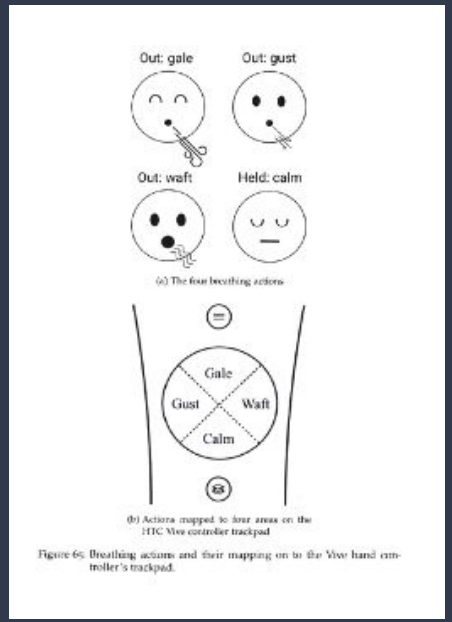
VR Breathing

Group 5: Breadth of the Wild
Presenters: Viva Laas, Jiamian Wang, Jinheng Zhang, and Minghao Zhao

Introduction

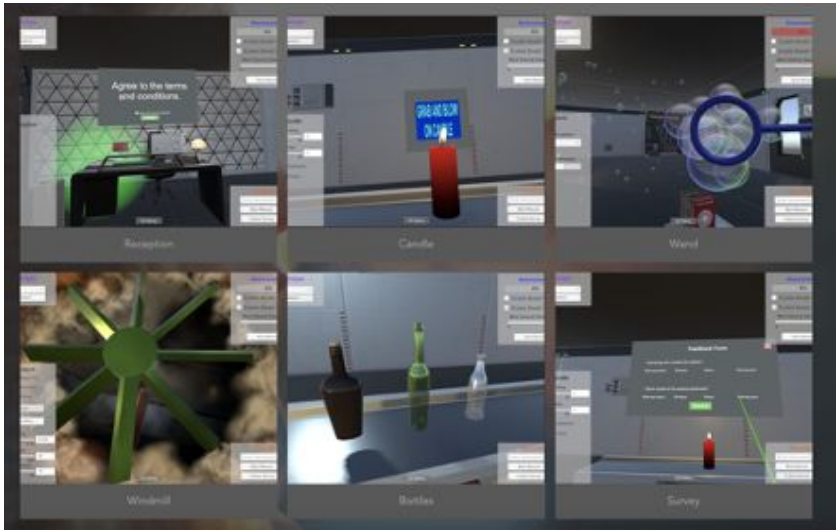


(a) The four breathing actions

(b) Actions mapped to four areas on the HTC Vive controller trackpad

Figure 6: Breathing actions and their mapping on to the Vive hand controller's trackpad.

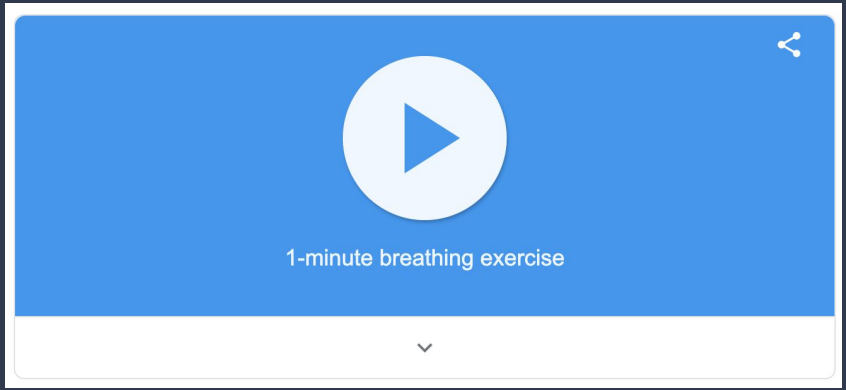
- We chose the VR Breathing project
- This project focuses on the use of breath to interact with different objects such as bottles, a candle, flames, etc.
- We wanted to help improve this project to help people focus on breathing and help with the visualization of breathing.



