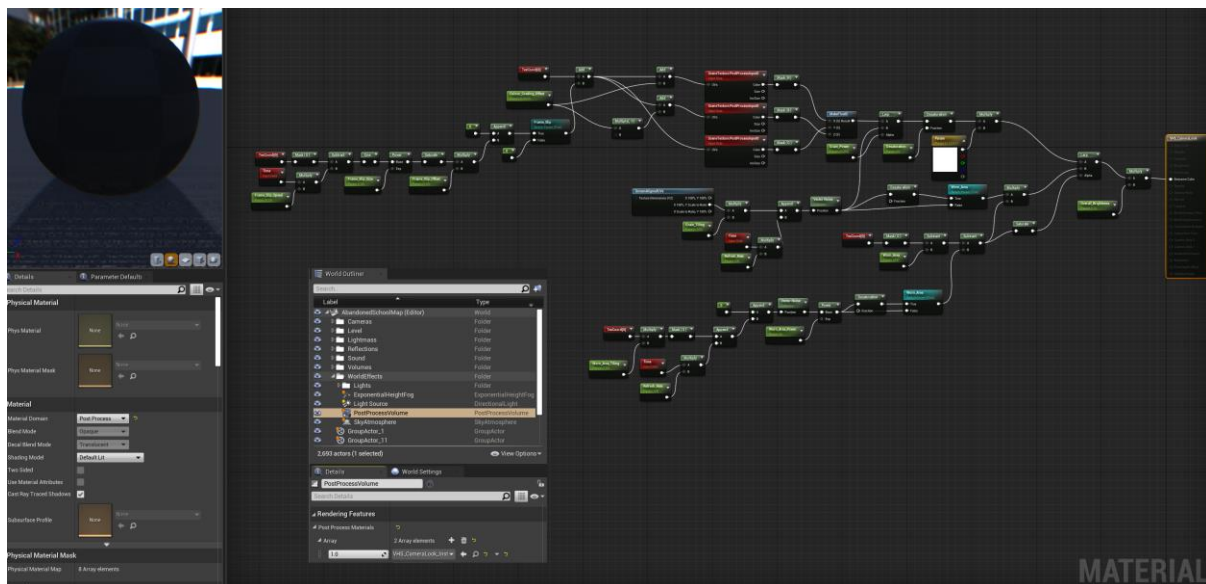


(Figure 33: Spring Arm Settings and Values)

3.2.6 Blueprints

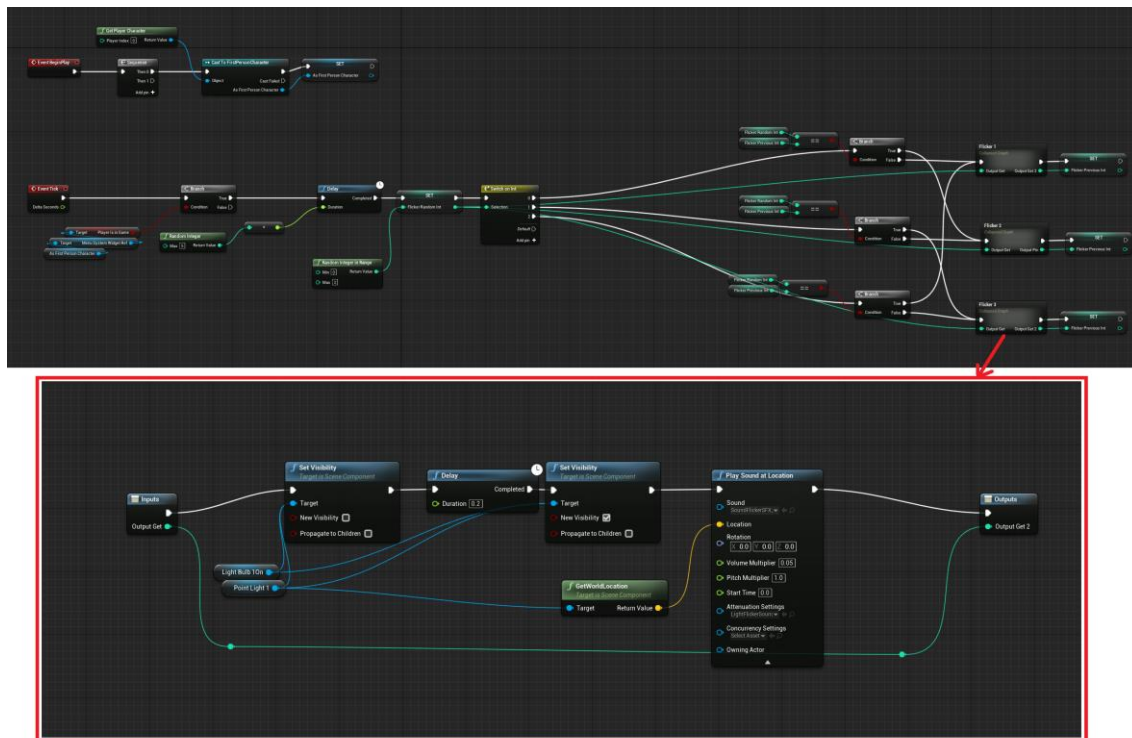
To add further functionality to the gameplay and environment, it made sense to create blueprints that would enhance the player experience. This included camera effects, dynamic light flickering of certain lights in the scene and certain interactions within the level.

