



Usability Test Report

Whale Box

MSC2006 | Michael Corrin

Development Team:

Amy Assabgui, Viktoriya Khymych, Shay Saharan, Abeeshan Selvabaskaran, Jenn Shao, Aimy Wang & Amy Zhang

Report Author:

Viktoriya Khymych

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Purpose

Whale Box is a guided tour of physical and social characteristics of different whales and marine animals. It is a web-based application accessible via a laptop or desktop computer. It is intended for wildlife conservation outreach and education. Although linear narratives (e.g. documentaries) exist to serve this purpose, there are few interactive experiences that invite exploration and educate users at their own pace.

It is expected that **Whale Box** will attract an English-speaking adolescent audience without background knowledge in the subject. It combines lay language with stylistic, didactic visuals that engage young audiences.

The purpose of this usability test is to evaluate the ease of use and satisfaction of the **Whale Box** interface. The objectives are to evaluate the app navigation and design, the 3D cube functionality, and whether the app is intuitive and fun to use.

The results will be used to improve the interface design of **Whale Box**. In doing so, it is expected to increase the satisfaction, ease-of-use, and fluidity of the app.

Problem statements

The following problem statements will be the main focus for this usability test and report:

1. Can users successfully navigate linearly and nonlinearly in the **Whale Box** app?
2. Can users intuitively interact with the 3D environment model?
3. Can users access the tutorial?
4. Can users toggle the sound?

User profiles

Whale Box is intended for an English-speaking adolescent audience without background knowledge in the subject. It combines lay language with stylistic, didactic visuals that engage young audiences.

Mikaela Corrie (Primary Persona)

"The Diligent Dreamer"

Age: 12 (6th grade student)

Personality: Curious, open, poor attention span

User goals:

- Learn about the elusive narwhals in a novel format not previously seen in the classroom
- Better visualize the habits and living conditions of narwhals



Background:

Mikaela is a 6th grade student attending Kenollie Public School in Mississauga, Ontario. Her family immigrated to Canada when she was 8 years old. Though she is a good student, she sometimes struggles to keep up with the other students due to occasional language barrier issues and getting easily distracted in class. In her free time, she loves browsing encyclopedias with colorful visuals and dreams of becoming a dolphin trainer. She learned about **Whale Box** in science class when her teacher introduced the application as part of their marine animals and climate change unit.

Frustrations:

She had never used a 3D application before, so she is a bit concerned about whether she'd be able to learn how to use it and keep up with her peers' pace.

Expectations:

As Mikaela already had great interest in marine biology, she is extremely excited to get a chance to use the tool. She hopes that it will help her learn more about her topic of interest, help her ace the unit test, as well as serve as an opportunity to play around in a virtual slice-of-the-ocean.

Marcus Dyer (Secondary Persona)

"The Irreverent Tinkerer"

Age: 16 (High school student)

Personality: Inquisitive, tech-savvy, analytical

Goals:

- Explore the types of applications that can be created using Unity and WebGL (lol)
- Gather inspiration for potential 3D projects
- Make sense of how the tool was made



Background:

Marcus is a high school student attending John Fraser Secondary School in Mississauga, Ontario. With two software engineering parents, he grew up surrounded by technology and developed an interest in 3D modeling and storytelling. He is a motivated and focused student, with the goal of finding a high-paying interactive design job right out of high school. Marcus is introduced to **Whale Box** through his high school computer programming teacher as an example of an application that blends 2D and 3D techniques.

Frustrations:

His parents have no design sense so he wants to get an idea of how apps can also feel nice in addition to being functional. As an individual with refined taste and appreciation for low-poly aesthetics, Marcus wants to gain a better understanding of combining form and function, as well as to gather some inspiration for his next Blender adventure.

Expectations:

Marcus is very excited to try out the app during his computer programming class as he feels it will provide him with invaluable knowledge about combining his passion for 3D modeling and storytelling with the more technical aspects of development. As a budding programmer, he also secretly wants to see if he can break the application and get some bugs to appear.

Testing Methodology

A single round of user testing, with a total of eight participants, was completed to test the **Whale Box** Unity application. Participants were youth between the ages of 10 and 19 (see **Appendix E** for age distribution). The **Whale Box** Unity prototype was used to complete testing, which was conducted on April 18, 2022 remotely over Zoom, in part due to the ongoing COVID-19 pandemic.

