Final Bachelor Project

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Executive summary

In this project I set out to design a Virtual Reality game that would make its players more empathic. I decided to make a game in which players must care for a virtual pet, thus having them develop empathy for this pet.
I soon realized that what I was creating relied on emotion recognition skills as well as empathy and decided to include this in my focus. I found that people normally develop these types of skills between the ages of 10 and 14 so I decided to target my idea at first grade high schoolers, around 12 years old. There are currently not many trainings like these for a general public, these types of trainings are often developed for children with autism. This is a potential user group I also ended up exploring and seemed valid for the concept to be marketed towards.
However I figured it could be a welcome addition to the high school curriculum. I based this on the idea that people these days spend less time communicating face to face and an increased amount on their phones or using other sorts of technology, causing these skills to have worsened over the years.
The training also has a place in the core learning goals high schools have set out for themselves, especially considering high schools are going to start focusing more on so called “21st century skills” in the future, which social skills are a part of.

I went on to develop my game and designed a little dog like creature. It was designed in a way it could easily display expressive emotions for the player to identify. The game contained several activities the player could perform such as playing with, petting and feeding the creature. The creature would react to the player’s behavior and also signal its own desires, displaying various emotional, behavioral and contextual clues. Leaving it up to the player to figure out what it wants.

The demo was tested in a group of 23 children that fit the target group. Here it could be seen how without instruction the children did not immediately try to understand the creature, but when asked what it wanted from them they could often make figure it out quite well.
It could also be seen what the effect was of having an entire class interact with the product together. How they shared their ideas of what the creature wanted, showing how the product in this setting creates the possibility to speak about these topics where they otherwise might not.

All in all the project laid the groundwork for this concept, though it leaves much work to be done in the future. The product would have to be tested more extensively and a decision would have to be made on which of the target markets should be focused on, schools or children with autism. After this, the training can be developed further with the target market in mind.

Prologue

In the past year and a half I have been shifting my focus at Industrial design to game design and development, particularly with a focus on Virtual Reality. This started with my third design project in which I contributed to a virtual reality game for language learning as part of my design research project under the Play and Learn squad. Since then I have also interned at Enversed studios, a company that creates a variety of virtual reality applications.
For my final bachelor project I chose to return to the Play and learn squad because there I could make use of technologies such as virtual reality, emphasizing the playful and interactive aspects of them.
In this squad I also had the opportunity to show the developments I have made in the past years and develop further in the areas I wanted to. Being able to show I'm capable of designing and developing a game myself and learning new skills related to game development such as 3D modeling and animating.

Introduction

I chose the project topic "Virtual Reality for Empathy" and I set out to design a product that would make its users more empathic in some way using virtual reality as a medium. I already knew I wanted to make something playful and interactive to accomplish this so that I could show my capabilities, I just didn't know exactly what yet.
I set out to use a similar process my internship company used when they create games. Dividing the project up in small concrete tasks that can be tackled one at a time. Allowing me to stay focused but not lose sight of the big picture. Of course, being a solo project, there were a lot of varied tasks ranging from between design, art and programming. I aimed to have a certain consistency across all these different aspects that unified the project as a whole.

Design Process

Brainstorm

The main goal for my project was to design a virtual reality product that made people more empathic in some form. Because I knew a lot of time would go into developing the VR game I chose my concept quite rapidly. I tried to think of some concepts and ultimately went with an idea I had for a while: a game about taking care of a virtual pet, in which players would develop empathy for this virtual creature.

I started brainstorming about what aspects of this creature would need to be designed and what was important to focus on. I thought of the type of tasks the player could perform with the creature and what features or characteristics the design of the creature should have to convey its emotions.
I then came up with the tasks someone would need to do with their pet on a daily basis like playing with it and feeding it. I envisioned that a play session could compose of waking the creature, playing with it and feeding it until it gets tired and goes back to sleep, concluding the session. You would be able to interact with the creature in a number of ways such as calling it (through a microphone) to get its attention, petting it with your virtual hands or through objects you pick up.
I realized that an important part of this game would be recognizing the emotions of the creature through its facial expressions and behavior. This gave me the idea to make that the focus of the game, to train emotion recognition skills by having to take care of a virtual pet.