To begin with the most important part of this entire section, the VHS Camera effect. This camera effect is often used in many horror games to mimic the older horror films or those environments that are set in the past. The distorted visuals can often enhance the game's atmosphere and at the same time make it difficult for players to see what's going on, which could potentially increase tension and make them feel more vulnerable. The VHS Camera effect was done through a post-process material using visual scripting (See Figure 34) and when completed, it was applied to a post-process volume actor that is in the level.



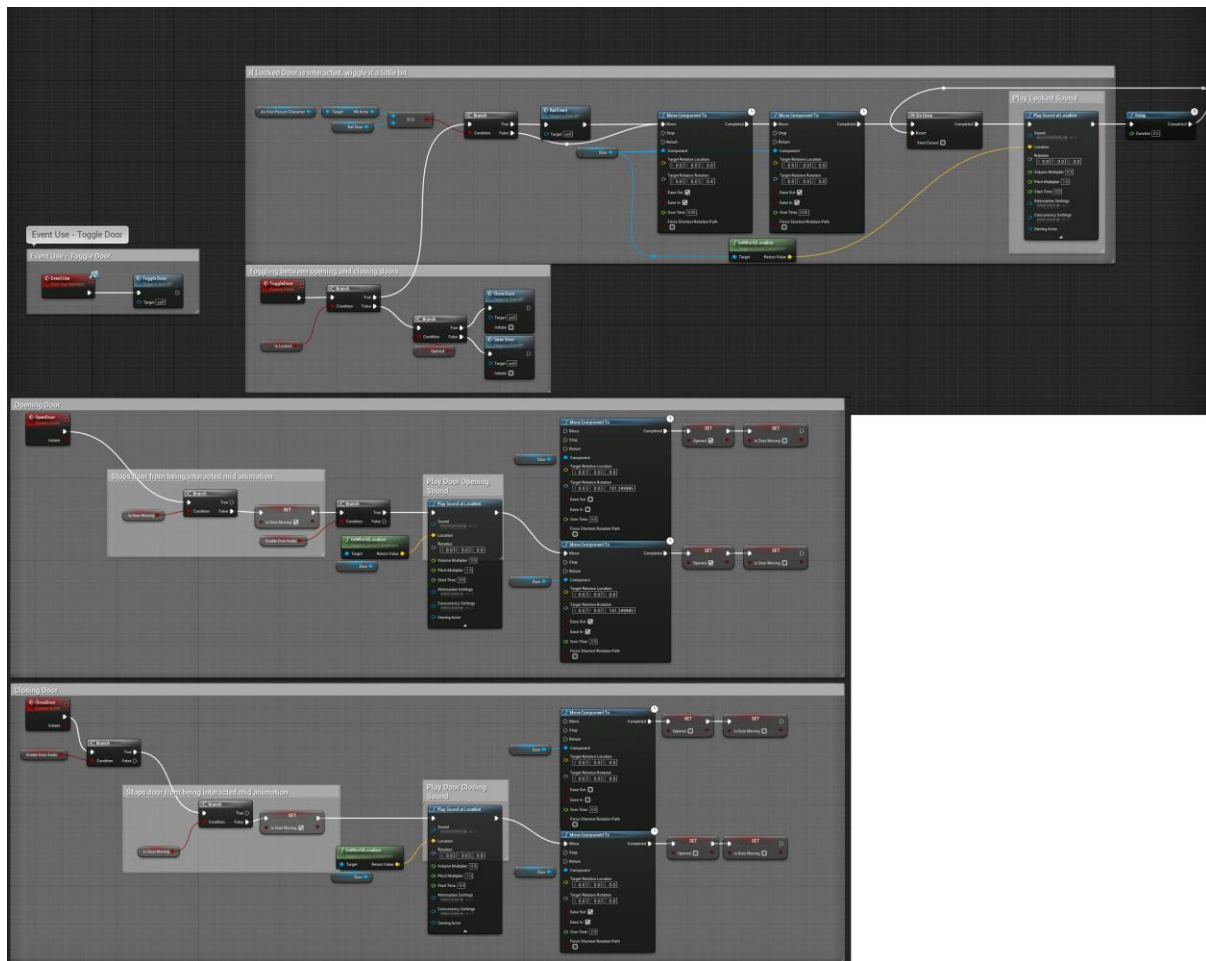
(Figure 34: VHS Camera Effect material blueprint)

To further enhance the environment and its immersive experience, dynamic light flickers of the fluorescent ceiling lights was developed. This was quite straightforward to make, as all it took was creating a blueprint class actor of the ceiling light, I wanted to make flicker, and reference the point light. Then by using the referenced light actor, it would make a random choice between flickering in intervals of twice, three times or four times by disabling the point light and reenabling it in set intervals using delay nodes (see Figure 35).



