# RESEARCH BLOG

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Week 1

Discuss through online meetings with teachers. I officially identified the Dream Core phenomenon as the theme of my graduation project game. Due to this phenomenon appearing in human virtual dreams, I was unable to find specific images as favorable materials, so I began conducting extensive research on various details of Dream Core. From the reasons for the occurrence, the various colors of the Dream Core, the different visual stages created by the Dream Core in a dream, what elements are included in the scene that appears, how people who have also experienced the Dream Core describe and evaluate their feelings when the Dream Core occurs, and so on, and compare and associate it with the scene memory of my own multiple personal experiences. After synthesis, record the similarities and differences of the Dream Core phenomenon in different people's memories. This can ensure that the dream core phenomenon is better restored in game design without causing style deviation.

Week 2

This week, based on the main visual style features of Dream Core collected, I searched online for many real-life photos and scenes similar to Dream Core phenomenon that people accidentally captured, including water amusement parks, abandoned kindergartens, an endless dark tunnel, messy and empty rooms, and so on. Some of the photos showed elements that were even like those in my dream, which shocked me, Because of this feeling, I have had similar events in real life before. During my college years, I went to an old shopping mall to buy materials. When I took the escalator to the top floor, I suddenly felt a sense of time and space confusion because this scene was my first time here and I had never been there before. However, I felt so familiar and friendly. At that time, I only thought it was an illusion or a lack of sleep, but now I understand that this is the same principle as Dream Core, It is all caused by the subconscious brain's disorder of memory time and space. In summary, the main characteristic of Dream Core is its surrealistic style, which reveals dreaminess, unreality, and nostalgia (feeling that this scene appears in childhood memories, but has not been personally experienced). All Dream Core phenomena are relatively quiet in space, giving people a sense of suffocation, which is also one of the biggest characteristics of Dream Core phenomena. The reason for the above situation is actually related to the experiences and memories in the brain, and through the

repeated organization and presentation of dreams, the phenomenon of Dream Core that seem familiar has emerged. I also added the characteristics and specific content summarized in this research section to the preliminary research section of the paper.
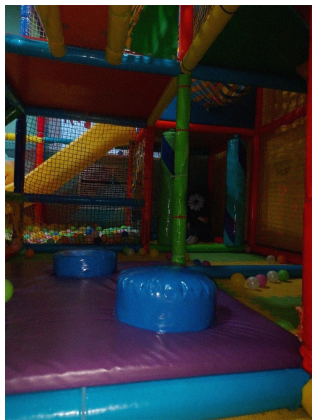
Week 3

This week, I collected a lot of 2D material elements that need to be used in the visual experience of Dream Core phenomenon, and started sketching 2D game scenes. At first, I set up many different levels to pass, each area as an independent individual with its own starting point and finishing gate. However, after careful consideration, I believe that the game scenes should be connected into a storyline, which better aligns with the continuity of a dream's plot from falling asleep to waking up. Therefore, I integrated the different levels into a very long level, But in this long level, three different visual style forms have differentiated to express the Dream Core phenomenon. The first visual part is the monochromatic area that appears during sleep, corresponding to the monochromatic blurring phenomenon that occurs during non rapid eye movement periods during sleep. The second part is the most classic surreal Dream Core region, with high saturation and high contrast. The third part is the interruption of dream regions caused by our shallow sleep. These three parts are intertwined to form a complete dream process, and participants can walk along the only path to the exit.

Week 4

This week I continued to envision possible elements in the scene, brainstorming and drawing out the basic terrain settings for each different area. This process refers to existing two-dimensional game elements on the market, such as staggered steps,

movable platforms and other ground structures, and combines them with the characteristics of Dream Core. At the same time, when I ran out of ideas, I interviewed a few good friends on the phone and asked if they had ever experienced Dream Core phenomena appearing in their dreams. I wanted to collect some scenes and things they saw when Dream Core phenomena occurred, which can be integrated into my sketch, and the result is very satisfying to me. I got some new inspiration through the research, such as flashing lights, climbing ladders, many doors leading to unknown worlds, etc. These elements were very helpful for my scene conception and also increased the diversity of props in the scene.