Participants were recruited from family and friends of the **Whale Box** team that fell within the appropriate age range. After indicating interest, each participant was sent an introductory email, which included a scheduler for setting their testing time and the link to a detailed consent form (**Appendix F**). They were required to have two hardware items to qualify for user testing:

1. A computer that could be used to open .exe files
2. A monitor that displayed in 1920x1080 resolution

Participants under the age of 18 required a guardian to sign off on their participation. Contact information and operating system details were obtained, and once consent was granted, participants were emailed:

- A scheduled Zoom link
- The file they would be testing (password-protected to prevent previewing)
- The time they were assigned

Once the user entered the conference room:

1. The moderator introduced themselves and the data loggers. The user was instructed to begin screen-sharing, and the moderator guided the user through the opening of the **Whale Box** Unity prototype.
2. The moderator read the orientation script (**Appendix A**) to the user, which described the purpose of the testing, a brief explanation of the tasks that will be done, and that they were free to leave should they feel uncomfortable during any stage of testing. Importantly, the user was also informed that their screen and a transcript of the user testing session will be recorded. Once consent was affirmed once again, screen recording and a live transcript was started. The entire screen recording and transcript were recorded as a single file.

3. Following the orientation script and introductions, the moderator began to ask questions from the list of test tasks. During this stage, the moderator maintained adherence to the script and refrained from answering any questions the user might have had. As the user completed each task, they were encouraged to talk through their thought process.
4. At the start of each task, the user was asked to indicate that they had commenced. The data logger recorded the path that the user took into the logging document (**Appendix B**). The moderator recorded any qualitative observations into the same shared document from the participant, and asked follow-up questions where applicable (e.g. why did you just do that?).
5. The user was asked to inform the moderator once they completed each task (as per instructions in the orientation script).
6. If/once the moderator deemed that the user has failed a task, the moderator stopped the user and moved on to the next task.
7. After the user completed all their tasks, the moderator asked the user follow-up questions where applicable (e.g. "It seems that you chose to click in that particular area during these specific tasks. Is there a reason for that?"). The user was encouraged to indicate if they had any further questions about any of the tasks they had completed. The moderator then read through the debriefing document (**Appendix C**).
8. Video recording and transcript files along with qualitative and quantitative data collected by the team were compiled and organized into a cloud storage folder for further analysis (e.g. Google Drive).

Testing equipment

Prior to testing, the following items were prepared:

- Download links to the **Whale Box** Unity prototype application - Windows and Mac
- A cloud document to record user path and any notes
- Screen sharing and live transcript on Zoom

Testing crew

Two people conducted each usability test. Their roles are described as follows:

Moderator

- Read the orientation script
- Read the scripted tasks
- Initiate and close tasks
- Debrief and answer questions from the participant
- Record qualitative observations and comments from the participant

Data logger

- Record the path the participant takes for each task
- Record the amount of time it takes for each scripted task
- Record the number of clicks taken for each scripted task

Both moderator and data logger will observe the progress of the user via Zoom, and utilize the logger form to record data concurrently.

Evaluation measures

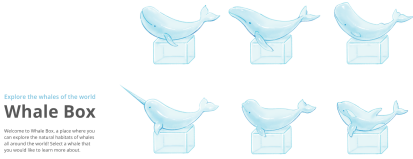
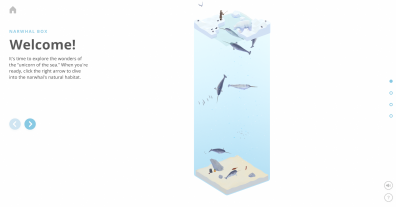
For each task in this usability test, there are two main criteria for success:

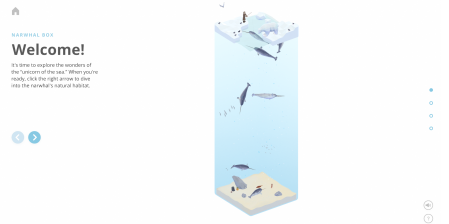

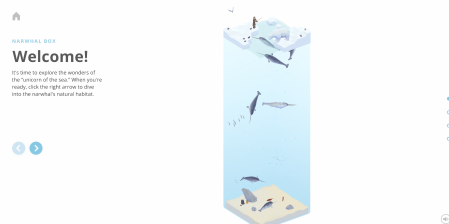

- Path taken to arrive a certain endpoint in the application (i.e. arriving at a specific page, clicking a required button or rotating the object without being overly asked to do so)
 - Success: User has completed all objectives within a task.
 - Failure: User is unable to complete the task.
- Participant's perception (indication of completion)
 - Success: User is able to say they have completed the task.
 - Failure: User is unable to say they have completed the task.


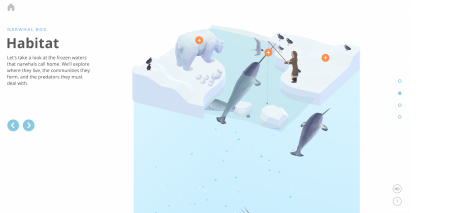
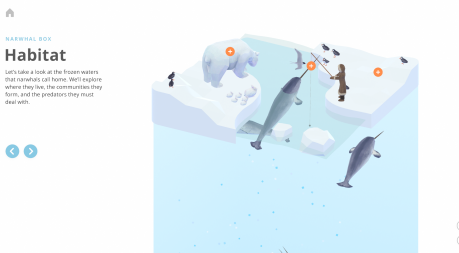
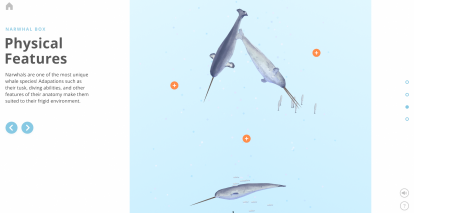
The specific criterion for each task varies depending on the task. Please see the **Task List** for elaborated evaluation measures.





Task List


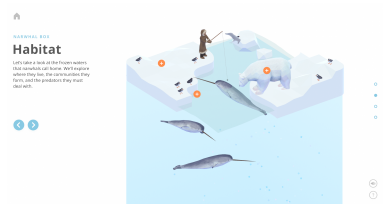


Each task corresponds with a problem statement, represented by a bracketed number.

Start state	Scripted text	Conditions for success
Whale Box home page	To start off, could you find the narwhal? (1)	The user successfully identifies and selects (clicks) the “narwhal box” icon to enter the narwhal learning module.
		
Module welcome page	You're now on the narwhal welcome page. Where would you find the tutorial?	The user selects the tutorial icon (image of app, mark where the button is), successfully opening the tutorial overlay and states they have found the tutorial.

		
<p>Module welcome page</p>	<p>Can you go to the next section?</p>	<p>1st module page</p>
		
<p>1st module page</p>	<p>Explore the different animals on top of the cube. Name them all if you can!</p>	<p>The user successfully navigates to the first section of the module, and is able to rotate the box to see all the animals.</p>

		
<p>From previous state</p>	<p>Can you go to the next section and find at least one function of the narwhal's tusk? (1)</p>	<p>The user navigates to the second section of the narwhal module and selects the hotspot that details the functions of the narwhal's tusk.</p>
		
<p>From previous state</p>	<p>Where can you learn about the narwhal's feeding habits? (1)</p>	<p>The user navigates to the final section of the narwhal module.</p>

		
<p>From previous state</p>	<p>In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)</p>	<p>The user correctly identifies the sound icon and selects it to mute the background music.</p>
		
<p>From previous state</p>	<p>Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)</p>	<p>The user navigates to the narwhal module welcome page through:</p> <ol style="list-style-type: none"> 1. The progress dots 2. The back button

		
<p>From previous state</p>	<p>Navigate to the Whale Box application home page from your current screen. (1)</p>	<p>The user correctly identifies the home icon and selects it to return to the Whale Box home page.</p>
		

[Debrief

Results

The testing for all users was conducted on April 18th, 2022 via Zoom. Eight participants were recruited to test **Whale Box**. Review of individual performance and the data log form can be found under **Appendix E: Raw Data**. Notes for each user and debriefing summaries are also found in the same section.

The overall success rate for all users for all tasks is outlined in **Table 1 & Figure 1**.