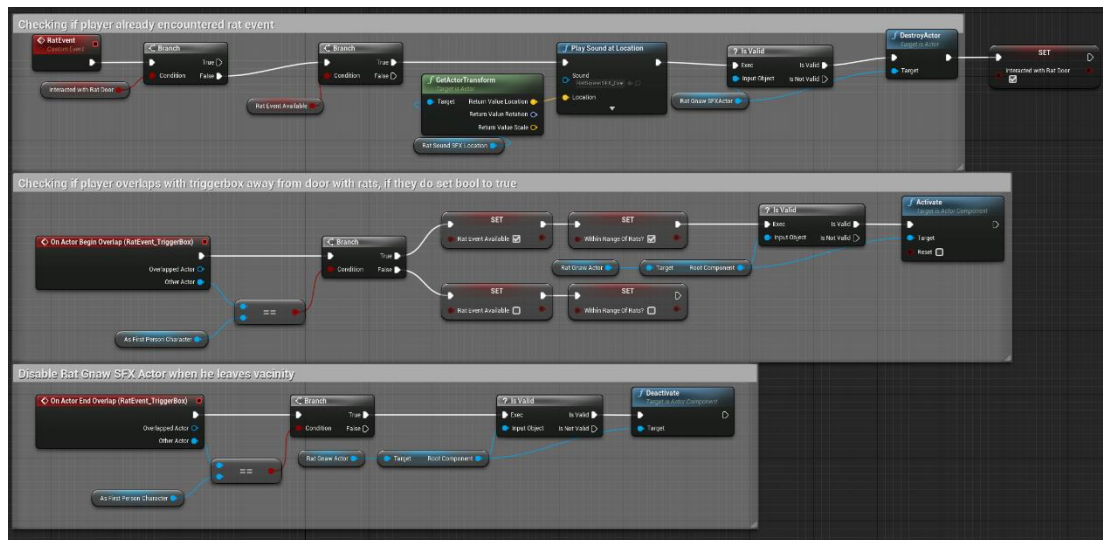
(Figure 35: Light flicker system in blueprints)

For the interactive side of things, a simple blueprint was made to open and close doors by creating line trace from the players camera look direction and then checking to see if the hit actor is one of the door actors that is placed in the scene. It would then check to see if the door actor hit is locked or not, and then it would play the appropriate sound alongside an animation that would rotate the door actor on an axis or wiggle the door if it's in a locked state. A simple bool determined whether the door actor can be opened or not, which allowed freedom of choosing what door in the scene can be opened (see Figure 36).



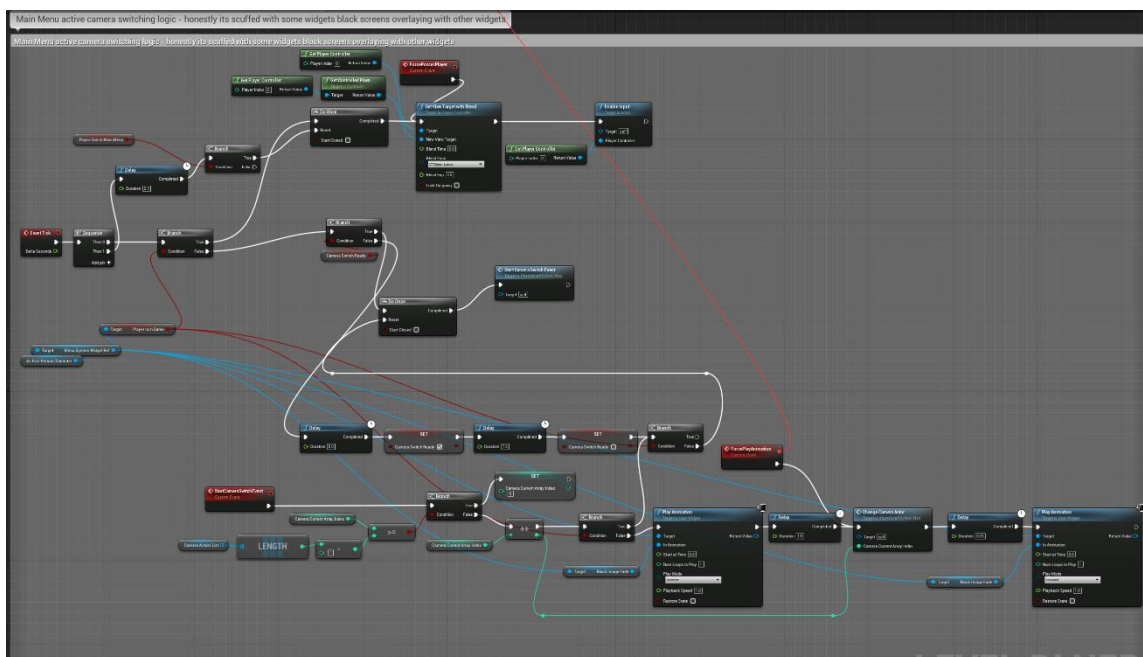
(Figure 36: Door behaviour system)

An additional interactive element that was added later to the game was a small little scare that the player would experience. This scare involved interacting with a door that has audio playing behind it – this audio being a rat scratching the ground. When the player interacts with the door, the rat would screech. Although simple, this element adds to the environment due to it being rundown and old. This was achieved through a simple if the player interacted with the door labelled as “Rat Door”, it would then go through multiple checks to see if the player already interacted with the door and then play the sound of the rat screech (see Figure 37).



(Figure 37: Image of blueprint code of the rat door scare event)

As the final piece of the game that was added at the end, were a selection of menu elements such as a pause menu, main menu with simple buttons and a settings menu which allows the players to change their graphics settings. Alongside these basic menu options, multiple cameras were setup around the scene, if the player is on the main menu screen, they would see a camera showcasing a part of the environment. The camera would then change after a couple of seconds to the next camera on the list. Figure 38 shows how after checking to see if the player is on the main menu, it would start a timer that would then change the camera after doing a fade in screen effect – a fade in was needed due to a visual artifact that was visible when changing cameras. Without the fade, there would be a very abrupt moment where all the models and textures were loading into that camera – causing the player to see white coloured 3D models.