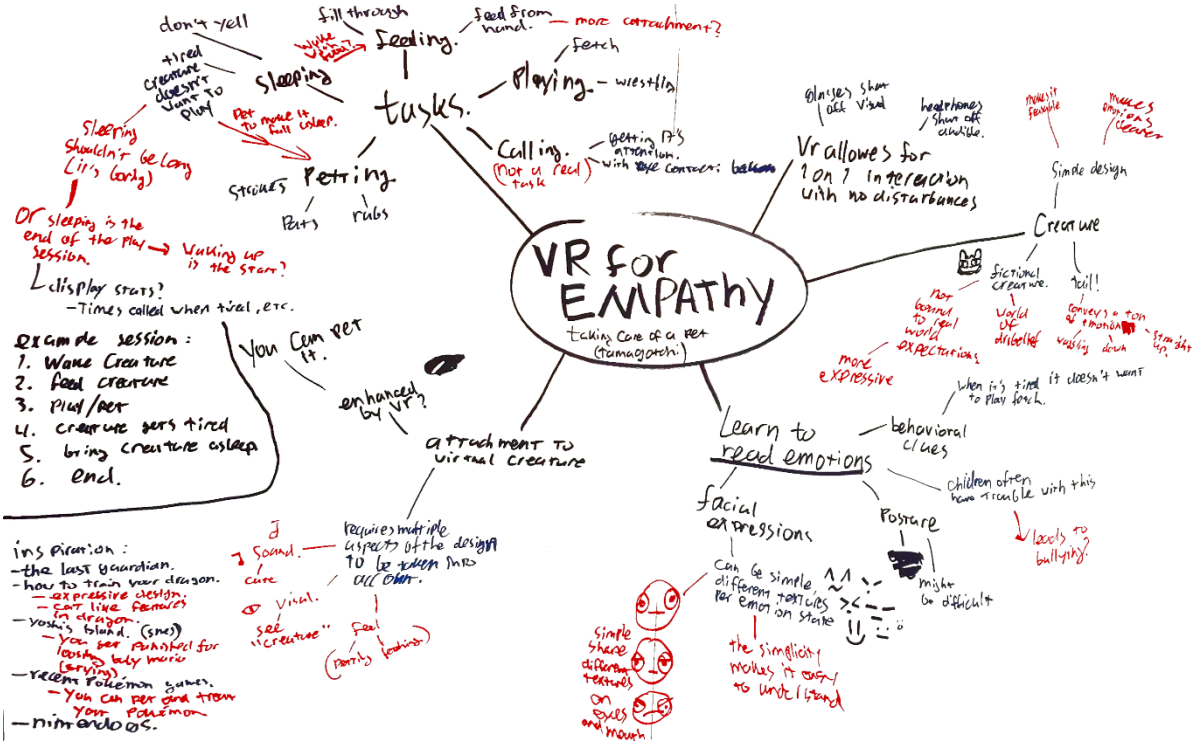

Figure 1: Mind map of the first brainstorm

Research

I started to do some research in the field of emotion recognition and other things related to the concept to further define the problem I am tackling with my concept, if there is one at all.

I found that improvement in facial expression recognition arises in phases between roughly 10 and 14 years of age and improvement in the ability to read emotion for eyes seems to come in stages between roughly 8 and 10 years of age (Tonks, 2007). So it seemed logical for either of these to become my target group. I chose for children around 12 years old so it can be used with first year high school students. If and when virtual reality headsets are to become standard equipment in schools in the future it is likely high schools will adapt it earlier then preschools would.
Pets have proven in the past to help children with their development (Svensson, 2014) (Meadan, 2010). This is why classroom pets are occasionally used to teach children to care for these creatures. Sadly a classroom pet comes with a lot of limitations due to things like allergies. These problems don't occur with a virtual pet. There have been studies on the effects of virtual pets in the past, one of which showed that kids who played more with their virtual pet dogs received higher scores on the humane attitude and empathy questionnaires (Tsai, 2014). This was very promising to me as it is very similar to what I am trying to accomplish, though with the addition of the focus on emotion recognition.
There currently do not exist many of these trainings for the general public. A lot of empathy and social skills trainings are targeted at children with autism for example. This could be a valuable target group for my concept as well though I had the suspicion that in our modern age our excessive use of technology has likely caused a decline in our empathic skills and therefor it might be important to introduce trainings such as mine.

Before I poured too much time into the concept I decided I should first look at the technical feasibility. Mainly whether or not I would be able to create a convincing enough prototype where my idea could be tested in. I would have to make a 3D model of the pet, it would need to be animated and it would need to be able to look at other objects in the 3D space. I found a couple of tutorials explaining how to do these things and trusted I would be able to use them and make a working prototype.
I started working on it straight away so that if I were to get stuck at some point I would still be able to divert course and search alternatives.

Pet Design

I wanted to design my own creature so that the player would not have any frame of reference to it. If it were a dog or cat they might expect certain behavior from it, or the highly expressive face would not be believable. It also allowed me to play with the features the design have to increase its expressiveness. I took inspiration from my own dogs and cats, the game "The Last Guardian" as well as the movie "How to Train Your Dragon" when thinking of features the pet should have. The last guardian used the creature's ear to convey a lot of information, mainly whether or not the creature was paying attention to the player. How to train your dragon was a good source of inspiration as it puts a lot of emotion into the dragon's face. A lot of the dragon's behavior is actually based off of that of a cat, giving it a sense of familiarity. It too uses its ears, but more to indicate emotion. The dragon puts its ears up whenever it's curious and puts then down when he's snarling or sad. The animators also change the size of the dragon's pupil. Making it very small when hostile and large when not. The rest of the face is also very expressive in general, especially the eyes and mouth.