Week 5

This week I started building a two-dimensional map area module in the software based on the sketch location. There are some floors of different heights and moving platforms of different lengths, which I think can increase interactivity and interest. The initial process of drawing was not smooth because many factors need to be considered, such as whether the overall vision will be confused due to the differentiation of platforms of different heights in the area, whether the colors of each area are coordinated, whether the colors conform to the style characteristics of the area, etc., so it took me a long time to fill and adjust. In addition, I also drew a lot of manuscripts of the monsters in the game, which were initially divided into six types of monsters with different appearances. They were all inspired by animals and plants in nature, including cactus monsters with spikes, agile sea lion monster and bat monsters that appear in dark corners, tongue-sticking mushroom monsters, giant hippopotamus monsters and nimble woodpecker monsters. The images of these monsters were personified and abstracted based on real-life photos, and were repeatedly revised and initially established.

Week 6

During this week, I continued to establish map scenes and props in the game and discovered many issues, such as the uneven distribution of the three visual areas, which directly leads to visual singularity, and reduced the freshness of the game experience. Therefore, I adjusted the position of each part of the area to try not to have the same visual element partition in the game experience process in a short period of time. Another issue is that there are many items of the same material in the same area, and it is inevitable that the box will appear repeatedly as the main item in the entire game. However, other items such as water polo and swimming circles have

obvious problems. I didn't notice this during my previous hand drawn drafts, so I replaced many of the same type of prop materials and arranged them as randomly as possible, making them more natural and unexpected. In addition, I have added a black blur layer to the outer contour areas of each region, inspired by the blurriness in dreams. People's memories of dreams are blurry, so I have refined them to enrich the storyline and map scene. This not only increases the visual hierarchy of the map, but also allows for the visualization of the surroundings, gathering the visual center in the central area to promote the generation of an immersive experience.

Week 7

This week, I have specifically improved and colored all the monster images, tried many different color schemes and material styles, and finally left two different color combinations. After obtaining the most primitive image, I began to create different actions for each monster's attack and movement. This step took a lot of effort on my part. As I had not tried this before, there were significant issues with the coherence and rationality of the movements. After drawing some actions, they were connected dynamically and I found that the front and back actions could not be connected, resulting in frame skipping. To solve this difficulty, I imported all completed actions into the video software for frame by frame testing in advance, ensuring that each action looked natural before saving and numbering.

Week 8

This week, I have compiled the preliminary research section of my graduation thesis, introducing the basic characteristics of Dream Core phenomenon and two-dimensional interactive games, as well as the issues that need to be noted. I have referred to many useful literature and papers in the same field, which has provided great help for my current game design stage and later paper argumentation. In the production of my graduation project, I added gradient effects and ambient colors to the map color scheme, making bright areas brighter and dim corners darker, forming a more distinctive regional feature for each area and enriching the diversity in the plane structure. As the weekend approached, I numbered and categorized all the completed scene materials and monster materials, imported them into Unity software, and started distinguishing the layers of each object to ensure that there were no overlapping issues.