(Figure 38: Image of menu camera blueprint system)

4.0 Critical Reflection

4.1 Results

Overall, I am genuinely pleased with the outcome of this project. While there were a few minor visual hiccups along the way, they were quickly solved to ensure maximum quality of the delivered product. The process involved several days of meticulous lighting rebuilds and debugging, ensuring that every corner of the environment conveyed my intended atmosphere the project wanted to create. Each classroom was carefully designed from scratch, drawing huge inspiration from the moodboards I have created. These moodboards, alongside other real-life images, served as the backbone of my reference and guided the creative process ensuring that each room captured the desired atmosphere.



(Figure 39: Screenshot of the hallways on second floor)



(Figure 40: Screenshot of one of the rooms on second floor)



(Figure 41: Screenshot of one of the open-plan rooms on first floor)



(Figure 42: Screenshot of the hallway on first floor)

4.2 Evaluation

When the product was completed, the next step in the project was to allow the game to be tested and gather feedback from a range of people that will then later be used to identify whether the product has achieved the projects aims and objectives. The way the participants would be gathered is through social media platforms such as “Discord” as well as word-of-mouth. The product package that included all the information on how to participate, the documents to sign, as well as the executable file for the game were all contained within a google drive folder link that the participants could download.

The user study test would be then conducted purely online due to multiple factors – this being that is very cost effective, there is no need for face-to-face interaction, and it is very friendly when it comes down to flexibility and the biggest factor of all, is the anonymous and user-friendly test. Where the users can perform every part of the test in their own home space, at their maximum comfort (B. Wright). These factors, amongst many others will ensure that the data collected is relevant, and informative for this project.

The test would be conducted online and split into three sections.

1. Section one: would be the document signing and agreement.
2. Section two: Playtesting the product for roughly 5-10 minutes.
3. Section three: Online questionnaire via google forms asking about the participants personal experience with the product they have played through.

The following survey questions would then be created to assess the participant’s experience.

1. Environment design
 - a. How did you feel when you entered the environment?
 - b. Did the environment around you contribute to your feelings of fear or unease?
 - c. When you explored the environment, did you feel particularly immersed?
 - d. Did anything in the environment you experience break your immersion or take you out of the experience?

2. Sound Design:
 - a. Did the sound design contribute to your overall experience?
 - b. Do you think the sound fit the environment you were in?
 - c. Did you like or dislike about any sound you've experienced?
3. Level Design:
 - a. Do you think the design of the environment fit the setting of an abandoned soviet school?
 - b. Did the environment around you feel repetitive? If so, what parts?
 - c. Did any of the rooms, hallways or the like feel off to you? If so, explain what and why?
4. Gameplay:
 - a. Did you encounter any bugs or glitches within the game?
 - b. If you answered yes to the above, what bugs or glitches did you encounter? And did they break your immersion or your ability to play?
 - c. Were there any gameplay elements that you thought are unnecessary or out place?

The choice of using qualitative questions for the user study was crucial because it ensured that the responses gathered would be more on a more personal level. Participants were encouraged to express their experiences and opinions on the game they've experienced, without imposing predefined options or assumptions [Rahman, M.S].

The participant responses gathered from the questionnaire were a mix between students on a game design related university course, or participants gathered from social media.

4.3 Data Gathered and Analysis

A handful of questions from the questionnaire would be selected and analysed using a qualitative data coding. This would allow the responses to be analysed and categorised – which would then be used to find themes and patterns. These themed responses would then be further analysed to properly understand the participants' experiences, perceptions, and feedback.

When entering the environment, the participants expressed a range of emotion responses (seen in Table 1) – these range from feeling a sense of danger or eeriness, to some even reporting that they felt extreme feelings of fear or anxiety. There were mentions of feeling both scared and intrigued, suggesting that a complex emotion response combining fear and curiosity was seen.

The responses seen in Table 2 shows mixed feedback when it comes to the user interface: one of the participants mentioned how basic the UI was compared to the environment designed, while the other response was mentioning confusion with the grey lines at the bottom of their screen (this is related to the VHS Camera Effect) and how it made them think it was their GPU that was causing that effect. One user mentioned the lack of visual elements when they looked outside the window and into the outside environment, which could have potentially hindered the sense of realism and immersiveness. One response noted their annoyance at the quantity of texture reuse, this is likely referring to the wall and classroom textures used.

Participants expressed that the sound design elements (as seen in Table 3), such as static sound associated with fluorescent lights, the door opening and closing sounds and the footsteps fit the environment well and added to the sense of realism. Some suggested that additional use of wind sounds were a nice addition as it helped reinforce the environments feeling of emptiness and creepiness. On the other hand, some participants expressed a desire for more variety of sound effects, sounds particularly related to different surfaces that the player steps on, or when they are close to the open windows – this could be referring to a potential sound adjustment depending on current players location.

When analysing the responses in Table 4, a high number of participants expressed their thoughts on how repetitive the environment felt, ranging from props to overall designs and assets used in the classrooms. This has caused one of the participants to express difficulty in distinguishing between classrooms they were exploring – further noting on the desire for more distinct features and a bigger variety of assets. While some participants expressed their understanding and recognition of realism of a school setting where classrooms natural share similarities in rooms and their designs.