Figure 2: Changing eyes and ears of Toothless the dragon © DreamWorks Animation

When designing a creature myself I gave it big ears so that these could later be manipulated to become very expressive as well. I gave it a big tail so that this too could be used in the same manner much like how dogs put down their tail when they get scared and waggle their tail when they're excited. This was something I had already planned for in my first brainstorm. The creature was given large eyes so it would become easy to make them very expressive. The space where the mouth would end up was kept flat so that a flat image could be used for the mouth. This would keep the making of the emotions simple as all that would have to be done would be to create new drawings of mouths, rather than alter the entire model or implement new animations.

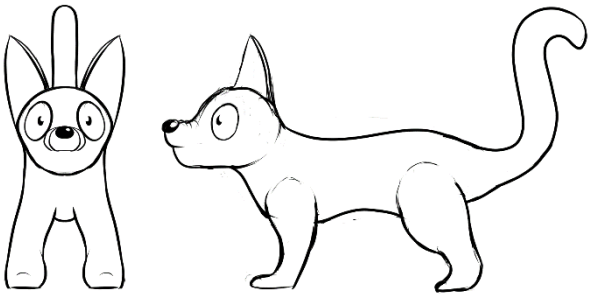

Figure 3: Reference drawings for 3D modeling

Figure 4: First 3D model

First Implementation and feedback

After the model was made I started looking at the implementation into unreal engine, figuring out how to trigger animations, give physics to the tail to give it more weight and how to have the head rotate to look around at objects. Once I had these features functional I had basically overcome all the technical roadblocks I knew I would face, and I was confident I was going to manage to make everything work. So it was time to take a step back and work out the concept into more depth.

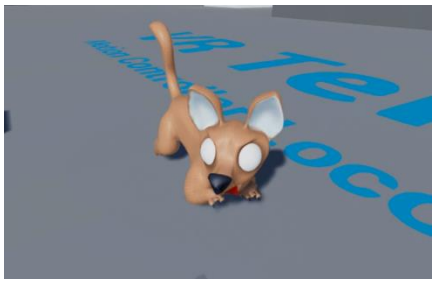

Figure 5: All technical issues answered; playing animations, the head rotating independently and separate objects attached to the head (eyes and mouth)

At the midterm demo day I got a lot of feedback telling me to do so as well. Other feedback included small ideas like being able to pick an animal which I had already considered but obviously isn't feasible for the demo.
One piece of advice I found quite interesting was the idea of having the kids work together in some way perhaps through coop or spectating, this would be more engaging for the entire class and would allow the children to learn from one another.

In Depth Concept Development

Before further developing the concept I wanted to validate the biggest assumption that I made before I started to develop the creature, that there is a decline in empathic skills causing a need for a training such as this one. In short, I had to see if I could justify demand for my game.

I found research suggesting that as technology has advanced the past decades it has come at a cost of face to face interaction. A study by Elon University interviewed many students who were concerned that technology is diminishing people's ability to communicate face to face. They noted, among other things, that "People have lost the ability to communicate with each other in face to face interactions" (Drago,2015). Empathic skills in college students have also dropped sharply since the year 2000 (Konrath, 2010). To me this was an indication that my assumption was correct. The introduction of technologies such as mobile phones and social media platforms have made it so that people spend less time together and even when they do they are often distracted by devices, diminishing the quality of face to face contact. All of this causes us to have less opportunities to train our empathic skills which can be a reason to aid children with them.

I also looked at how my game could fit into the current education system and found the following core learning goals high schools have (Van der Hoeven, 2006) that fit my project to an extent:

34: The pupil learns to understand the essentials of the structure and function of the human body, to make connections with the promotion of physical and psychological health, and to take his own responsibility within those.

35: The pupil learns to take care of themselves, others and their surroundings, and how they can positively influence the safety of themselves and others in various living conditions (living, learning, working, going out, traffic).

Making connections between physical and psychological health are of course a vital aspect of emotion recognition and the game focuses heavily on taking care of an animal. Not necessarily on how to properly take care of it (it assumes you're capable of finding this out on your own) but doing it in a way that takes the wants and needs of the thing you're caring for into account.

High schools are also working on implementing so called 21st century skills into their curriculum (SLO, 2019). These include Communication, Teamwork, Social and Cultural skills, which my concept could also help with. Particularly the Social and Cultural skills which aim to have kids show empathy towards one another, being able to read the room and show respect and understanding for people with other visions, expressions or behaviors.
The 21st century skills also focus a lot on introducing students to various new technologies, increasing the likelihood of schools purchasing virtual reality headsets for this purpose, which can then be used for applications such as mine.

Knowing my design fit the classroom I went to improve the design itself.
I found an app designed to train emotion recognition called Emoreco, designed by the University of Amsterdam. While this app is aimed at adults, I believe it would be much more effective to train these skills while people are still young as this is the point their brain develops them. It will benefit them their whole lives when having to deal with fellow students and colleagues alike. I did look at some of the theory behind Emoreco to see if there was anything I could take into my concept. They claim that people are perfectly capable of recognizing simple emotions (sad, happy, angry) but less good at more complex emotions (proud, tired, stressed) (Fischer, 2016).
My game could start out by focusing on the basic emotions (which should be easy) and then start to get more difficult by implementing some more complex emotions as you go along. For the demo I would keep things simple and focus on some basic emotions. I started putting these on the pet using Robert Plutchik's Wheel of Emotions (Plutchik,1997), which shows what the basic emotions are, and which more complex emotions lie behind them.

