CHI23
Hamburg, Germany | Hybrid
April 23-28, 2023
reCHInnecting

Mind Terior

A Mobile game mitigating
emotional difficulties

Mobile | UX/UI

Period	2022. 09 - 2023.01
Roles	Planning, Research, Logo design, UX/UI UX writing, Illustration, Sound design
Tools	Figma, Photoshop, Illustrator

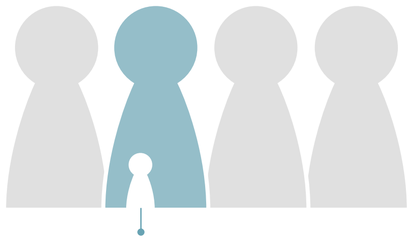
BACKGROUND

Mental Health Issues

Mental health issue is an increasingly severe social problem, but not many people actually get the proper mental health care. According to the survey, reasons for not seeking mental health care include cost burden, lack of awareness, lack of information and lack of time. In addition, there is a lack of appropriate interventions to help people easily and consistently monitor and manage their mental health.

Prevalence of mental disease during lifetime

27.8%



Mental health treatment utilization proportion **12.1%**

@Korean Ministry of Health and Welfare's Mental Health Survey 2021

Reasons for Not Receiving Mental Health Services

Lack of awareness

- 64.7% It will get better soon because it is not serious
- 36.1% Mental problems should be overcome by myself

Low Accessibility

- 26.5% Concerns about the cost of treatment
- 21.3% Don't have time to get treatment

Lack of information and misconceptions about treatment

- 47.7% I don't think the treatment will be very effective
- 23.9% Because of the negative stigma of the people
- 21.1% Concerns about the side effects of psychiatric medications
- 20.0% Don't know how to treat
- 17.8% Worried about the disadvantages of the medical records
- 17.2% Do not know a good hospital

@Korean National Center for Mental Health, Results of the national survey on knowledge and attitudes towards mental health 2022, n=465

RESEARCH GOAL

?

How might we design more **accessible** and **sustainable** mental well-being care services?

Mobile mental health care game that helps players mitigate daily emotional difficulties.

Main target
People who have mild mental difficulties, not ilness

Not a 'Medical Serious Game'
- Healthcare/medical purpose
- Limited player experience
- Specific directions and intuitive interfaces

But a 'Mind-care game'
- Pursues mind stability
- Abstract narratives
- Various emotional experiences
- Relaxed directions

RESEARCH PROCESS

1 Define Soution
- Competitive Analysis
- Define Solution

2 MindTerior design
- System Design
- Narattive Questionnaire Design
- UX/UI Design
- Sound Design

3 MindTerior Development

Mobile game development by using Unity engine editor version 2021.3.8

4 User Test

n = 8, including 20s, 30s, and 50s
(male 5, female 2, and undisclosed 1)

- Pre-survey
  - Recent game play experience
  - emotional difficulties in daily life
- MindTerior Play
- Post-survey
  - Possibility of further action in reality
  - Ask about overall game feedback
  - AESTHEMOS test
- 1:1 Interview

DEFINE SOLUTION

Competitive Analysis

There were multiple mental healthcare games, which mainly focused on providing relaxing effects with sensory elements. In some prototypes, players were provided with reward systems, music-puzzle elements, and behavioral therapy for long-term engagement.

Representative mind-care games with relaxing audio-visual elements

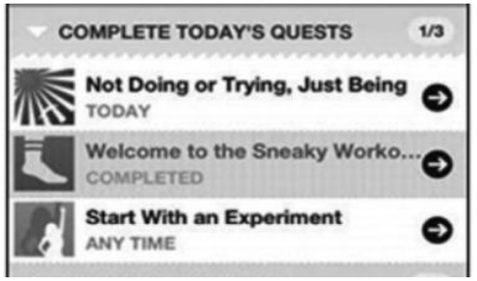
Abyssrium (2021)

Penguin isle (2019)

Gris (2018)

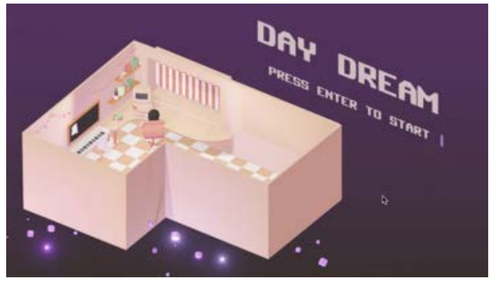
Journey (2012)