In Table 5, quite a few participants expressed their concerns about camera lag and the VHS look at the bottom of the screen. While one of the participants felt that the camera effect to be over the top, however they acknowledged that it didn't significantly impact their exploration of the level. On the other hand, many participants felt that the gameplay elements were necessary and made sense and thought that everything felt in place and didn't require any further changes.

And finally, as the last question for the questionnaire (see Table 6), the participants were given an option to say anything else they would like. Overall, the response from them was very positive. One of the participants mentioned the markings on the wall very realistic and that it added to the immersive feeling of an abandoned and rundown environment. Some participants further noted that the

well-designed assets were impressive and added to their overall experience – while one even noting that if the game was polished a bit more it could become a great experience if it was part of a bigger game. However, some feedback was given on the accessibility of the game they played, where one participant complained that they had difficulty with user interface due to them being on a different language keyboard. Finally, one participant added that additional immersive elements could be added to the game such as dynamic objects like moving windows.

Question 1:

How did you feel when you entered the environment?

Quotation	Theme
"I felt a sense of danger and eeriness". "Felt quite creepy, and eerie." "I felt kind of creeped out and nauseous." "Bit disoriented and uneasy."	Feeling of Danger, Eeriness or Subtle emotional response
"Uneasy definitely" "A bit on edge and slightly anxious" "Both scared and intrigued" "I felt intense" "Surprised."	Prominent feeling of fear. Intense Emotional Response

(Table 1: Question used to evaluate how the users felt upon entering the environment)

Question 2:

Did anything in the environment you experience break your immersion or take you out of the experience?

Quotation	Theme
"The blackboards with "Cheeky Breeky" on them" "the writings on the board" "a slight immersion break came from there being nothing when you looked out of the windows"	Environmental Details
"The pause UI was a bit basic in comparison to the tone of the game" "I didn't like the grey lines at the bottom of the screen, I just thought my gpu was broken"	User Interface (UI) Design
"No, but re-use of same textures without even tiny little bit of change made me feel from claustrophobic if I am always entering same room to annoyed as if you had no motivation / time to do that." "Not really in the enviroment. However, a toggle for the flashlight could add to immersion (Maybe I didn't see the control for it)"	Immersion and Interactivity

(Table 2: Question used to evaluate whether the users immersion was broken due to anything in the environment)

Question 3:

Did you like or dislike about any sound you've experienced?

Quotation	Theme
<p>"Yes, the radiation sounds fit the environment very well as well as the static sound that was on while walking around"</p> <p>" Yes, the fluorescent lights flickering and the sound they gave off really felt real, as well as the door and footstep sfx which created the sound which I would imagine such an environment to have."</p> <p>"Light sound when they were with power, the wind or the sound just made it more natural"</p>	Fit and Realism
<p>"I really liked the light buzzing (and sometimes flickering), and the slight wind ambience. I think the ambience helped a lot to feel creepy and empty."</p> <p>"Yes I think so, just overall. I think maybe adding more wind could add a sence of emptyness to the environment"</p>	Creepiness and Ambience
<p>"I always appreciate a good walking sound and i thought that fit the environment well with the rubble adding an extra crunch in certain areas"</p>	Specific Sound Effects
<p>"Dislikes - There was no different sound when you step on different surface, no extra sound or any different noise when youre close to windows or bump into any terrain."</p>	Missing or Lacking Sound Elements

(Table 3: Question used to gather feedback on the sound used within the game)

Question 4:

Did the environment around you feel repetitive? If so, what parts?

Quotation	Theme
<p>"The environment for each room wasnt repetitive but some of the props used were"</p> <p>"The bottom floor was not repetitive, but the top floor was quite repetitive but that was realistically so because it's a school and the classrooms are going to look quite similar."</p> <p>"The same writing on the blackboards and the masks on the tables were pretty repetitive".</p> <p>"Yes, shadow reflections of the moon from outside environment, the table covers were the exact same color and pattern, same pattern of dirt on the windows, same writings on the boards"</p>	Prop/asset reuse
<p>"Not particularly, because it is a school it made me think that most of it would look the same due to classrooms."</p> <p>"The class rooms felt too similar"</p> <p>"The class rooms felt a little repetitive but not to the point of being annoying".</p> <p>"The classrooms were a little hard to distinguish from each other."</p>	Classroom Felt too similar

(Table 4: Question used to determine whether the environment/3D Models etc. felt repetitive)

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Question 5:

Were there any gameplay elements that you thought are unnecessary or out place?

Quotation	Theme
"camera lag was too much". "camera lag" "I thought the camera VHS Look was a bit over the top at the bottom of the screen, it was a bit annoying but I sort of just ignored it while I was exploring the level."	Camera Experience
"no, all gameplay elements were necessary to the game and made sense" "No everything felt like it was in place." "i think it's pretty good the way it is"	Gameplay Elements

(Table 5: Question used to evaluate whether any gameplay elements were impacting their experience)

Question 6:

Are there any further comments you'd like to make on your experience of the environment or the user study?