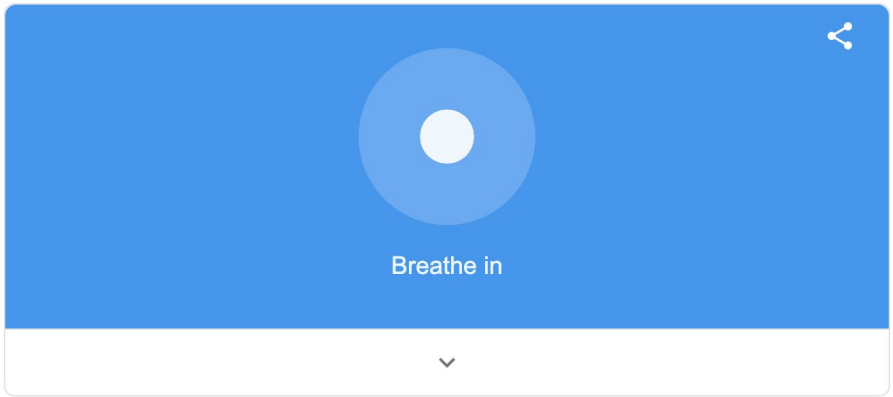
Motivation

- Giving people a different alternative sense to help learn their breathing patterns and habits
- Aid people with visualizing their breathing in order to improve their performance on breathing exercises

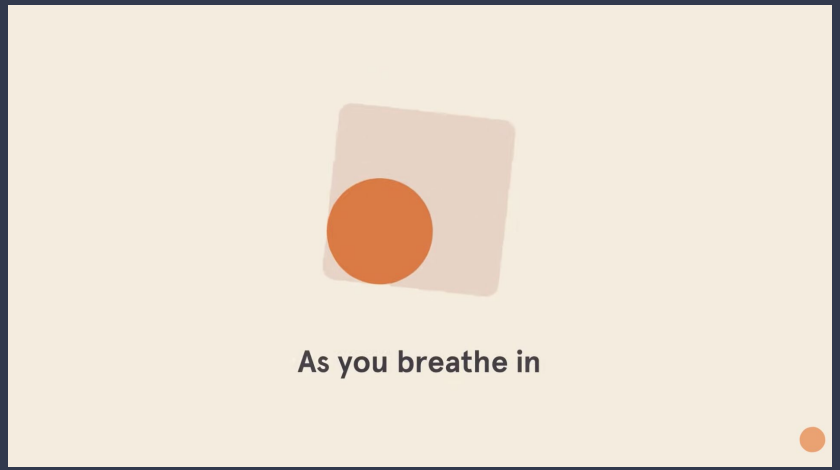
Related Works - Google Breathing Exercise



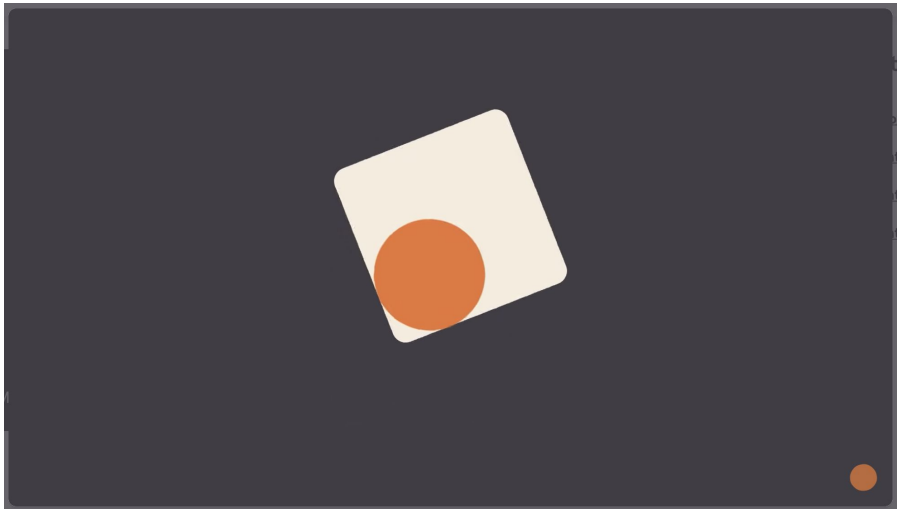
- This exercise is useful for focusing on breathing
- It showcases a visual to see when to breathe in and out
- Does not use other senses to help outline what you are currently doing with your breathing



