

EMOTIONAL ECOSYSTEM

AN AUGMENTED REALITY APP TO HELP
KIDS BETTER MANAGE THEIR EMOTION



GROUP PROJECT

DIRECTION/

XR Design
Service Design

ROLE & CONTRIBUTION/

Research 50% Ideation 50% Visual Design 50%
Unity & XR Game Development 50%

TEAMMATES/

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TIME/

2024.01-2024.02

Background

What emotion kids have in common

As the life pressure increases dramatically, people are gradually becoming more aware of their emotional health. Since childhood is a critical period for the formation of a person's mental state, personality and values, children's mental health is becoming a problem that cannot be ignored.

JOY:

Joy can enhance a child's motivation to explore and learn. It encourages social interaction and fosters positive relationships with peers and adults.

SADNESS:

Sadness can lead to withdrawal or decreased activity. Children may need support to process feelings of loss or disappointment, which can affect their self-esteem and social connections.

ANGER:

Anger can result in aggressive behavior if not appropriately managed. It may lead to conflicts with peers and feelings of frustration, affecting a child's ability to form healthy relationships.

ANXIETY:

Anxiety can trigger avoidance behaviors. It might prevent children from engaging in new experiences, potentially impacting their social skills and confidence.



According to UNICEF, WHO and CAS statistics

30 million Children and adolescents under the age of 17 in China face emotional or behavioral problems.

13.41 yrs was the average age of the first diagnosis for adolescents diagnosed with a mood disorder.

50% of all mental health conditions start before the age of 14.

1 in 5 adolescents experience a mental disorder each year.

25% of teens report feeling mild or severe depression.

Literature Research

What causes emotional management failure



Digital devices and screen time:

Excessive use of digital devices and screen time can disrupt a child's emotional regulation by affecting their sleep patterns, attention span, and overall well-being.



Peer pressure and cyberbullying:

In today's hyper-connected world, children may face peer pressure and cyberbullying, leading to emotional distress and challenges in managing their feelings.



Parental expectations and stress:

Busy schedules, work pressures, and parental expectations can impact a child's emotional well-being.



Exposure to societal issues:

Children today are exposed to a range of societal issues, which can evoke strong emotions and feelings of helplessness.

Perceiving Emotions

The ability to correctly identify how yourself and others are feeling

"What are you, and others, experiencing?"

Using Emotions

The ability to create emotions and integrate your feelings into the way you think

"How are these emotions directing and influencing your thinking?"

Perceiving Emotions

Using Emotions

Managing Emotions

Understanding Emotions

Managing Emotions

The ability to figure out strategies that use your emotions to help you achieve a goal

"How do you manage your, and others' emotions?"

Understanding Emotions

The ability to understand the causes and complexity of emotions

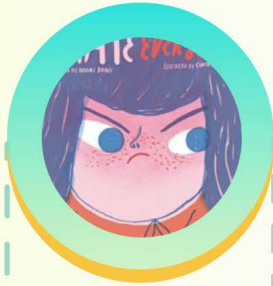
"What caused these emotions? How might they change?"

Competitive Analysis

Calm down box



A Calm Down Box is a tool used to help a child manage their emotions. The box usually contains a range of items and activities that help to calm the mood.



Picture books



These picture books help children recognize, accept, express, and control their emotions through lively stories and illustrations.



Gamified APP



Gamified apps use games to help children understand and manage emotions through low-intensity interventions focused on emotional awareness.



Sandplay therapy



Doctors can learn about children's psychological states and problems by observing the way they choose and use toys, as well as the scenarios they create on the sandtray.



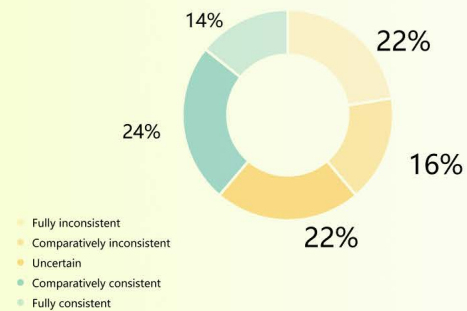
Questionnaire

RECOGNITION Children can easily recognize a wide range of emotions

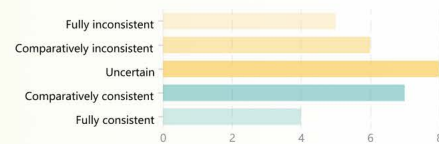
20% of the children surveyed reported that they were **unsure or relatively unable** to distinguish between positive and negative emotions.

1 in 3 of the children were **unsure** or had a **negative view** that they could control their emotions if they were angry.

AWARENESS Children have the habit of recording their emotions



INTEREST Children find the counseling format lively and interesting



METHODS

What do children like to do when they are in a bad mood?