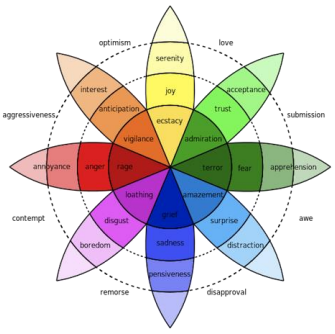

Figure 6: Wheel of Emotions by Robert Plutchik

I could then put these emotions onto the creature using the tools I had made for myself. Changing the size of the pupils and drawing several eyebrows and mouths fitted for every emotion. Of the eight basic emotions (Fear, Anger, Sadness, Joy, Disgust, Surprise, Trust and Anticipation), disgust, trust and anticipation did not make it into the demo directly. Disgust did not really have a use for any of the mechanics and interactions I had in mind, though it's less intense version, Boredom, was added. Anticipation's less intense version, interest, can be seen as the neutral state, where the creature is looking at and going after whatever interests him at that moment. Relaxed and Hungry were also added. Relaxed in some sense also signifies the creature trusts you or enjoys what you are doing (just not in a very active way like Joy would) and hunger (though not really an emotion) had to be added to signify you have to feed the pet.

Figure 7: All the emotion states (from left to right: Scared, Relaxed, Sad, Hungry, Surprised, Angry, Bored, Happy and Neutral)

There is also a state for the creature becoming tired. This is not a separate emotion but a modifier that goes over the current emotion, making the eyes more closed and showing bags under the eyes.

Figure 8: Relaxed - Tired

Sadly I could not find a way to set the ear's position, probably because of the physics they had. I chose these physics over the ability to set the ear because of how much the ears folding back when touching them with your hands added to the feel that this is a tangible and real creature.

Demo

With the emotions sorted out it was time to think about how the game would go exactly. In my first brainstorm at the start I had already worked out an example of how a session might go, starting with waking up the pet, feeding it, playing with it and bringing it back to sleep once it's tired. I worked out the following gameplay loop and incorporated the emotions I had into it.