Quotation	Theme
"I liked the markings on the wall that you could read, like the 'GET OUT' which pointed out the door. It helped get an idea of what the situation would've been like at the time when there were people here." "Some of the arrows pointed upstairs and into a room, but I wasn't sure exactly what it was trying to lead me to, which added to some confusion." "Add windows and an outside view." "Maybe more dynamic objects could increase immersion, like windows moving by the wind, etc."	Environmental Details
"It was a very cool immersive experience with very well done assets and gameplay." "I liked the radioactive aspect, as well as its impact on the POV (lines on screen)." "I think the environment was really immersive and with small improvements could be a great experience if part of a bigger game."	Immersion and Gameplay
"I'm French with a French keyboard, and I couldn't change the keys. Mann, it was a pain."	Controls

(Table 6: Question used to gather final user feedback about the environment or the user study conducted)

5.0 Conclusion

Overall, based on the feedback received from the participants, it is safe to assume that the project has met its goal in achieving the creation of an immersive atmosphere and engaging experience for the players. The responses were mostly positive, with many participants mentioning that they liked the aesthetic that the project was aiming for, and some even wanted more.

5.1 Limitations

The biggest limitation this project has faced was time. The initial plan was to create a much bigger environment, focusing on environmental storytelling and industrial setting, however due to the limitations of time, assets, and research, it was deemed appropriate to scrap the idea and lower the projects scope to a single building.

Originally, the primary objective of the project was to showcase and construct an immersive horror experience, as such, there was no initial plan to develop additional 3D assets, considering the amount of time it would require designing everything whilst adhering to the original art style that was used. This approach, however, has led to some participants noticing repetition and asset reuse, which was unintended outcome. In hindsight, this could have been avoided by further pre-production planning to ensure that the user experience would not be hindered by repetitive use of 3D assets in the environment.

5.2 Future Work

Despite receiving positive feedback, the project still has room for improvement before reach perfection. One aspect that requires more detail is the inclusion of greater variety of assets, as this would greatly help differentiate each classroom from each other, reduce repetitiveness and add more diversity into the environment. Furthermore, the project could also be turned into a fully-fledged horror game, which focuses on expanding the game's features and mechanics.

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Appendix

Section 1 of 7

Participant Questionnaire

Note: Before answering any of the questions, you must have played the .exe file provided by the researcher.

Read before participating

By clicking the "**submit**" button at the end of this questionnaire, you confirm that you have read and understood all the questions, and that you have answered them truthfully and to the best of your knowledge.

You also acknowledge that you have the right to exit this questionnaire at any point and that your participation is voluntary.

Do you agree to the terms provided to you above? *

If you do not agree to the terms above, you will be prompted to exit this questionnaire.

☐ Yes

☐ No

Section 2 of 7

Environment Design

How did you feel when you entered the environment? *

Did the environment around you contribute to your feelings of fear or unease? *

When you explored the environment, did you feel particularly immersed? *

Did anything in the environment you experience break your immersion or take you out of the experience? *

Section 3 of 7

Sound Design



Did the sound design contribute to your overall experience? *

Do you think the sound fit the environment you were in? *

Did you like or dislike about any sound you've experienced? *

Section 4 of 7

Level Design



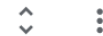
Do you think the design of the environment fit the setting of an abandoned soviet school? *

Did the environment around you feel repetitive ? If so, what parts?

Did any of the rooms, hallways or the like feel off to you? If so, explain what and why? *

Section 5 of 7

Gameplay



Did you encounter any bugs or glitches within the game? *

If you answered yes to the above, what bugs or glitches did you encounter? And did they break your immersion or your ability to play?

Were there any gameplay elements that you thought are unnecessary or out place?

Section 6 of 7

Before you submit



Are there any further comments you'd like to make on your experience of the environment or the user study? *

Environment Design

How did you feel when you entered the environment?

10 responses

I felt a sense of danger and eeriness

Felt quite creepy, and eerie.

Surprised.

I felt kind of creeped out and nauseous.

Both scared and intrigued

i felt intense

Uneasy definitely

a bit on edge and slightly anxious

Bit disoriented and uneasy

It was quite myserious, and scary and the VHS effect made it more immersive

Did the environment around you contribute to your feelings of fear or unease?

10 responses

Yes

yes

100% , the broken and scattered items made the fear even worst

Yes, with all the items strewn all over the place and some lights flickering it made me feel quite uneasy.

Yes, the darkness and sound design really added to the atmosphere of creepiness

Yes because the evironemnt looked like it was left and abandoned in a hurry

When you explored the environment, did you feel particularly immersed?

10 responses

Yes

very immersed

Yes, I was immersed throughout the playthrough.

Yes the environment was very immersive with the sound of the lights and the footsteps really adding to it.

Fairly well

a little bit, yes

Yes, although the sound wasn't loud enough

yes

Yeah because of the VHS effect

Did anything in the environment you experience break your immersion or take you out of the experience?

10 responses

The pause UI was a bit basic in comparison to the tone of the game

No not really.

No, everything felt like it fit in.

The blackboards with "Cheeky Breeky" on them

No

the writings on the board

I didn't like the grey lines at the bottom of the screen, I just thought my gpu was broken

a slight immersion break came from there being nothing when you looked out of the windows

No, but re-use of same textures without even tiny little bit of change made me feel from claustrophobic if I am always entering same room to annoyed as if you had no motivation / time to do that.

Not really in the enviroment. However, a toggle for the flashlight could add to immersion (Maybe I didn't see the control for it)

Sound Design

Did the sound design contribute to your overall experience?

10 responses

Yes

yes

yes 100%

Yes it was a positive experience overall, adding to the creepy vibe.

Yes 100% it added to it.

Somewhat

Yes but it wasn't loud enough (I couldn't change it in game)

Yeah I think the sound was very important.