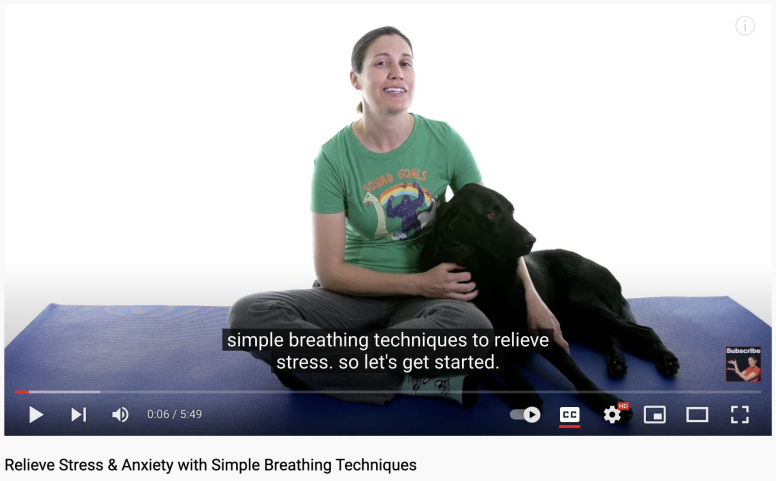
Related Works - Headspace



- This app and web application is focused on meditation rather than breathing exercises directly
- Does encourage the use of other senses (visual on the ball and placing hand on stomach) not it is not exactly meant for breathing focus



Related Works - Youtube



https://www.youtube.com/watch?v=odADwWzHR24

- There are many youtube videos out there for breathing exercises with instructors who help run them through with you
- These are lovely to have people speak to you and showcase techniques
- Again, these do not showcase your own breathing during the exercise making it harder to evaluate yourself

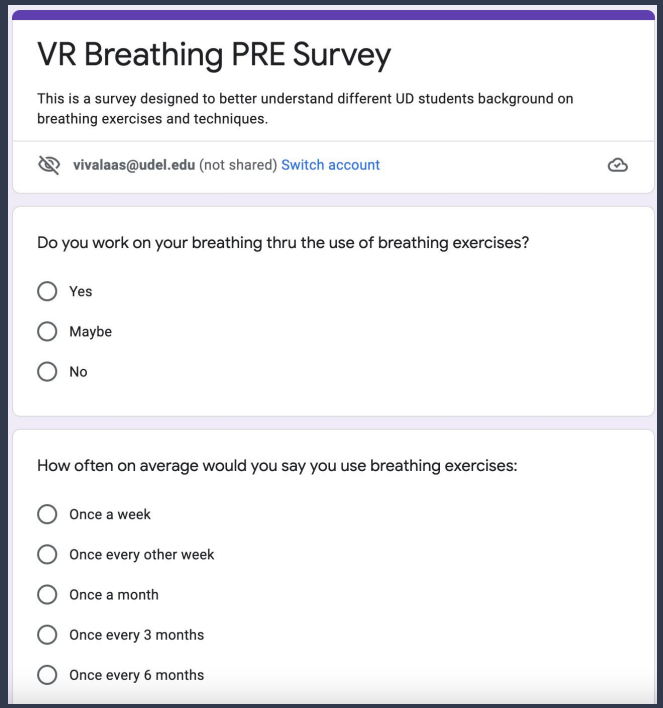
Need Finding - Professor

- We utilized the professor for help on coming up with ideas
- Originally we wanted to do a balloon but upon speaking with Professor Barmaski we found no unity assets
- She geared us towards sound which ultimately lead to the idea of breathing visualization aid

Need Finding - Research Breathing Techniques

- Common breathing techniques are:
- Square breathing (4-4-4-4)
  - Breathe in for 4 seconds, hold for 4 seconds, breathe out for 4 seconds, hold for 4 seconds
- 4-4-8
  - Breathe in for 4 seconds, hold for 4 seconds, breathe out for 8 seconds
- 4-7-8
  - Breathe in for 4 seconds, hold for 7 seconds, breathe out for 8 seconds

Need Finding - Survey



VR Breathing PRE Survey

This is a survey designed to better understand different UD students background on breathing exercises and techniques.

vivalaas@udel.edu (not shared) Switch account

Do you work on your breathing thru the use of breathing exercises?