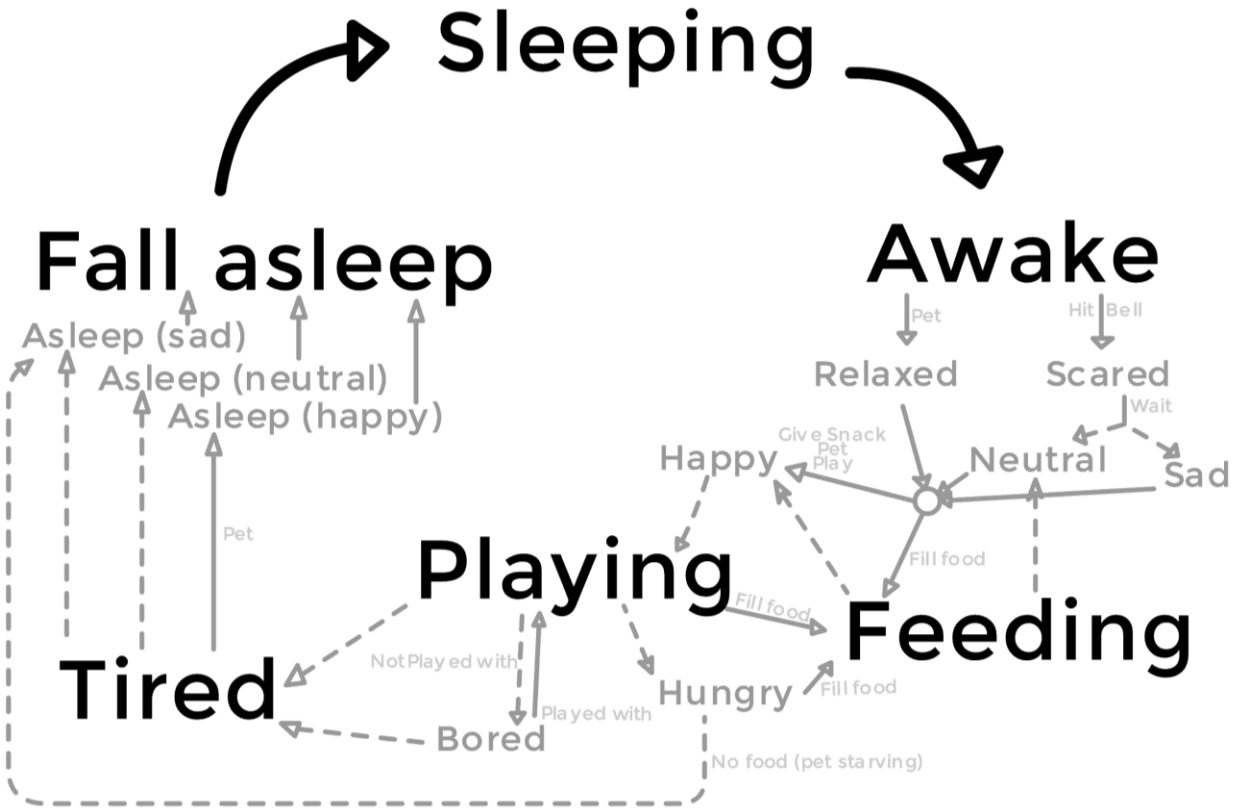

Figure 9: Gameplay loop

The dashed lines are things that happen to the pet automatically, the solid lines are actions the player actively performs. Having the game written out in this way helped scope the development on these necessary aspects and prevent feature creep. These behaviors and interactions between them were what needed to be programmed.

Most of these were from the original brainstorm, with a few readjustments. The ability to call the creature was replaced with a bell that the player could ring to get the creature's attention. This would be easier to make since no microphone controls were required and would probably work better in a potentially noisy classroom setting. The interactions the player would need to be able to perform came down to: Petting, hitting, ringing a bell, feeding snacks, filling a food bowl, playing with toys.

Certain items were required for this which I quickly mocked up using Google Sketchup.

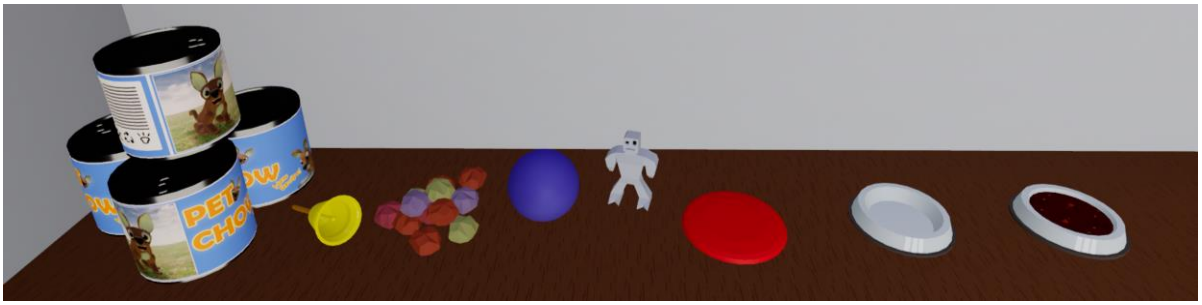

Figure 10: All interactable items in the demo (From left to right: canned food, bell, snacks, ball, robot toy, frisbee, food bowl empty and filled)

From this point onwards it was a case of getting the demo ready for testing. Most of the program stayed the same compared to the original gameplay loop. While developing, the game was constantly being tested. In these tests I would not only test functionality of the gameplay elements but also whether or not they felt accurate. I would make adjustments to how quickly the creature got tired, how happy he would get from petting or playing and more.

Only a few major adjustments were made.
A water bowl was added so that the creature occasionally goes for a drink if it is thirsty and not being interacted with. This makes the creature feel a bit more alive and gives it something to do other than follow the player around.
A total of 3 toys was created as can be seen above, originally this was only going to be one. This was so that it could be made that each toy has a randomly assigned variable dictating how much the pet likes it. It is then up to the player to discover what toy the pet wants to play with.
Lastly, a day and night cycle was added to make it clearer when the creature is likely to be tired. This was added as I found this to be a bit unclear at first. In real life people can also rely on contextual clues like this so it would be good to implement them here as well. The separate sleeping states which can be seen in the gameplay loop were actually added during the development process, they were made to give the players feedback on how well they performed.

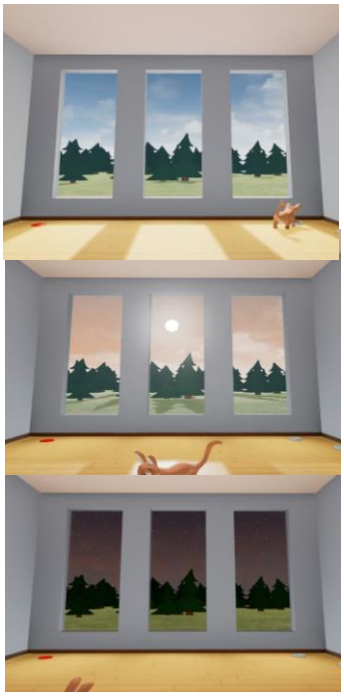

Figure 11: Day night cycle

In the end all planned interactions were put into the game as can be seen in the following screen shots.

Figure 12: Petting to wake up the creature

Figure 13: Petting to cheer up the creature

Figure 14: Filling the food bowl13

Figure 15: Eating

Figure 16: Ringing the bell

Figure 17: Playing with the creature

Final Validation

With the demo finished I could try it out with potential users. I had been in contact with several high schools though sadly due to the final exam period many did not have the time to cooperate. I eventually got in touch with one and was able to test my demo there with 23 children around the age of 12.
They were asked to think out loud when playing and I took notes on their behavior and interactions in the game. Were they trying to understand the creature? How well did that go? The full transcription of the user test can be found in appendix 1.