Week 9

The main design task this week is to determine the image of the protagonist. The protagonist is myself, and I want to explore the entire dream from a first person perspective. I think this is a very interesting and memorable part of my design, but using myself as the prototype for the protagonist's image design also makes me feel very difficult. What image should I design to better fit my character, cute? Handsome? Clumsy? Dull? So I first hand-painted many different styles of illustrations to try out, including those with normal body proportions, those with slender figures that lean towards Japanese anime characters, and those with cute and cute personalities. After repeated comparisons, I finally chose a big head image that was completely naked, humorous and quiet as my character setting. This is very in line with my image, and the image without clothes also matches the sleeping scene of Dream Core. The movements of the characters are divided into four movements: walking, jumping, the back of the person descending the stairs, and hitting. With the previous experience of making monster action effects, I have gained some experience and confidence in the production of various dynamic key frames of characters, and adopted a relatively clever way to take the dynamics of real characters as reference and disassembly, which effectively ensures the coherence and accuracy of each action, and also significantly improves the efficiency.
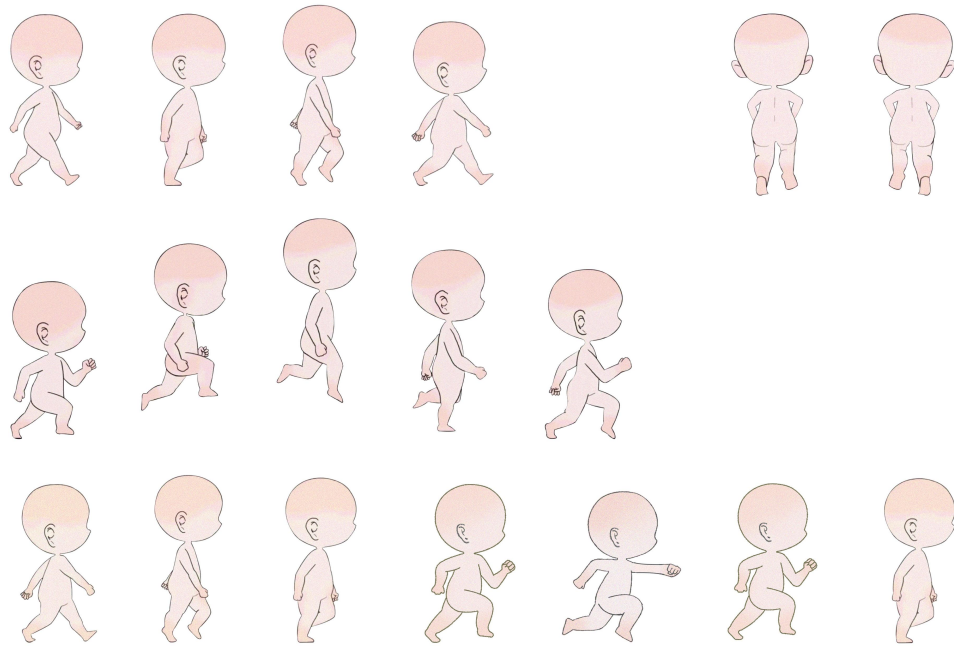
Week 10