Mental health care purposed game prototype



SuperBetter (2015)

Level up, scoring, reward systems to motivate players to positive change



Day Dream (2020)

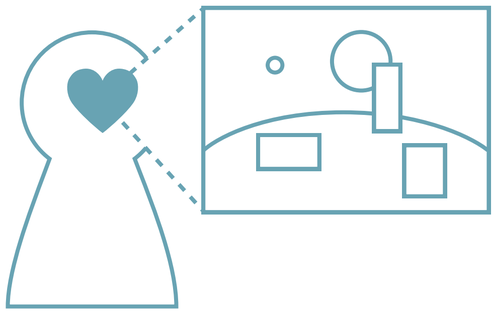
Music and puzzles for reducing stress and caring mental health and emotion

The Guardians (2021)

Behavioral therapy for long term engagement in relation with real world

DEFINE SOLUTION

Enhance the self-awareness



Visualize players’ mental health data as visual elements of game space to enable users to easily recognize their emotional status.

Easy to access coping methods

Develop a mobile game form to enhance daily accessibility, and provide gamified evidence-based mental health care activities

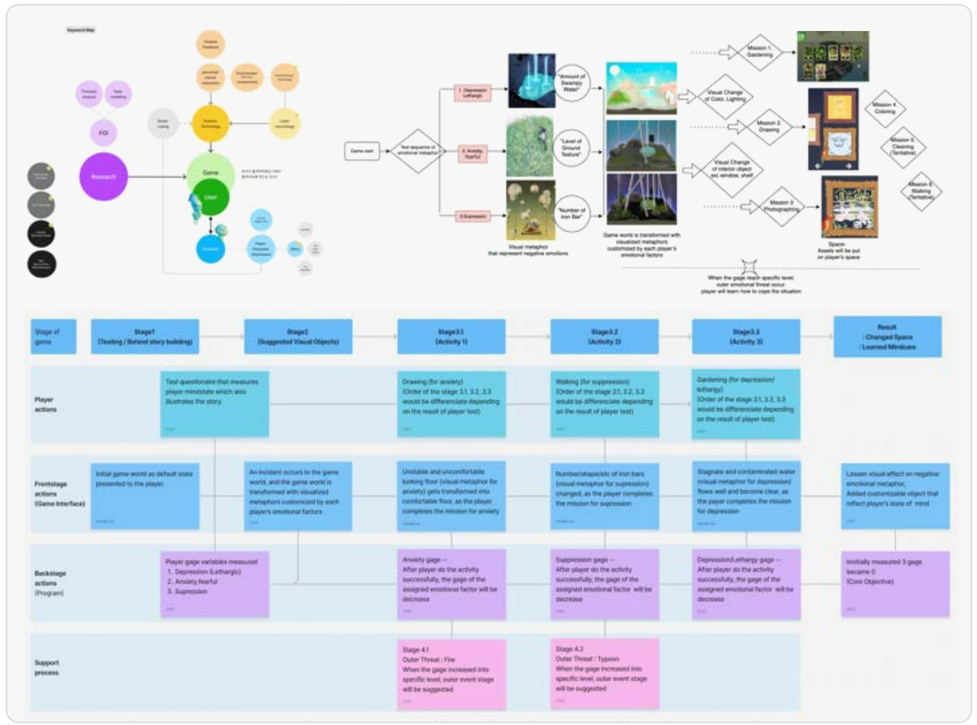
Lead sustainable use

Provide fun factors and a reward system to lead users' continuous game-playing for long-term mental wellbeing

MINDTERIOR DESIGN

System Design

- Four team members defined the game concept through regular discussions twice a week for six weeks, and designed a specific flowchart and blueprints of the system.



Screenshot of Figjam work space

UX/UI Design

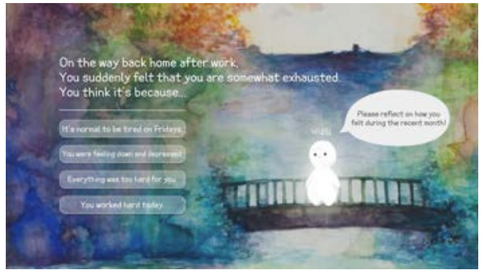
- I drew the all visual elements of MindTerior by using Procreate and Photoshop, and designed UX/UI by using Figma.