Figure 18: Participant during the user test

The tests went nearly without any complications.
2 of the tests encountered a small bug which caused me to have to intervene.
Overall, the kids were very excited about the game and virtual reality in general. Taking into account that for most of them this was their first time playing a virtual reality game it makes sense they were. Looking past this there were still a number of interesting observations to be made.

The most notable is how the classroom setting altered the way the game is played.
Because children walking around could spectate this created an atmosphere in which they shared their thoughts on what people needed to do. In the case of my users test this caused a culture in which all children thought that the bell was meant to be used for waking up the creature, or as a “feeding bell” signaling to the creature it was time to eat. Only a few participants noticed that waking up the creature with the bell caused it to look scared. In the concept’s final state, this would be a great opportunity for a teacher to start a discussion among the class so students may learn from one another.

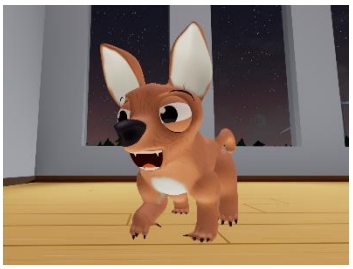
Figure 19: The creature being happy - tired

In general, kids were not actively thinking about what was going on in the creature’s head, though when asked about it did realize what the creature wanted most of the times.
The kids struggled the most with the creature being tired, they constantly misjudged the behavior to be hungry more than anything. They often wanted to play with the creature, while the creature itself did not yet want to. There was one case where the participant was actively trying out different things trying to figure out what the creature wanted. After having fed it the creature grabbed a toy and she exclaimed “Now it wants to play!”.

Alternative Market

From the beginning of the project and onwards I had always kept the potential user group of children with autism in mind. Mostly since the skills I try to improve with my concept are skills people with autism often struggle with. If schools did not end up being interested I could focus on this target group instead as I had a feeling it would suit the well.

I decided to further explore this since, from a business point of view, it might be smarter to target a more niche target group rather than something as large as high school kinds since it would require high schools to have access to virtual reality technology and implement my game into their curriculum. This could take a long time to happen so that time might be better spent with a smaller target market.
Since I was nearing the end of my project not a lot of testing could be done so I chose to get an expert opinion on the matter by talking to a researcher at Industrial Design who is specialized in autism, Emilia Barakova.

She said she could definitely see that my concept has applications in children with autism, for the same reasons I already thought, people with autism often struggle with the skills I aim to help improve.
One would have to take into account some of them might not want to wear a VR headset.
She also thought it could help elderly with dementia though we did not elaborate on this further.
Of course the kids love to play, but it would need to be made sure the game teaches them better emotion recognition. A lot of testing would be required to see if it does, it's hard to tell by only looking at the product. This testing could be done in a potential continuation of the project.
It might also help kids learn to take initiative in a social setting though again this would have to be tested.
Overall I was satisfied with the outcome, it confirmed that it is worth looking into children with autism as a potential user market aside from schools.

Conclusion

In the end, this project had laid a solid groundwork for this concept. The concept has a place as either training for children with autism or as part of the future education system focusing on 21st century skills.

The game teaches kids about emotions and empathy by requiring them to think about what the creature wants from them, not just what they want to do with the creature. They need to do this by identifying the emotion the creature is portraying while also taking contextual clues into account such as the creature sitting near his food bowl or it turning nighttime.
The fact that it is a virtual reality game helps make the creature feel more real and tangible since you can physically pet, play and make eye contact with it, creating a much stronger connection.
In a classroom setting, the game also helps by making the topic of empathy and emotions discussable through the creature. Whereas otherwise they might have to talk about themselves or others they can now talk about how the creature feels and behaves and share their opinions that way.

Discussion

Due to the short amount of time left for testing, extensive testing could not be done. Because of this the group that was tested only got to play the game once, giving no opportunity to see whether they really learnt anything from the game. Observations made do indicate the children were capable of thinking about what was going on in the creature's head when asked to do so. I imagine that upon further play session they will start to take the initiative to do this themselves, this cannot be confirmed as of now.

It should also be noted some tests were hindered by minor hiccups in either the design or functionality of the game.
2 tests encountered an issue with the creature not waking up due to an error in the code.
A number of participants experienced virtual reality for the first time and had trouble adjusting to the controls, mainly the teleportation mechanics which could be eliminated in a future version.
Lastly, some participants had trouble understanding some game mechanics like not recognizing the cans as food cans to be put in the food bowl or mistaking the water bowl for the food bowl.