STRESS

Parents think it's easy to help their children with emotional management

64.3% of the parents choose

- Fully inconsistent/
- Comparatively inconsistent/
- Uncertain

Response Category	Percentage
Fully inconsistent	3.6%
Comparatively inconsistent	28.6%
Uncertain	32.1%
Somewhat consistent	21.4%
Fully consistent	14.3%

Interview

We invited a psychologist to be interviewed by us about existing therapies for children.



Effective counseling for children's emotional management often utilizes **cognitive-behavioral therapy (CBT), play therapy, art therapy, and family therapy**. These approaches help children recognize and express emotions, cope effectively, and improve emotional regulation.



Traditional methods for treating children's emotional issues often struggle to maintain their engagement due to **limited attention spans** and difficulty with talk therapy. Interactive, play-based, and creative approaches such as art, music, games, and role-playing are more effective, offering hands-on activities that resonate better with young clients.



What are the main difficulties in treatment?

Pain Point

Based on our research, we have summarized the following pain points.



- Children have no cognitive concept of emotions.



- They lack the habit of recording their emotions.



- Existing methods are not interactive enough to attract children.

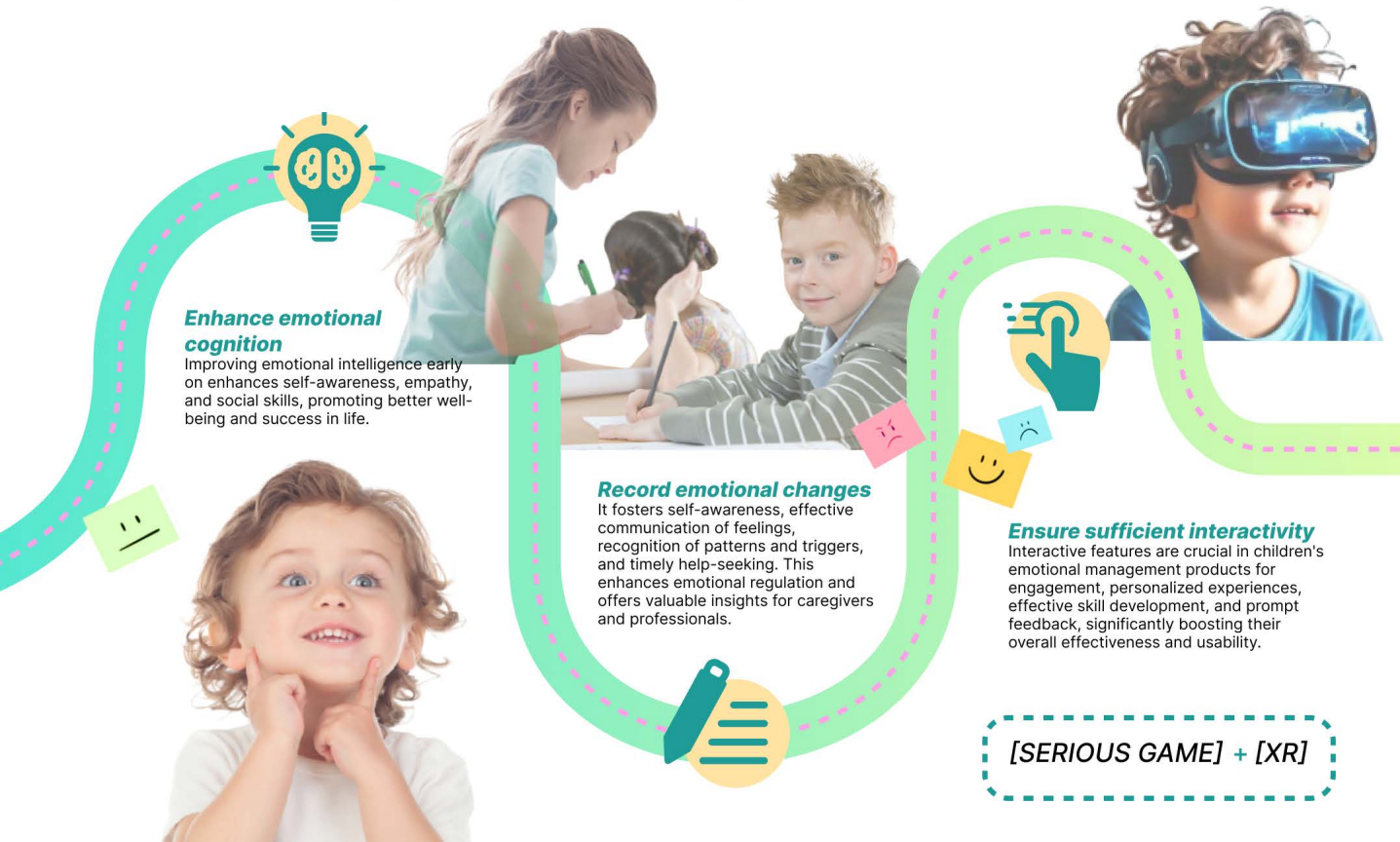
Co-design

We sorted out several ways of managing emotions.