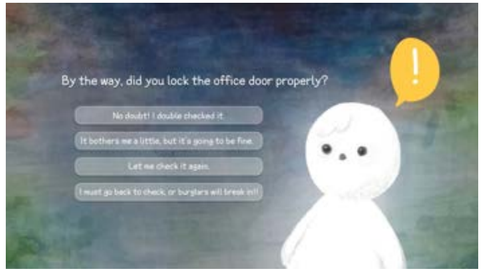
Screenshot of Figma work space

MINDTERIOR DESIGN

Narrative Questionnaire

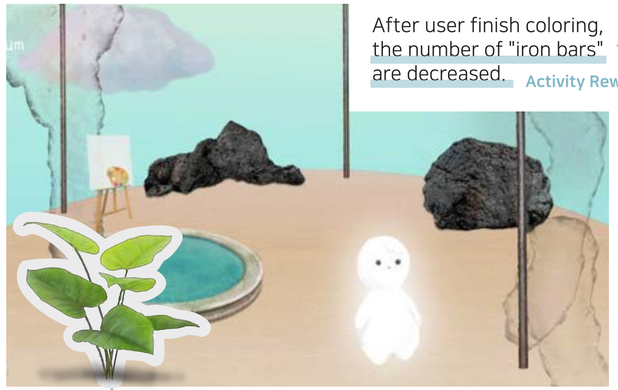
When first starting the game,each user responds to questions asking how they think about and act in several specific situations.





Visualization of emotional status

Each user's emotional status is automatically analyzed based on their answers to the narrative questionnaire and metaphorically visualized as states in the game's space, MindArium.



After user finish coloring, the number of "iron bars" are decreased. Activity Reward 1

Users can customize their MindArium by purchasing objects with hearts(currency) earn by completing suggested activities. Activity Reward 2

Gamificated evidence-based activity

Suggest cognitive behavioral therapy interventions needed to alleviate the user's negative emotional state in the form of a mini-game.

Coloring could reduce obsession

Coloring
Walking
Sentence Dictation

Obsession

Cleaning
Gardening
Sentence Dictation

Gloominess

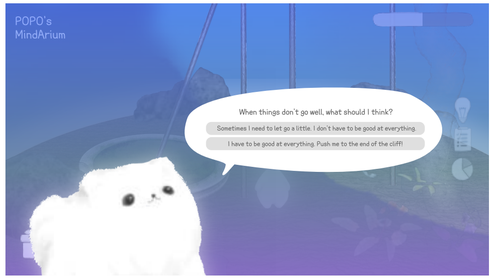
Sentence Dictation
For overall emotional stability
Provides helpful sentences spoken/written

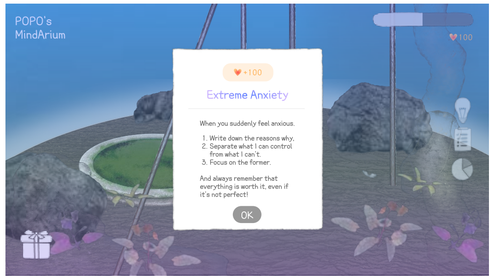
Anxiety

List of Game Activities

Event

When the user completed certain number of mini games, an event occurs that enables users to learn how to cope with extreme emotions