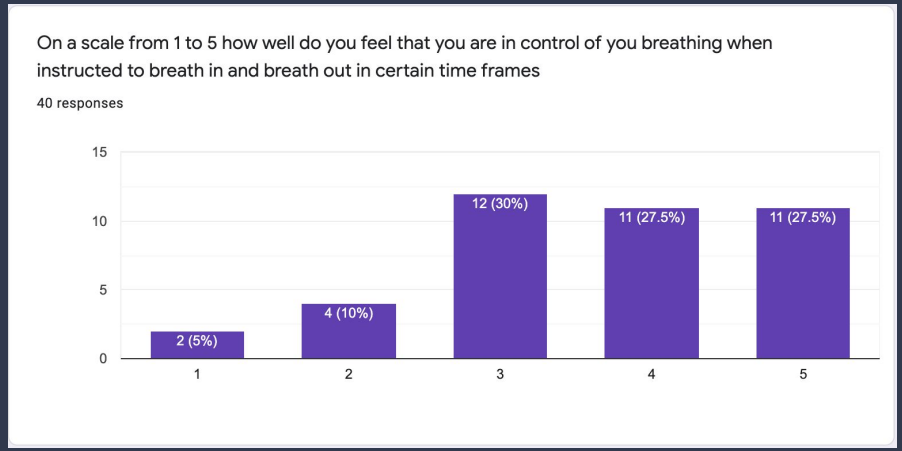
- Yes
- Maybe
- No

How often on average would you say you use breathing exercises:

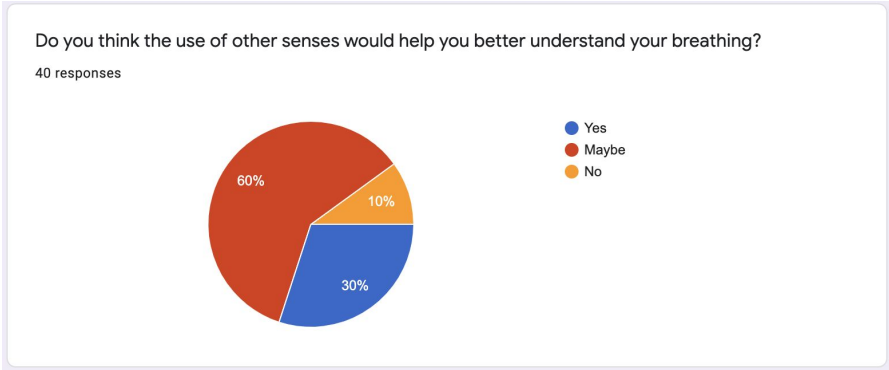
- Once a week
- Once every other week
- Once a month
- Once every 3 months
- Once every 6 months

- We chose to find more information about UD students point of view via a survey
- Asked basic questions about if students breathing habits in terms of exercises
- Wanted to find what breathing exercise is used most in survey sample to use for implementation
- Also wanted to see if people would be interested in this product