Future work

Pick a market

There several directions this concept can be taken in future iterations. First of all a decision would need to be made regarding the target market, whether it should be focused towards schools or children with autism. Though this might not change much about the game itself (extensive testing would have to confirm that), the training and program around would have to be tailored to suit the either of these markets.
It is also possible to start out with one market and eventually branch into others, this will allow you to present a more finished product when branching out.
When this decision is made further research and testing would have to be done to properly adjust to it. After that improvements to the game and training can be made.

General Improvements

First and foremost the game would have to be expanded upon to include more of the complex emotion people are more likely to struggle. These include but are not limited to the less intense emotions or combinations of emotions described in Robert Plutchik's Wheel of Emotions, some of which are already in the game.
Incorporating these emotions into the game also involve coming up with scenarios that will cause the creature to display these emotions. These will have to be thought out and made as well, expanding the gameplay loop and creating more possible interactions the player can have with the creature.

I would also recommend adding more animations to the game to help convey emotion through body language. Currently the creature cowers a little when he's scared or lies down but no other specific animations like this exist. One I thought would add a lot to the game in particular is the creature reacting in some way when being pet, such as the creature lying on his back, indicating he is enjoying being pet.

An idea that had been floating around since the first feedback moment was the ability to personalize the creature, as this can be something that increases your bond with it.
This can be done by having players select their animal, being able to pick from a variety of creatures. Upon reconsideration I realized it does need to be taken into account that especially the classroom setting it is important the student's pets are comparable so that they are all talking about the same facial expressions and emotions so the different pets in that setting should remain of the same species, just with different types of fur, much like cats.

The idea to make the game cooperative could also be explored further. Making the game multiplayer would add a lot of complexity to the technical aspect of it. Alternatively the spectators can have a bigger role in the training to accomplish a similar effect.

Reflection

The last semester I have been working on my final bachelor project, developing a virtual reality game that taught empathy and emotion recognition. This was the first time tackling a project of this scale on my own, and the first time making a game from scratch. There were a number of goals I had set myself for this project. I wanted to create concrete tasks, learn to make models for games and do proper user testing. This, being my last project of the bachelor, was also going to be an opportunity to show all the skills I had learned at Industrial Design thus far.

Throughout the project I kept a balance of the different tasks like research, concept development and product development, making sure that no area was left too far behind but also making sure I would not get stuck on any of them. For example, half way through the project I took a step away from development to take another look at my background research and concept, making sure they were still on par with what I was trying to accomplish.
From the beginning of the project onwards I kept track of a list of tasks, similar to how my internship company did. This helped keep focus and only work on a few things at a time. It also allowed me to write down ideas as I made them up.

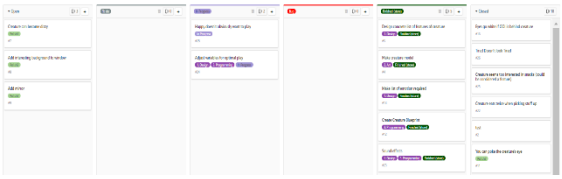

Figure 20: Task list on Gitlab

I also made a planning early on in the project, indicating when I wanted to have to project in a certain phase (creature model finished, full demo and user testing). At the beginning of the project I started off very enthusiastic, though after a few weeks I noticed I got a bit more sluggish and had trouble being proactive. Despite my efforts to prevent this, the entire project still felt very daunting and I didn't always know where to begin. This got to a point where I was falling behind schedule and I had to pick up the pace quite a bit. I did manage to pull myself together and start working on the project very disciplined again and managed to complete it in time, which I am very proud of.
This shift in planning did cause me to have some trouble organizing user tests however. I had them planned as the final step from the start, but now I realize I should have done more user testing earlier on regardless. At the point when I had put the emotions in, the demo could have already been used for a first test of just participants trying to recognize the emotions with no interaction yet.
The final test also featured some issues that earlier testing could have prevented.

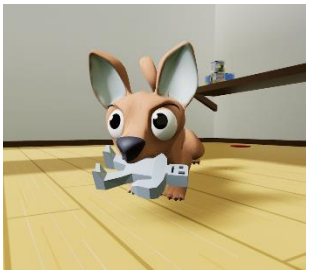

Figure 21: Some of the 3D models in the game

My goal of learning 3D modeling went a lot better. The concept I ended up developing would have actually been very hard to do without making my own model so it was a nice fit. At the start of the project I found a number of very helpful tutorial which led me through the process of making my 3D model. I kept the scale of my project small, giving me the opportunity to make everything in it myself, which I succeeded in. Apart from the grass, sky and hands (which were default objects from Unreal Engine) have been created by me.

All in all, I am very satisfied with the final result of my project. I have made a huge amount of progress in developing a number of skills related to game development while still paying enough attention to the design of the concept, making sure this is of an adequate level.

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Appendices

Appendix 1: User testing

General Findings
Unreal Engine's default hands look "gross", "scary"
When lying down and being pet consider adding more feedback to indicate he's enjoying it (rolling on his back so you can pet the belly for example)
A lot of players can't tell the food and water bowl apart

Participant 1
Wants to play but pet doesn't.
Plays with bell (figuring out VR), doesn't seem to care for creature (wasn't explicitly told this was the purpose)
Fed creature
Wanted to play again but creature got tired.
Didn't seem to realize this even after the session ended.