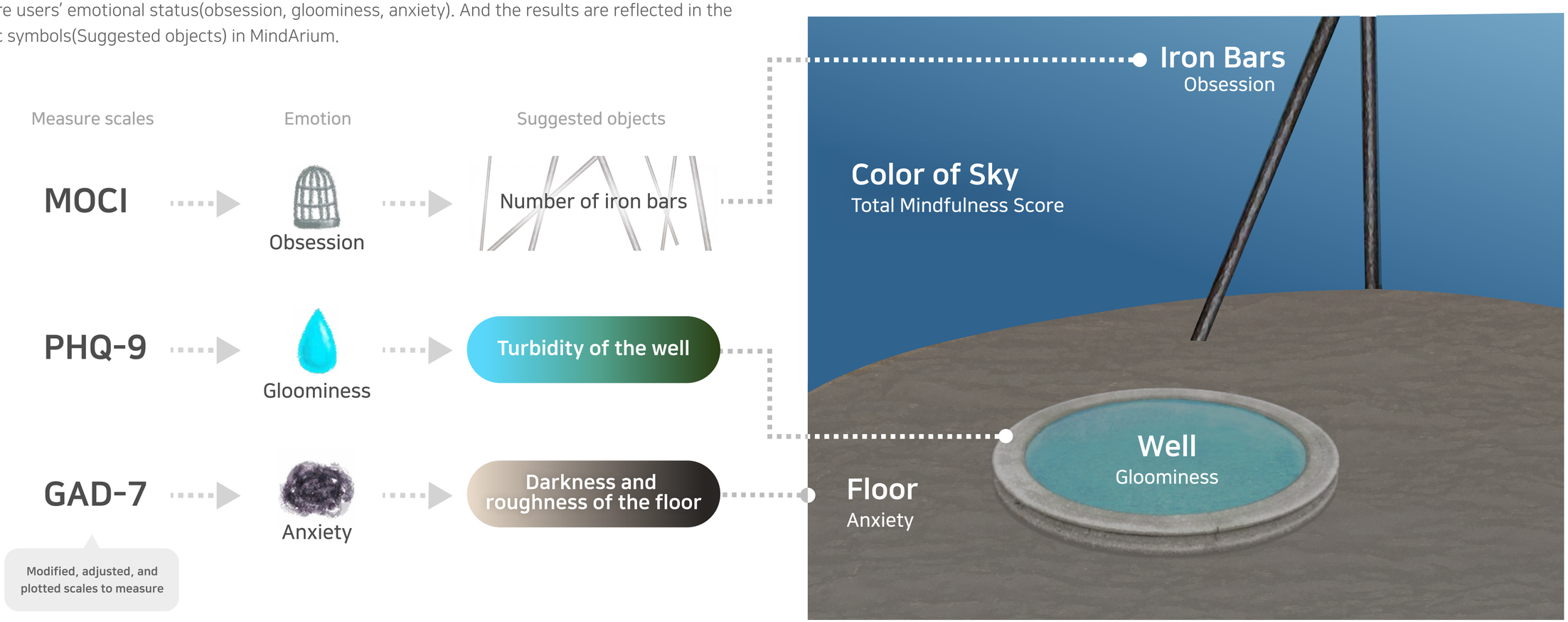




MINDTERIOR DESIGN

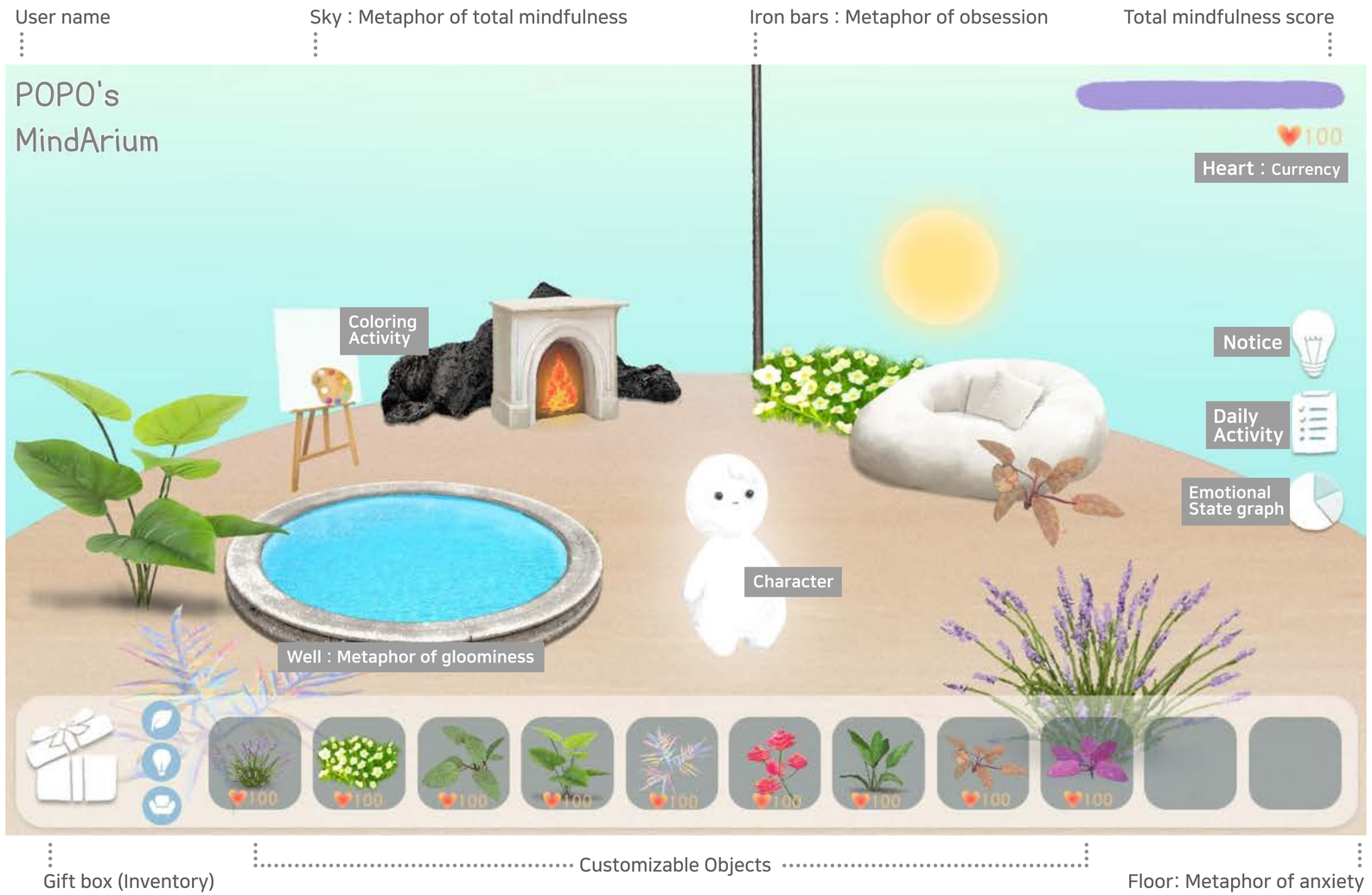
Emotional State to MindArium

The Narrative Questionnaire consists of eight questions of modified, adjusted, and plotted scales to measure users' emotional status(obsession, gloominess, anxiety). And the results are reflected in the specific symbols(Suggested objects) in MindArium.



Kurt Kroenke, Robert L. Spitzer, and Janet B. Williams. 2001. The PHQ-9. Journal of General Internal Medicine 16, 9: 606–613.
R.J. Hodgson and S. Rachman. 1977. Obsessional-compulsive complaints. Behaviour Research and Therapy 15, 5: 389–395.
Robert L. Spitzer, Kurt Kroenke, Janet B. Williams, and Bernd Löwe. 2006. A brief measure for assessing generalized anxiety disorder. Archives of Internal Medic

MINDTERIOR DESIGN



Scoring and Reward system

Total Mindfulness score (total score): After the Narrative Questionnaire, the total score is calculated and displayed on the top bar graph. At this time, the total score is calculated in inverse proportion after adding up the questions that measure emoitons. For example, in the case of 400 points of the negative emotions score, which is the highest, the top bar starts with the shortest.

Reward: When players fnish an activity, they get an increase in their Total Mindfulness score and get a currency reward (Heart). Accordingly, the negative emotion score decreases; status of suggested objects that are symbols of negative emotional states is improved with the increase in Total Mindfulness score. Second, they receive game currency that can be used to purchase items to decorate the space in the game.

Decorating MindArium

The user also can interact with their MindAriums by placing customizable objects. To build the circulatory system between main activities and MindArium decoration, we designed to purchase customizable objects with Hearts, a reward for main activities. Also, it is expected that enjoying improving and decorating their own MindAriums can motivate players to change their real-life surroundings.