Insights

We distill and summarize these insights based on the above preliminary research and discussion.



Design Strategy



“

Enhancing the faculty of emotional regulation hinges on the recognition and comprehension of emotions. Unless we have a clear understanding of the origins and evolvement of our emotions, it is impossible to effectively manipulate and administer them.

”

The application of XR technology can enhance individuals' recognition and comprehension of various emotions by immersing them in simulated emotional scenarios. Incorporate gamification elements into emotional management training to motivate people to actively engage in the process through enjoyable gameplay.

Persona



Eddie

7

First grade student

Frequency of emotional management: 
Frequently used methods: CBT & Play Therapy
Favorite game: LEGO

PAIN POINTS

- Eddie struggles to express his emotions clearly.
- He lacks patience for regularly recording his emotions.
- Current CBT therapies are too rigid, making him impatient and reluctant.

GOALS

- Use colors to represent feelings and encourage drawing for emotional expression.
- Make recording emotions fun and interactive with visuals to keep children engaged.
- Maintain interest in emotional understanding by incorporating diverse models during exploration sessions.

Design Sketch

Idea 1



- Emotion Recording+Garden Coloring Game
- Paint one flower when feeling negative
 - Different emotions, different colors
- Not necessary to use XR 

Idea 2



- Emotion Recording+Ecosystem Management Simulation
- Record emotions daily(using memos)and interact with the ecosystem during the therapy
 - Different emotions, different effects

Ideation & Proposed User Flow

We conceptualized and proposed the user flow.



Emotional processes



Doctor-guided game



Doctor's guidance

This user flow highlights the combination of interactive play, professional guidance, and personalized strategies in teaching children to recognize and effectively manage their emotions. Using the memos can ensure the convenience of the emotion recording process and the interaction with the ecosystem scenario.



Memo collection



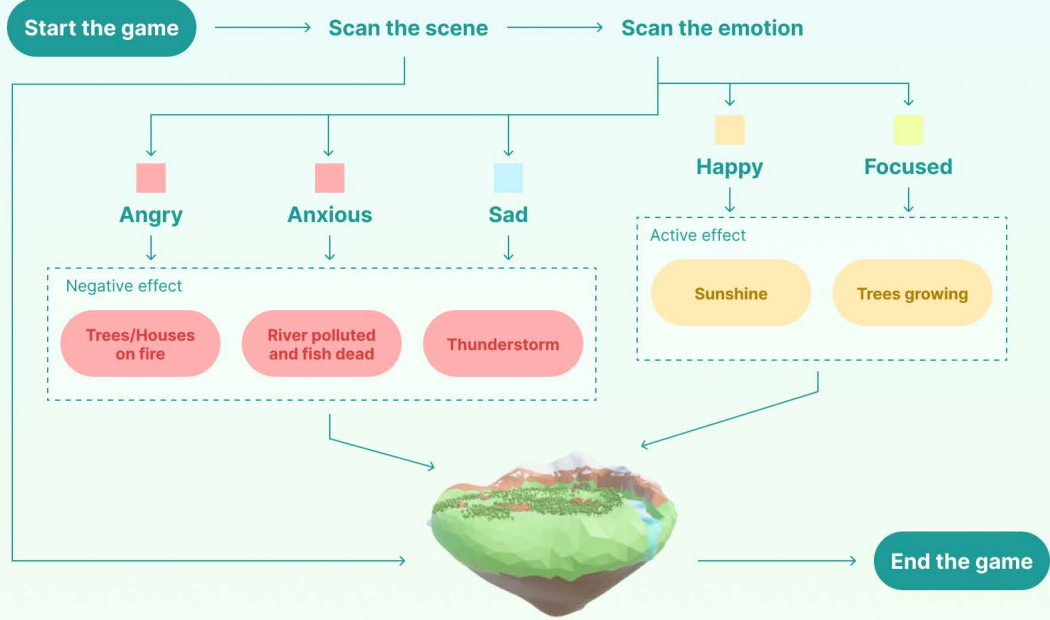
Changes in the model



Emotional management

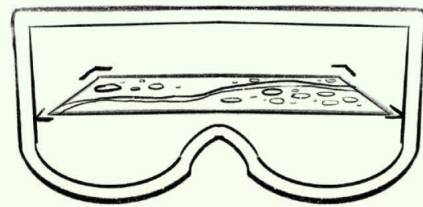
Game Mechanics

We combed through the game mechanics with a flowchart.