This week, I mainly envisioned the reward and punishment mechanisms of the game. The reward mechanism is divided into points for breaking items and points for hitting monsters. In addition, the character needs to collect 15 randomly hidden memory fragments in the box. The punishment mechanism of the game includes losing health when attacked by monsters, restarting the game when the health is 0, and discovering that monsters appear when a character opens a box to find memory fragments. These monsters are randomly distributed in the box, and in my opinion, these reward and punishment settings can increase the excitement of the game. At the same time, I also designed different visual icons, including points icon, health icon, memory fragment icon, and so on. In terms of the paper, I disassembled and analyzed the classic two-dimensional game Super Mario, and conducted research interviews with friends to visualize and summarize the data. I identified the following minor issues that occurred in the game: relatively single character backgrounds and prop elements, loud and chaotic sound effects, relatively monotonous game storylines, and the protagonist's fast movement speed, which served as a reference for my game design, I have also included this part of the research content in the preliminary research section of the paper.
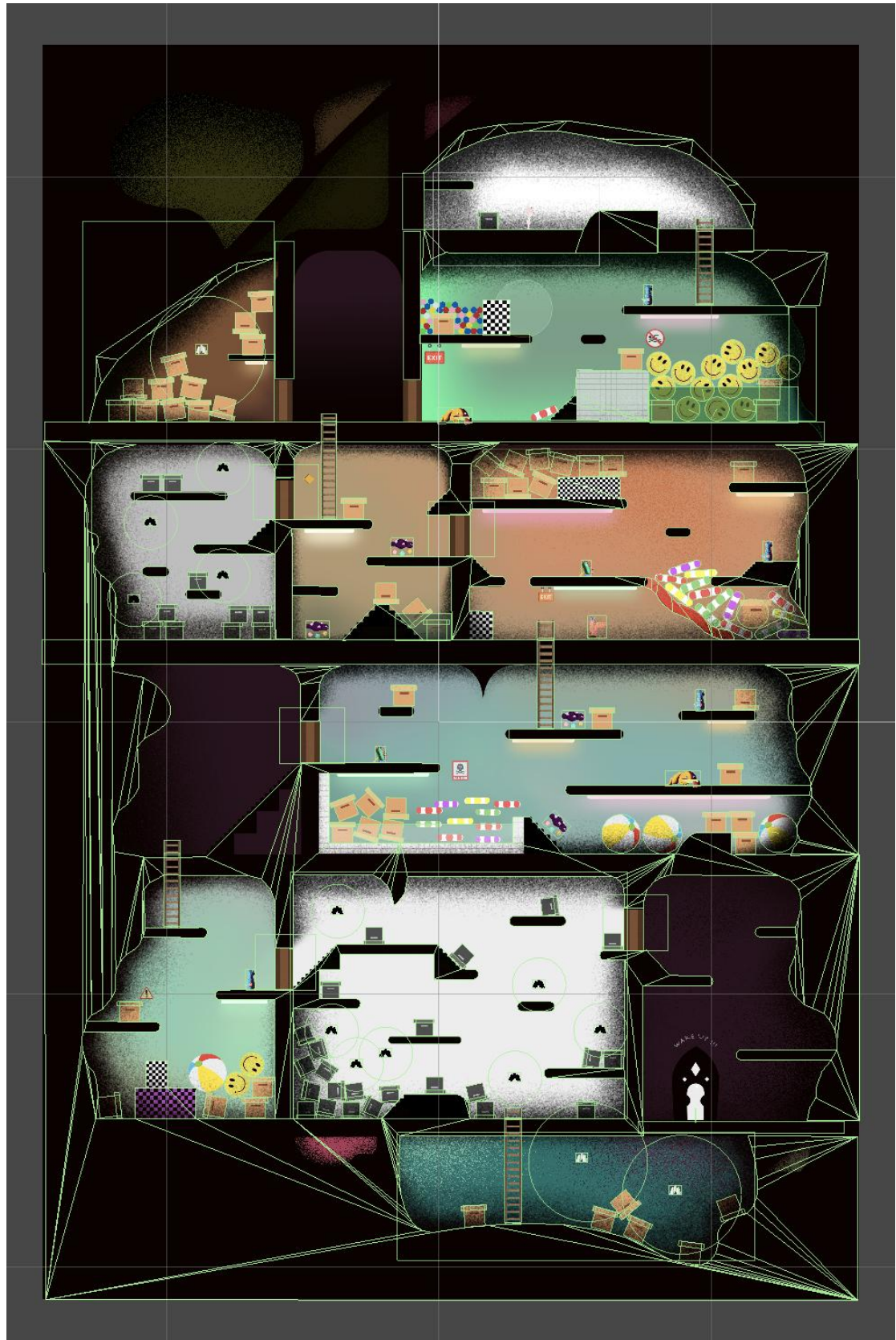
Week 11

This week's design work is mainly divided into the production of game sound effects and the research of game immersive experience. Immersion is a crucial part of the game, which directly determines whether the game participants can get a sense of high-quality game experience, and the immersion is obtained firstly by the visual scene that conforms to the plot of the game to create, and secondly by the game sound effects that conform to the scene to render. For example, with ethereal sound effects and surrealist style dream core planar atmosphere can create an atmosphere of panic and helplessness, so that people will be immersed in the real world and forget about the real world, and get involved in the game plot of the Dream Core. Therefore, I collected a lot of audio clips for editing and used objects around me to record sound effects matching the props, and synthesised them with software, including the white noise in the light sleep area, the echo of the void at the exit, and the accompanying sound effects in the reward/punishment mechanism, etc. I have also incorporated this part of my research and production process on game immersive experience and sound effects setting into my thesis.