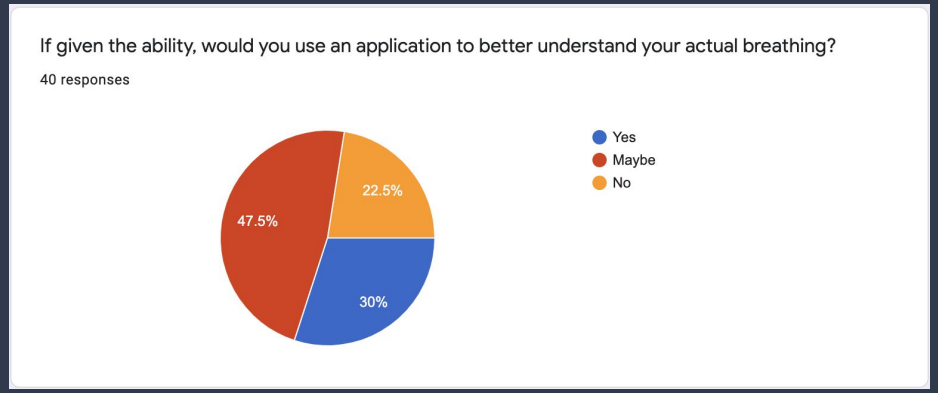
Need Finding - Survey Findings



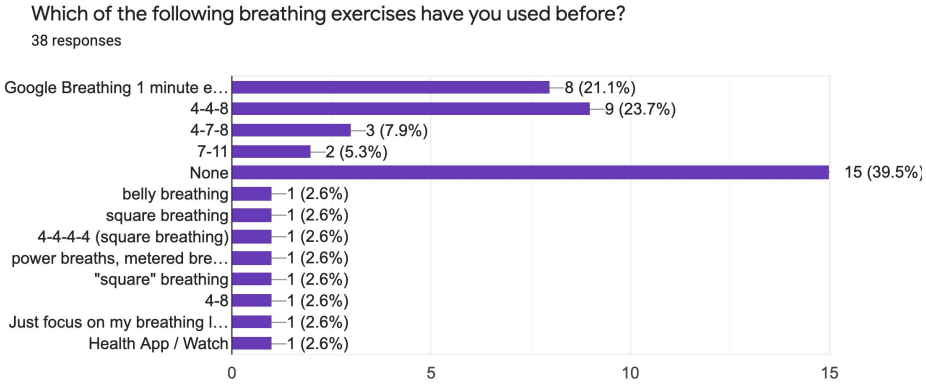
- 40 Responses at the time this presentation was finalized
- It was interesting to see how the scale was changed
- This showcases that there can be a need for this application and the neutral responses may have some interested



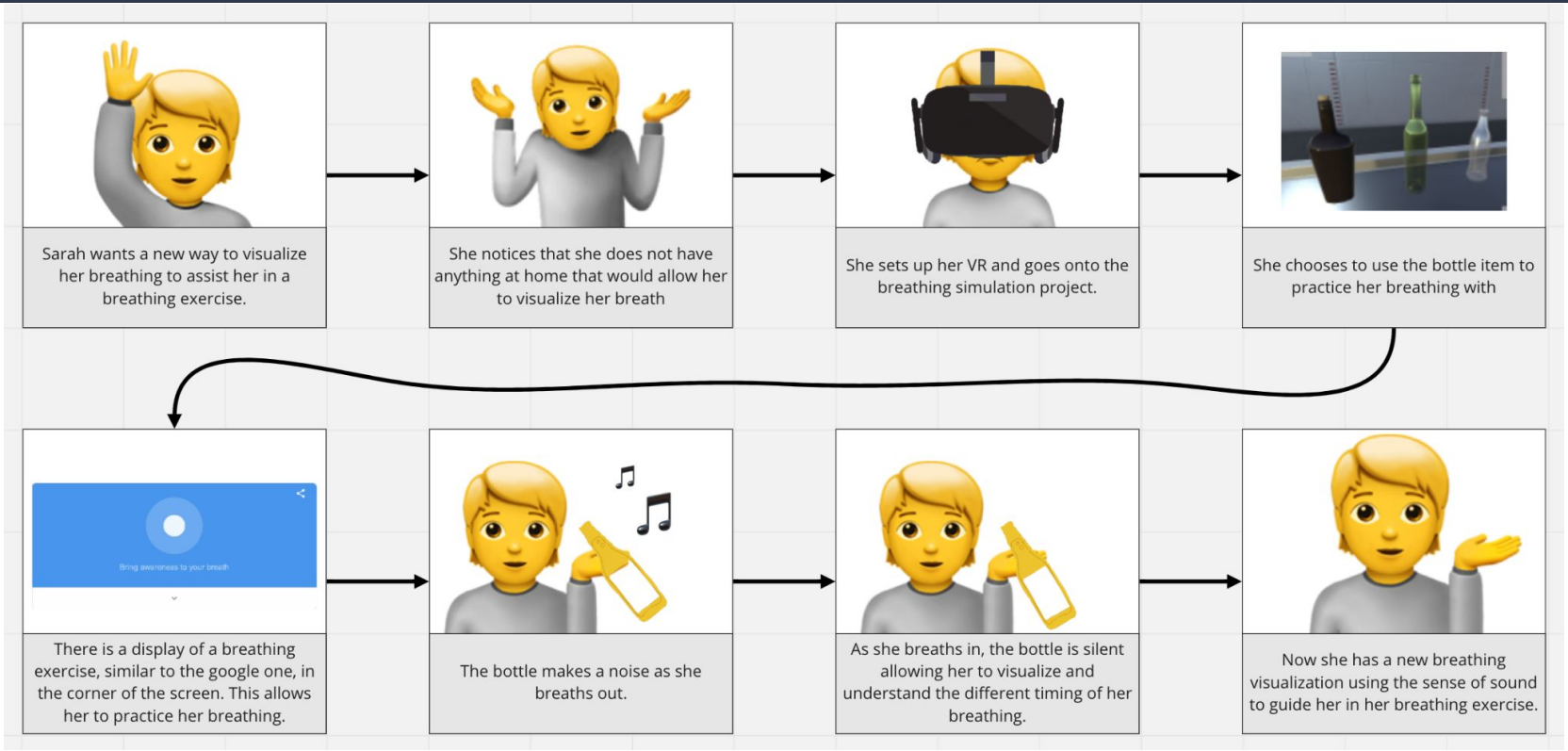
Need Finding - Survey Findings Continued