Do you think the sound fit the environment you were in?

10 responses

Yes, the radiation sounds fit the environment very well as well as the static sound that was on while walking around

I really liked the light buzzing (and sometimes flickering), and the slight wind ambience. I think the ambience helped a lot to feel creepy and empty. The sound of the rats when you tried to open the locked door were a interesting jump scare, and creeped me out a bit.

Yes, the fluorescent lights flickering and the sound they gave off really felt real, as well as the door and footstep sfx which created the sound which I would imagine such an environment to have.

Yes I think so, just overall. I think maybe adding more wind could add a sence of emptyness to the environment

Yes

it does

The footsteps sound and doors sounds were great

i always appreciate a good walking sound and i thought that fit the environment well with the rubble adding an extra crunch in certain areas

Light sound when they were with power , the wind or the sound just made it more natural

VHS statics sound effects to enhance the feeling of holding a VHS. The sounds used though were fitting, I would expect an empty spooky area to have a faint humming noise

Did you like or dislike about any sound you've experienced?

10 responses

no

All the sounds suited the tone of the game

The door opening and closing sound didn't really sound like they fit the animation/door model. The footsteps sounds were ok, nothing special about them.

I liked the footsteps, door and lights sounds.

I liked the sound that came from the second closed door on the second floor, it scared me.

/

i think the sounds added to the experience by making you feel even more on edge

Dislikes - There was no different sound when you step on different surface , no extra sound or any different noise when youre close to windows or bump into any terrain.

Likes - Light buzzing sound , wind howls (?)

I liked the TL light flickering sound effects

Level Design

Do you think the design of the environment fit the setting of an abandoned soviet school?

10 responses

Yes

yes

Yes

Yes, it definitely felt abandoned because of radioactive substances. It felt like a soviet school partly because of all the radioactive references, which I would guess is because of Chernobyl, and there were also russian flags and maps seen.

Yes, the storytelling with the flags also added to it which made me think it was a soviet school.

I intially thought WWII than soviet

Did the environment around you feel repetitive ? If so, what parts?

9 responses

The environment for each room wasnt repetitive but some of the props used were

The bottom floor was not repetitive, but the top floor was quite repetitive but that was realistically so because it's a school and the classrooms are going to look quite similar.

Not particularly, because it is a school it made me think that most of it would look the same due to classrooms.

The class rooms felt too similar

The same writing on the blackboards and the masks on the tables were pretty repetitive

no

the class rooms felt a little repetitive but not to the point of being annoying

Yes , shadow reflections of the moon from outside environment , the table covers were the exact same color and pattern , same pattern of dirt on the windows , same writings on the boards wd

The classrooms were a little hard to distinguish from each other.

Did any of the rooms, hallways or the like feel off to you? If so, explain what and why?

10 responses

no

No

all the rooms suited the style and tone of a soviet school

No it felt quite good to me.

No they did not they all felt like they fit in.

I don't think so

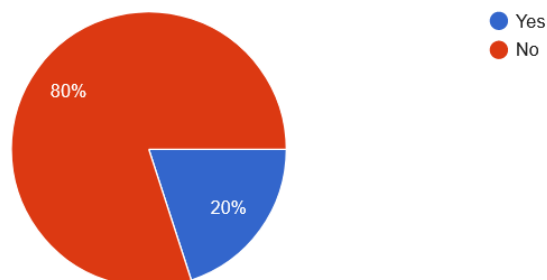
it felt just fine

Gameplay

Did you encounter any bugs or glitches within the game?

 Copy

10 responses



If you answered yes to the above, what bugs or glitches did you encounter? And did they break your immersion or your ability to play?

2 responses

You could see blue/red hue on certain objects when you were close to them, it broke my immersion ever so slightly.

I got stuck

Were there any gameplay elements that you thought are unnecessary or out place?

7 responses

no, all gameplay elements were necessary to the game and made sense

I thought the camera VHS look was a bit over the top at the bottom of the screen, it was a bit annoying but I sort of just ignored it while I was exploring the level. The slight smoothing to the camera input was quite nice making it feel more fluid, especially in the types of games that would have a level like this, it makes sense.

No everything felt like it was in place.

no

i think it's pretty good the way it is

camera lag was too much

camera lag

Before you submit

Are there any further comments you'd like to make on your experience of the environment or the user study?

10 responses

no

I liked the markings on the wall that you could read, like the "GET OUT" which pointed out the door. It helped get an idea of what the situation would've been like at the time when there were people here. Some of the arrows pointed upstairs and into a room, but I wasn't sure exactly what it was trying to lead me to which added to some confusion.

It was a very cool immersive experience with very well done assets and gameplay.

I liked the radioactive aspect, as well as its impact on the pov (lines on screen)

add windows and an outside view

I'm french with a french keyboard and I couldn't change the keys mann it was a pain

i think the environment was really immersive and with small improvements could be a great experience if part of a bigger game

No.

Maybe more dynamic objects could increase immersion, like windows moving by the wind etc.

About Your Checklist

Ethics ID	49198
Date Created	16/03/2023 01:16:44
Status	Approved
Date Approved	21/03/2023 11:59:27
Risk	Low

Researcher Details

Name	Deniss Kirillovs
Faculty	Faculty of Science & Technology
Status	Undergraduate (BA, BSc)
Course	BSc (Hons) Games Design

Project Details

Title	Exclusion Zone
Start Date of Project	07/02/2023
End Date of Project	15/05/2023
Proposed Start Date of Data Collection	20/04/2023
Supervisor	Alain Simons
Approver	Alain Simons

Summary - no more than 600 words (including detail on background methodology, sample, outcomes, etc.)