Week 12

This week I made the physical force between the various areas of the map scene, this operation can ensure that the object in the force movement process will not go beyond the set map area, but also allows monsters and characters to stand on the set ground activities will not be subjected to gravity fall, which includes the physical mechanics of the ground on the scene object, the physical mechanics of the walls and moving platforms and so on, as far as possible, to carry out the refinement of the processing. We also constructed stress areas for different props in the scene, initially simulating the mechanical phenomena in natural environment. Due to the lack of rich experience in unity, during the operation of this session, I borrowed a lot of teaching videos to study and practice, and asked my good friends who majored in game design during my undergraduate studies for guidance when I made the force area. Although I was anxious when I encountered problems that I couldn't make, I was glad that I finally overcame the difficulties through my studies and research, and I deeply understood that practice is the only criterion to test my knowledge.

Week 13

This week, based on the previously built environment, I conducted a small collision test on local areas, which is also a part of the iterative design process. During the test, it was found that there was an unreasonable collision between the props and swimming circles in the scene. Therefore, I found the reason for this. The swimming circle was elliptical in shape, and the stress area I established earlier was rectangular. There was a discrepancy between the two shapes before, so the curvature of the swimming circle could not participate in the collision at the moment of collision and would be bounced off by the top corner of the rectangular stress area. Therefore, I deleted all the stress areas of the swimming circle, And found the capsule shape in Unity and re scaled it to construct the stress area of the object. After repeated testing, the natural effect was achieved. In addition, individual swimming rings and water balls will randomly fall when the animation starts due to the influence of gravity and elasticity, causing the initial position to exceed the area of the water body. Therefore, I rearranged the initial position of the swimming ring to ensure that it is not affected by gravity. After falling, it will not affect the visual interaction of the initial mode in other areas, and it also achieves a unified visual effect.

Week 14

This week I set up the interaction between monsters and humans. Most of the monsters in the scene only move in a small area. I set the left and right range of the movement of the monster, and try my best to keep the start and end values consistent with the length of the ground platform. When no one is near, the monster will walk around in this range, and when someone approaches, the monster senses the value and starts to attack people. At this time, people can choose to score points after hitting the monster, or they can choose to escape and skip the monster's hit out of the attack range. In this production step, I found a problem. When the monster was fighting with people, the layers before and after were superimposed incorrectly. I adjusted the z value of the monster layer to solve the phenomenon of space contradiction. At the same time, this week, I also made flash animation for the lighting effects in all the regional scenes, simulated the fault style of different colors of lights, made the game more surreal dream core style, and made the scene atmosphere more bizarre and rich.

Week 15

During this week, I mainly processed the superimposed hierarchical relationship of all

props and objects in the water. The water body is on the top layer, the path of scene props and characters is on the middle layer, and the map scene is on the bottom layer as the base, which ensures the accuracy of the visual relationship and does not affect the physical space confusion after the characters enter the water. At the same time, I also adjusted the buoyancy of all the scene objects in the water body. When the characters hit the props, the props included both the collision elasticity of each other, the falling gravity, and the buoyancy and physical reaction force after falling on the water body. This allows participants to control the game while having a more immersive feeling of environmental changes, increasing the authenticity and playability of game elements. When the character walked into the water body, I set the body resistance for the character, and then the pace and movement became slow, while the sound of wading was accompanied.