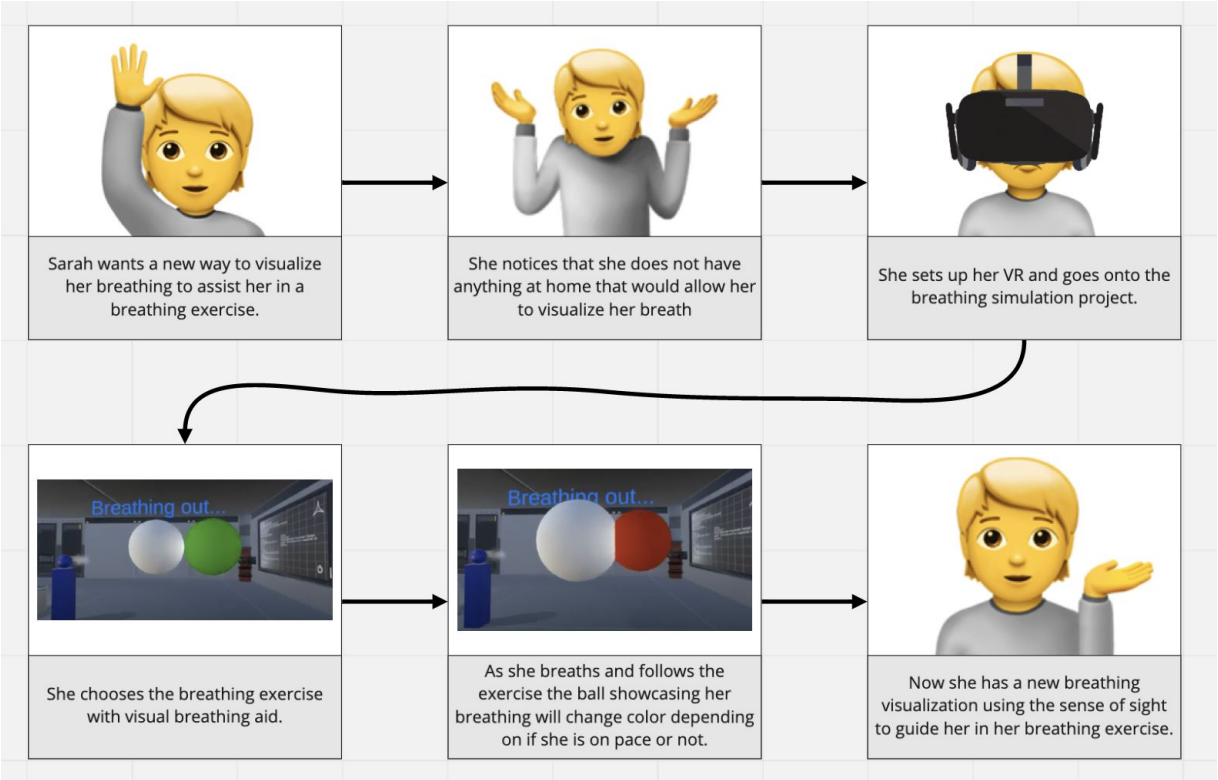
- Interesting to see the wide range of breathing exercises people have used
- Basing off this need find we will be choosing to update our breathing exercise to be either:
  - Mimicking the Google Breathing
  - 4-4-8
  - 4-4-4-4