Exclusion zone is a first person adventure horror game where you explores the city of Pripyat which has been evacuated after the Power Plant of Chernobyl.

The player can survive and explore the abandoned region the city of Pripyat, whilst gathering tools, resources and necessities to survive.

Filter Question: Does your study involve Human Participants?**Participants****Describe the number of participants and specify any inclusion/exclusion criteria to be used**

I will be conducting an online questionnaire that is aimed to grab the attention of roughly around 20 individuals. These individuals must be over the age of 18 to participate and be somewhat well-versed in using the technology provided to them - this can include but is not limited to:

- A computer (Laptop, PC)

- Communication software (eg, Facebook, Twitter, Discord) - Able to operate and play the game provided to them	
Do your participants include minors (under 16)?	No
Are your participants considered adults who are competent to give consent but considered vulnerable?	No
Is a Disclosure and Barring Service (DBS) check required for the research activity?	No

Recruitment

Please provide details on intended recruitment methods, include copies of any advertisements.	
The method of conducting my participant recruitment will be through social media (Discord, Facebook, Twitter and Reddit).	
Do you need a Gatekeeper to access your participants?	No

Data Collection Activity

Will the research involve questionnaire/online survey? If yes, don't forget to attach a copy of the questionnaire/survey or sample of questions.	Yes
How do you intend to distribute the questionnaire?	
online	
If online, do you intend to use a survey company to host and collect responses?	Yes
If yes, please provide details of survey company.	
The questionnaire will be distributed via the "Google Forms" online website.	
Will the research involve interviews? If Yes, don't forget to attach a copy of the interview questions or sample of questions	No
Will the research involve a focus group? If yes, don't forget to attach a copy of the focus group questions or sample of questions.	No
Will the research involve the collection of audio recordings?	No
Will your research involve the collection of photographic materials?	No
Will your research involve the collection of video materials/film?	No
Will the study involve discussions of sensitive topics (e.g. sexual activity, drug use, criminal activity)?	No
Will any drugs, placebos or other substances (e.g. food substances, vitamins) be administered to the participants?	No
Will the study involve invasive, intrusive or potential harmful procedures of any kind?	No
Could your research induce psychological stress or anxiety, cause harm or have negative consequences for the participants or researchers (beyond the risks encountered in normal life)?	No
Will your research involve prolonged or repetitive testing?	No
What are the potential adverse consequences for research participants and how will you minimise them?	

I will attempt to avoid the use of sensitive and triggering topics that can potentially induce any emotional or psychological distress when the participant is taking part in the questionnaire.

The participant will be fully informed on the nature of the study, the potential risks and benefits and their right to withdraw at any given point during or before the questionnaire.

Consent

Describe the process that you will be using to obtain valid consent for participation in the research activities. If consent is not to be obtained explain why.

A "Participant Agreement Form" will be handed to the participants prior to the questionnaire, the form will include all the information regarding the purpose of the questionnaire and what the questionnaire will be asking of the participants.

Do your participants include adults who lack/may lack capacity to give consent (at any point in the study)?	No
--	----

Will it be necessary for participants to take part in your study without their knowledge and consent?	No
--	----

Participant Withdrawal

At what point and how will it be possible for participants to exercise their rights to withdraw from the study?

Before the online questionnaire begins, the participant will be noted that at any given point during the questionnaire, they can either skip the question without giving a reason, or completely stop the questionnaire altogether and close the "Google Forms" website window.

If a participant withdraws from the study, what will be done with their data?

The participant will be informed that all the data that will be saved and recorded the moment they press the "Submit" button at the end of the questionnaire. Any data that was inputted by the participant prior to the withdrawal or the unexpected disconnection etc., will have that data removed and reset.

Participant Compensation

Will participants receive financial compensation (or course credits) for their participation?	No
--	----

Will financial or other inducements (other than reasonable expenses) be offered to participants?	No
---	----

Research Data

Will identifiable personal information be collected, i.e. at an individualised level in a form that identifies or could enable identification of the participant?	No
--	----

Will research outputs include any identifiable personal information i.e. data at an individualised level in a form which identifies or could enable identification of the individual?	No
--	----

Storage, Access and Disposal of Research Data

Where will your research data be stored and who will have access during and after the study has finished.

The research data obtained from the questionnaire will be stored via my personal Google Forms email account. Any data that will be collected from Google Forms will then be stored on my home computer locally (eg, data graphs).
The data collected will only be accessed by me.

Once your project completes, will your dataset be added to an appropriate research data repository such as BORDaR, BU's Data Repository?	No
---	----

Please explain why you do not intend to deposit your research data on BORDaR? E.g. do you intend to deposit your research data in another data repository (discipline or funder specific)? If so, please provide details.

NOT APPLICABLE

Final Review

Are there any other ethical considerations relating to your project which have not been covered above?

No

Risk Assessment

Have you undertaken an appropriate Risk Assessment?

No

Attached documents

Participant Agreement Form.docx - attached on 17/03/2023 18:16:10

PI Sheet Template Questionnaires.docx - attached on 17/03/2023 18:16:47

Participant Agreement Form.docx - attached on 23/03/2023 14:51:17