Participant 2
Wants to wake using bell
Feeds creature
Wants to play but creature doesn't yet (because of bell it's not happy enough)
Thinks "dog looks scary" when tired.

Participant 3
Woke up by petting!
Throws stuff at it.
Plays with creature after feeding it
Continues to play when it's tired

Participant 4
Petted creature a little but then walked away
Grabbed snacks
Eventually wakes it up by petting
Plays with pet
Creature wants to play, player responds well though wants to pet it more than play with it (nothing wrong with that)
When asked about it realizes creature wants to eat and fills food bowl.

Participant 5
Wants to wake the creature by handing it things at first, later wakes by petting
Immediately wants to play with the pet but it doesn't
Pets it a little
Feeds it snacks (don't think he knew that's what they were)
Creature gets happy and they play
Creature still hasn't been fed yet and is starving, sits at food bowl but player doesn't realize what this means. Creature goes to sleep without having eaten.

Participant 6 (was very young)
Had trouble with controls (constantly teleporting around when doing basically anything)
(I was distracted and couldn't record the start)
Creature woke up scared (probably the bell)
Fed it normally
Played for a while
Creature fell asleep

Participant 7
Pets to wake
Wants to play but the creature doesn't yet
Creature walks to the food bowl
When asked, realizes the creature is hungry and feeds it
Creature wants to play now so they do
Eventually creature gets tired and pet to sleep

Participant 8
Wakes with the bell
Immediately feeds the pet (probably saw the others do it)
Thinks the creature wants to play while it doesn't yet
When told clues (it's dark outside, he's already eaten) realizes the creature isn't hungry but tired.
Pets the tired creature

Participant 9
Fills food before even waking it up
Pets it a little but creature doesn't wake up yet
Wants to use the bell to wake up now but it doesn't work (bug)
When creature finally wakes up and is fed it gets tired quickly and the session ends

At this point the entire class seems to have the idea the bell is meant for waking up the creature and few people notice it's making it scared. Spectating kids encourage players to use the bell telling them they have to. I kept trying to tell the spectators to stay quiet and let players think for themselves.

Participant 10
Woke up with bell
Wants to play with the pet but the pet doesn't
Pet got hungry, took the player a while to realize (even after the pet walked to the food bowl)
After eating the creature is already tired and doesn't want to play anymore

Participant 11 (has played VR games before)
Wakes with the bell because all the spectators told him to
Enjoys throwing things around
Thought snacks were the only food and threw all snacks onto the ground
When told the cans are actual food he does fill the food bowl
Plays with the pet a little before it falls asleep

Participant 12
Wakes with the bell
Gives food
Thinks the creature wants to play when it's tired (after being asked what they think it wants)

Participant 13
Is afraid of the animal (says she doesn't like animals in general)
Wakes up using the bell
Wants to keep distance while the pet keeps walking towards her
Throws things at the pet because she's uncomfortable getting near it.

Participant 14
Wants to wake using the bell (everyone is screaming at her to do so)
Gives the pet snacks
Feeds it his food
Pets with it
Plays with it
When it's tired she wants to give it snacks, thinks it's hungry

Participant 15
Immediately goes for the bell, then asks "Why is it scared?"
Feeds it and grabs the ball but the creature doesn't want to play yet
Gets frustrated when it doesn't want to play
Gives snacks and the creature cheers up but it's already tired

Participant 16
Bell again, spectators see the pet is scared of it
Feeds the pet
Plays with it until it gets tired, then pets it

Participant 17
Wakes up by petting, took multiple attempts at this
Eventually goes for the bell which won't work due to the bug, so I tell him to pet it instead
Feeds it
Plays with it
Gets tired but doesn't understand what the facial expression means (like most players)

Participant 18
Wakes up by petting
Throws toys around
Feeds it snacks
"Does it want to play?"
Testing out different things until feeding it
"Now it wants to play!"
Plays around with it and pets it occasionally
Pet gets tired
"Do you want more food?" "Eat!"
Eventually starts petting it and it falls asleep

Participant 19
Wakes with bell
Feeds then gives snack
"Shouldn't he want to play?"
Eventually plays with it until it gets tired and falls asleep

Participant 20
Starts by filling the food bowl
Wakes with bell, also rings bell while it's eating, interrupting it
Throws all snacks at the pet
When he lies down she starts to pet him

Participant 21
Also goes for the bell
Puts food in the food bowl
When the creature got tired the player started throwing around objects

Participant 22

Wakes up by petting at first, then grabs the bell
Wants to play but the pet doesn't
Feed fills the food bowl, but the pet doesn't notice it's filled yet
I told him to draw the pet's attention to the food
He started to pet the creature
After having eaten they play together until tired

Participant 23

Wakes up by petting at first, then grabs the bell
Wants to play but creature doesn't yet
It is interested in the toys, but not in playing yet
Didn't know he could fill the food bowl so gives snacks instead
Creature gets tired after eating.