Week 16

During this week, I found some problems exposed in the game through self-testing. For example, when the character is near the Bat monster, all the Bat monsters in the room will gather together, which causes a problem that the character has only one hand and can't hit all the Bat monsters at the same time, so the character quickly loses his health and dies. To this end, I reduced the sensing area value of each bat monster to ensure that only one bat monster attacked the human in a short time, and the bat monster would not continue to follow the character to other rooms after the human left the room. This process is the improvement of the game interaction details. In addition, I set up the door opening effect, when the character walks to the door and strikes the door, the door will pan up and open, and then the door will automatically close after the character enters another area through the door. In this process, I found that when the door was opened, the black color mask added around each independent scene was not erased at the door opening, and the black barrier before the area would appear, which seriously affected the visual effect and the fluency of clearance. To do this I removed the excess black mask effect and replaced the animation footage.

Week 17

This week I mainly related the scores of props and objects in the scene to the characters. When a character hits a monster, breaks an item, or collects a memory chip item, the game UI will have a numerical pulsation effect, and when attacked by a monster, the health bar will gradually decrease until it drops to 0 and starts exploring the game again. At the same time, I also set the difficulty of the game to start from the

first area, the more difficult it is to get closer to the end, increasing the effect of increasing difficulty, so that the participants' experience psychology can gradually adapt to the rhythm of the game while having a strong desire to play, effectively avoiding the phenomenon of boredom caused by the average difficulty. In the progress of the paper, I have elaborated the interaction process in detail, and equipped with corresponding pictures to assist understanding.

Week 18

In this week, I mainly improved the thesis according to the graduation project, and made some data visualization charts according to the research of various data in the thesis, so as to quickly see the trend and proportion relationship. Some text quotes that are conducive to my argument and elaboration are added and marked. The partitions of each paragraph are refined. For my graduation project, I repeatedly observed the finished areas of the game, calibrated the interaction details, and fine-tuned the color changes in some map scenes and props. I also replaced the position of a small number of monsters, trying to do not appear in one area of the same type of monsters, to avoid repetition.

Week 19

This week I also tested the game map, having the characters walk from beginning to end in game mode. I found that some of the mobile jump platforms were too short and moved too fast, and the characters could not jump to the corner to collect memory fragments through this platform. For this reason, I scaled the length of the jump platforms in the engineering document, and re-preset the left and right path endpoints, so as to ensure that the characters' interactive experience in the game was not interrupted, and they could also smoothly reach each corner they wanted to explore. At the same time, I want to sort out the questions I want to ask the teacher about the game and the paper at the online meeting next week. Some guide ICONS were made to guide participants in the map scene, such as the flashing left turn icon and exit icon. In addition, the plane vision of the game's start interface, loading interface and end statistics interface was also made.

Week 20

During the week, I had an online video conference with my teacher to share my games and papers. Since the game is not fully completed yet, I only showed some skills and scenes, but we found many problems together. For example, when the character goes down the ladder in one area, he will go directly through the ground to another space, and when the character comes into contact with some objects, There is lag, there is an overlay error in the layers of the ladder, it should be placed on the top layer, there are still air gaps between objects in some areas, etc. This is undoubtedly a serious experience loophole for the game. So I double-checked and fixed the above issues, and added all the props and scene sound effects. I also made more complete settings and adjustments to the buoyancy and gravity reaction forces of objects in the water to make the physical effects of the props more realistic. In terms of the paper, I added a participant test research section and a methodology section, and provided an in-depth explanation of the interaction process. Add some picture materials in the preliminary research and interactive parts to assist the understanding and presentation of the paper. The thesis and graduation project will be refined and improved at the same time.

Week 21

This week was also the most stressful one. I repeatedly checked and revised the details of the paper. The font, size, format, etc. all needed to be checked. I re-wrote the conclusion of the paper. The previous version was too macro and lacked tendency and generality. In my graduation project, I made slight adjustments to the physical parameter values of some objects, tested them repeatedly, and also increased the resistance of the characters when wading through water. Make all the settings in Dream Core Traveler more detailed and closer to the ideal appearance in my mind.