MINDTERIOR DESIGN

The Characters in the Game

There is a character and nonplayer character (NPC) in MindTerior who help players immerse themselves in the game story and induce them to perform mental health care activities. The character is designed not to represent a specifc gender so that various players can project themselves into their characters. Looking at the character and empathizing with it, players are motivated to improve their MindAriums, the space where the character resides. The NPC is designed as a cute dog. It instructs the tutorial and assists the player throughout the game play

Non-Player Character

help players immerse themselves in the game story and induce them to perform mental health care activities

Character

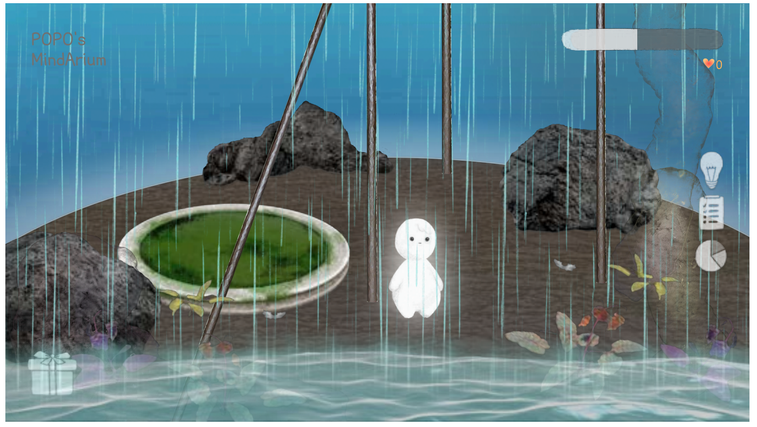
Various players can project themselves into their characters, which motivates players to improve their MindAriums, the space where the character(themselves) resides

Event

After players perform main activities several times, an Event occurs to learn how to cope with a particular emotion at its peak. Figure 4 shows when three Events scenarios occurred. In the Event, the NPC asks how to properly deal with the situation. The user should choose one of the two options, and then NPC gives feedback according to the response. After the Event is fnished, the popup summarizes the learned countermeasures.

Event : Extreme Anger

Event : Extreme Anxiety



Event : Extreme Depression

RESULTS

Overall aesthetic impact of MindTerior

Through a survey anaysis, we found that playing Mindterior was effective in emotional relaxation. We used the Aesthemos(5-point Likert scale) with aesthetic emotion questionnaires.

* Aesthemos contains a total of 42 emotional statements, consists of a total of seven aesthetic emotional categories (P: prototypical, E: epistemic, An: animation, NaR: nostalgia and relaxation, S: sadness, Am: amusement, and N: negative).

Top 5 Answers

Beautiful | Calmed me | Liked it | Relaxed me | Felt motivated to act

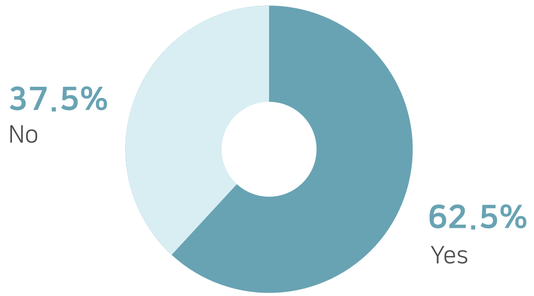
'The overall graphic concept gave me **peace of mind**'

P4

Possibility of inducing mental health care activities in reality

According to the survey, 62.5% of users answered they would like to continue doing mental health care activities in their real lives. Many users said that they would most like to try gardening out of the five activities.

Do you want to perform MindTerior's mental health care activities in your real life?



Helpful to Recognize Emotions

Six out of eight players responded that it was helpful to perceive emotions to face by projecting their mental state into a virtual space.

"Mental states were projected into the game space, making it **easier to recognize my emotions**."

P8

"I could **look at** my abstract **emotions visually** in MindArium."

P3

"I think that the **virtual space also can represent our emotional states**, just like our home or office becoming cluttered or clean based on our mood."

P6

RESULTS

Limitations and Improvements

Consider that visual elements could occur negative feelings

Certain visual elements representing user's bad emotional status, such as dark background, lots of iron bars might cause negative experience. Therefore, negative state of visual elements should be improved.

Needs to track the real-life behavioral change

As a research result, MindTerior motivated users to do mental care activities in real life, but there is no function to reflect the result of actual actions to game rewards. Wearable or other automatic data collection technology would connect two different worlds.

User engagement to continue gameplay with rich content

Some users emphasized that more varied content is needed to motivate people to keep playing this game for their long-term mental health care. The future version should provide different levels of activities based on each user's condition, and more customizable features.