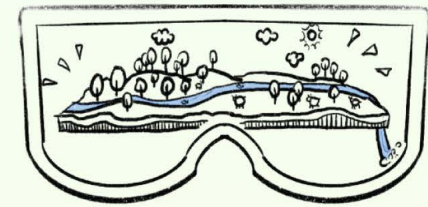


Game Draft

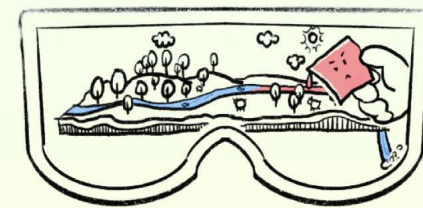
We drew the game's interface draft following the process summarized above.



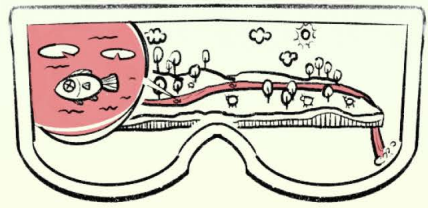
Scan the card



can



Drop the paint



Bring changes

Demo interface

We created the interface of the demo game.



introduction



Scan out the scene



Identify the color of the note



The sticky note starts dripping ink



Ink drops into clouds



Clouds change state



Clouds turned dark and it started to rain



Clouds Rain Plants Grow



Accomplished interface



Change the color of the note



Note color recognition



Red water drops dripping into the woods



forest fire



Drip into house causing fire



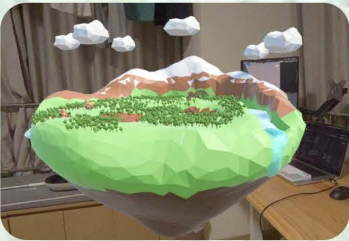
Accomplished interface

Development Process

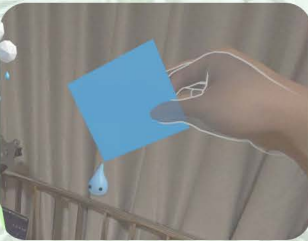


Interaction

The game uses **Meta XR All in One SDK** to allow hands interaction in Unity. We implemented grab function with both hands. Also, the SDK **Seethrough** function allows us to see the real world backgrounds.



Meta XR See Through

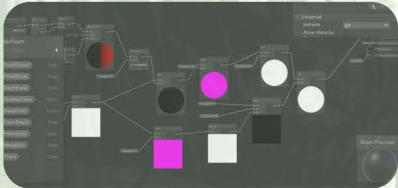


Meta XR Hand Grab

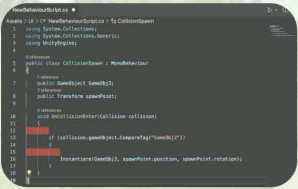


Meta XR Camera

Visual Effects



To create realistic water, we used distinct colors for shallow and deep areas and added bubbling effects.



When the user drops colored ink onto various objects using the memo, the scene will change in active or negative ways. The image on the right illustrates the code for dropping red ink onto a tree with a red memo symbolizing the emotion of anger. In this scenario, the tree will catch fire, accompanied by a smoke effect.

Real World Color Recognition



This code is designed to recognize memos to facilitate interaction between the memos and the entire scene using the OpenCV library. It is particularly useful for applications that require object recognition and shape analysis.

Feedback

We invied some players to exprience our project and recorded their feedback



Ethan

11 years old
No experience in emotional control counseling

"I find this game interesting! When experiencing sadness, the thunderstorm scene makes me understand my feelings better. However, sometimes I feel happy and sad or even angry at the same time, in which case I don't know what color memo to use."

Jack

9 years old
Weekly counseling on emotional control

"I think this experience is great! When I regulate my emotion from unhappiness and record it with yellow memo, the sun is shining and it makes me feel accomplished. But sometimes when expressing anger, the scenes that come up scare me."



Conclusion

Strengths

The AR product helps children express emotions through colored memos, enhancing emotional recognition and engagement. By utilizing AR technology, it creates an interactive space for visualizing feelings, fostering empathy and social skills among peers.

Weaknesses and Improvement Directions

Current emotional classifications fail to fully capture children's mixed emotions, and the representation of negative feelings, especially with the red memo, may cause discomfort. Future improvements should involve more nuanced visual effects and expanded emotional categories for better support. Additionally, the Meta Quest device is unsuitable for children's head circumference, and we should explore more adjustable, lightweight devices to complete the project.