Original Storyboard

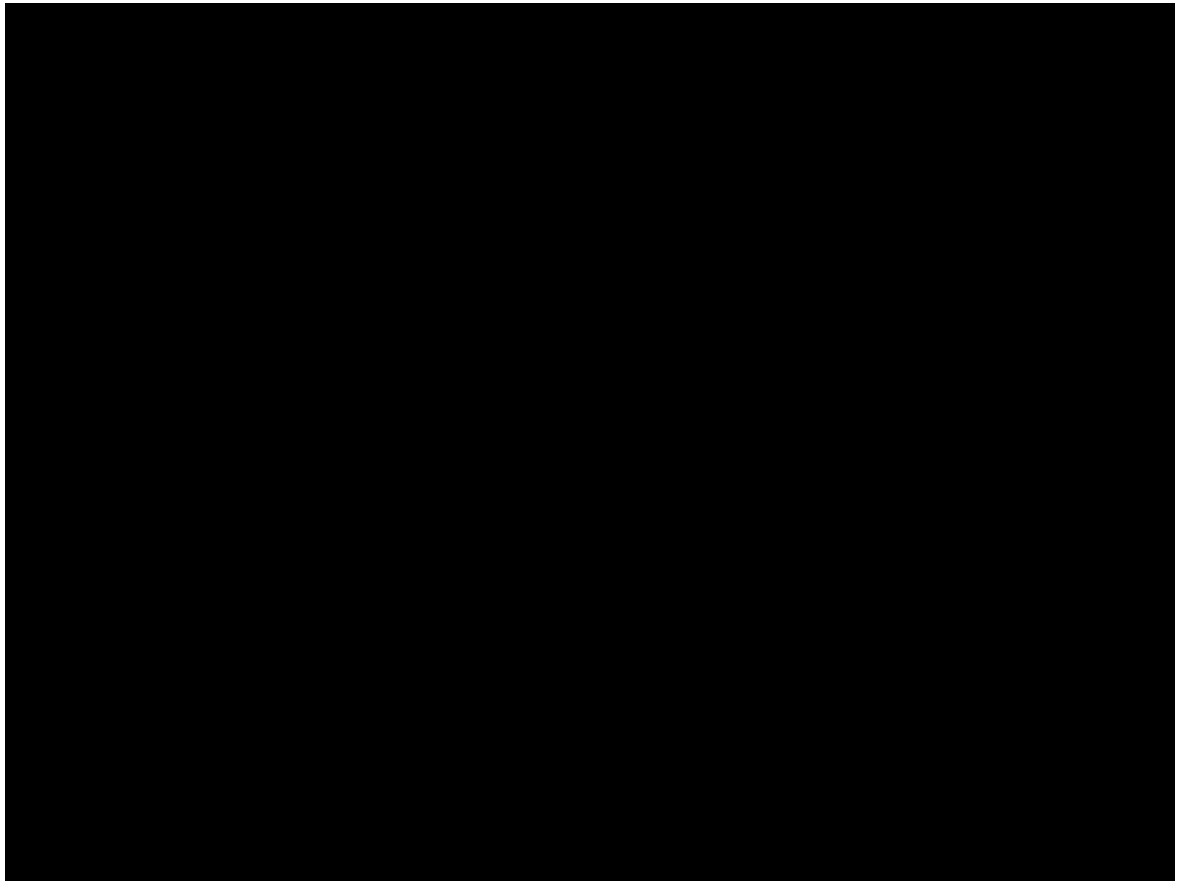


Newest Storyboard



Design + Development

- Two Visual “Breadth” Balls
  - Show Case
    - Auto Resizing
  - User Controlled
    - Resize on behalf of user control
    - Simulate the Users Breathing
- Color Changing
- Size Matching



Visual Of Current Work

Feature Additions - Currently

- We added two bubbles similar to the Google Breathing Exercise
- One bubble is a breathing exercise the user can perform
- The other bubble is the actual persons breathing
- They change color depending upon accuracy of keeping up with the exercise
- Add light source to matching the theme with the original Google Breathing Exercise
- Future Plans
    - sounds for breath to the bottles with different levels of water
    - Better interaction with the object
    - Add control of changing mode for template

Challenges

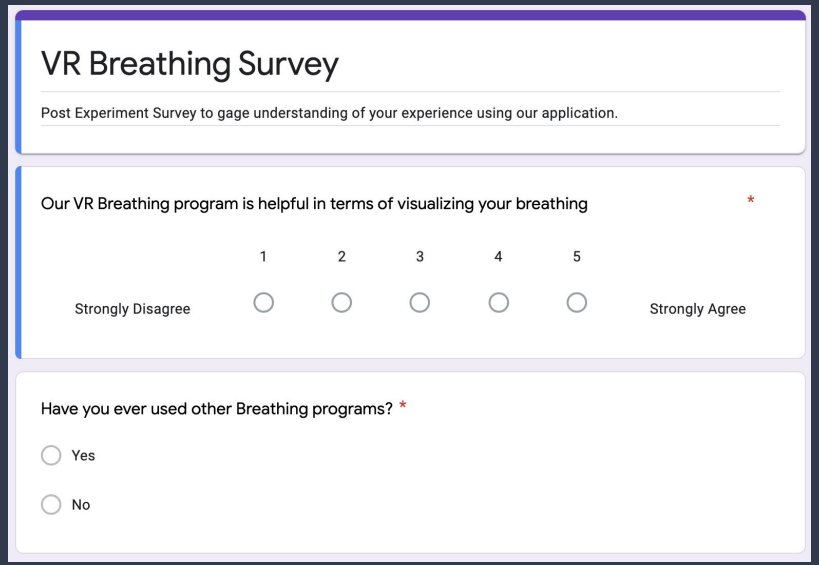
- New to Unity and thus had to learn it
- 3D Model
  - Initially want a balloon, but hard to find and not familiar with Unity
  - Chose to implement our own bubble instead
- Size Changing
- Color Changing

User Study Design

- We wish to complete a within-subject experiment which entails participants to do a breathing exercise with the original VR breathing and with the new feature of the VR breathing
- We will observe their difficulties and how they react to each application
- Hypothesis for experiment:

  For our evaluation approach, we are hypothesizing that if we create a virtual reality that allows users to use the senses of sight and sound with a breathing exercise then the user will complete the exercise in a better manner of understanding and correctness. This hypothesis will serve as our goal and projected outcome for this project.

User Study Design - Survey



VR Breathing Survey

Post Experiment Survey to gage understanding of your experience using our application.

Our VR Breathing program is helpful in terms of visualizing your breathing *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Have you ever used other Breathing programs? *

- ○ Yes
- ○ No

- In addition we will send out a post survey to the participants in order to understand the pros and cons of our design
- This way we can use our observations from the experiment along with the survey to make any adjustments necessary to the design

Conclusion

- We hope to encourage a fun way to utilize breathing
- This application can be used as a tool for those struggling with breathing to have a more interactive experience that utilizing visual aid

Questions?

Thank you!