Table 1. Success/Fail Rate for Whale Box Testing

Question	Success	Success %	Failure	Failure %	Observations
To start off, could you find the narwhal? (1)	8	100%	0	0%	
You're now on the narwhal welcome page. Where would you find the tutorial? (3)	5	63%	3	38%	
Can you go to the next section?	8	100%	0	0%	
Explore the different animals on top of the cube. Name them all if you can! (2)	2	25%	6	75%	Rotated it in later sections
Can you go to the next section and find at least one function of the narwhal's tusk? (1)	6	86%	1	14%	Note: User 1 didn't do this question
Where can you learn about the narwhal's feeding habits? (1)	6	75%	2	25%	
In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	8	100%	0	0%	

Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	8	100%	0	0%	
Navigate to the Whale Box application home page from your current screen. (1)	8	100%	0	0%	
Debrief Qs	Trackpad		Mouse		
Are you on a trackpad or a mouse?	4	50%	3	38%	Trackpad users did not/could not rotate the cube

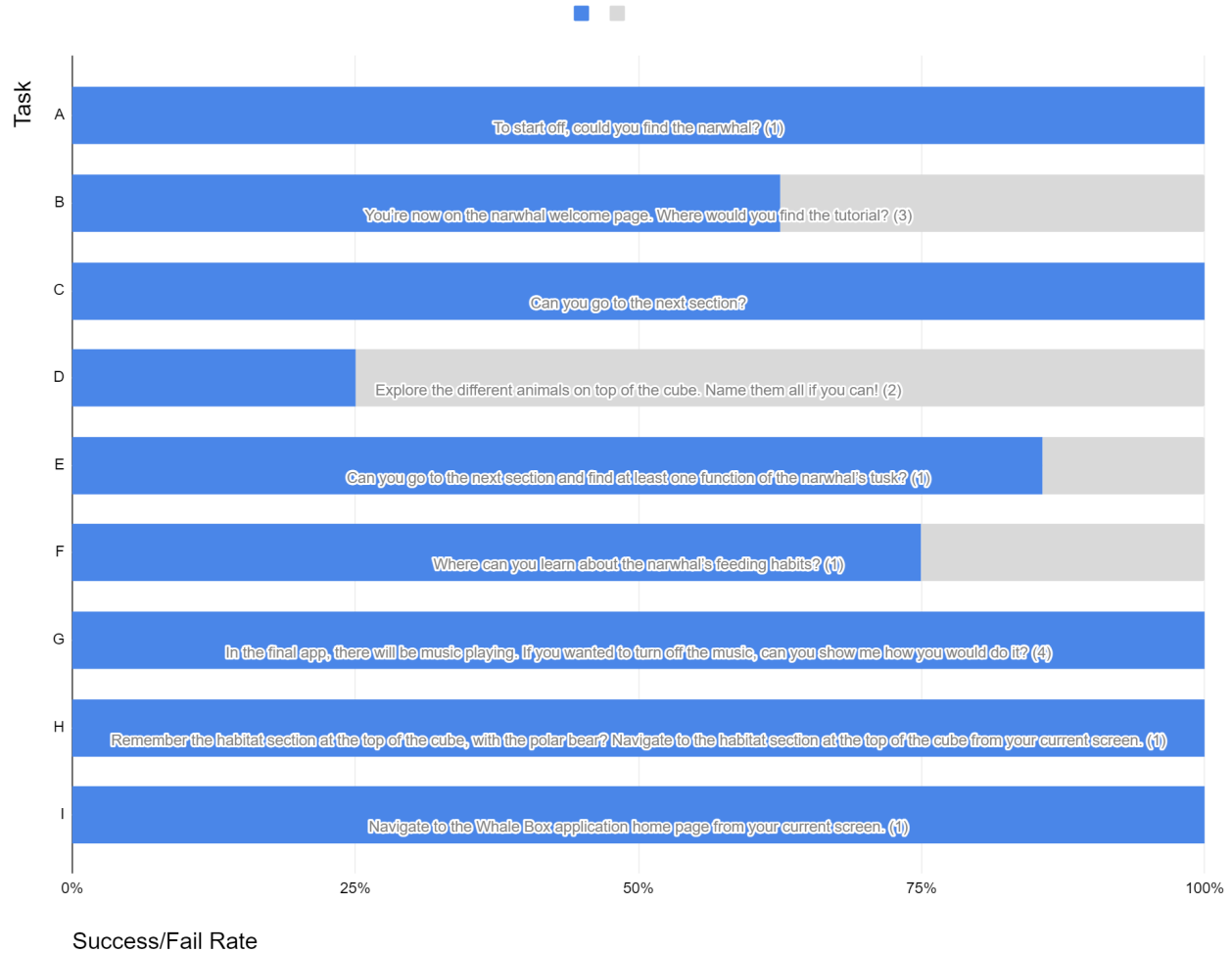


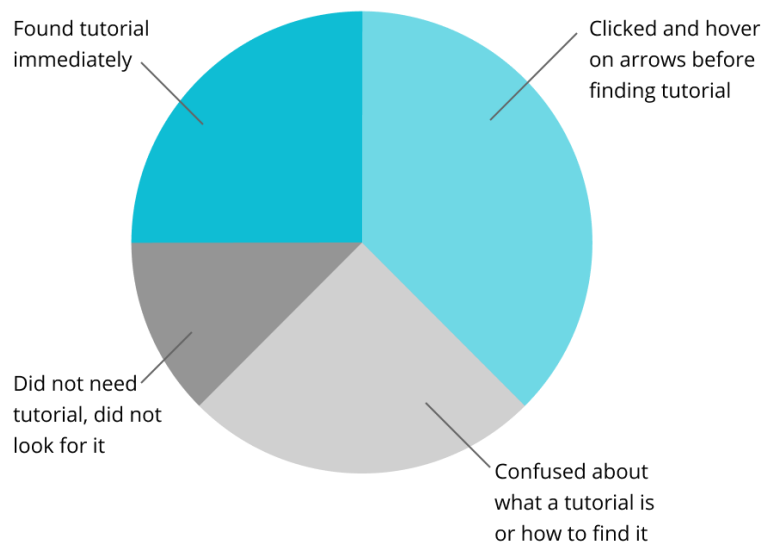
Figure 1. The overall success/fail rate for **Whale Box** testing.

In addition to evaluating users based on their overall success, we also considered the following questions:

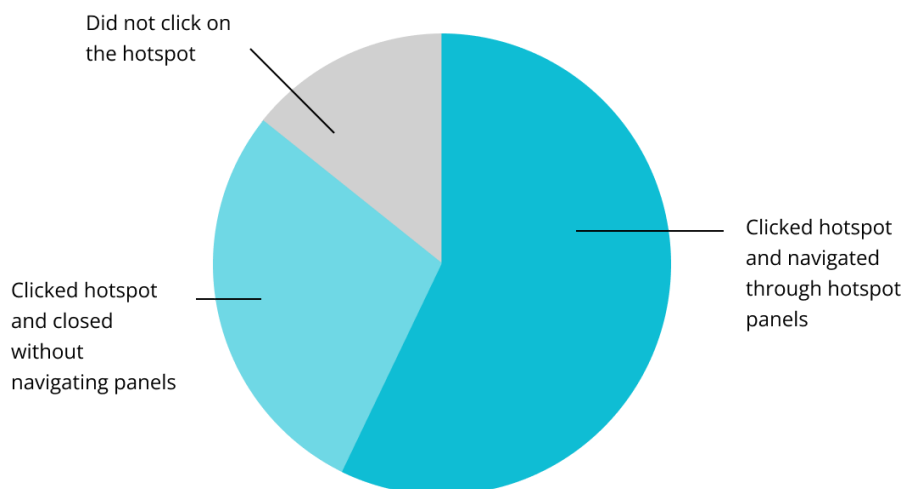
- Did the user try and achieve the right outcome? (controls and flows are logical)
- Did the user notice that the correct action is available to them? (controls are visible)
- Did the user associate the correct action with the outcome they expect to achieve? (controls work as expected)
- If the correct action is performed; will the user see that progress is being made towards their intended outcome? (controls provide feedback)

This was particularly useful to evaluate the success of tasks where the users achieved the correct outcome in a nonlinear fashion or explored the application on their own without being prompted to do so.

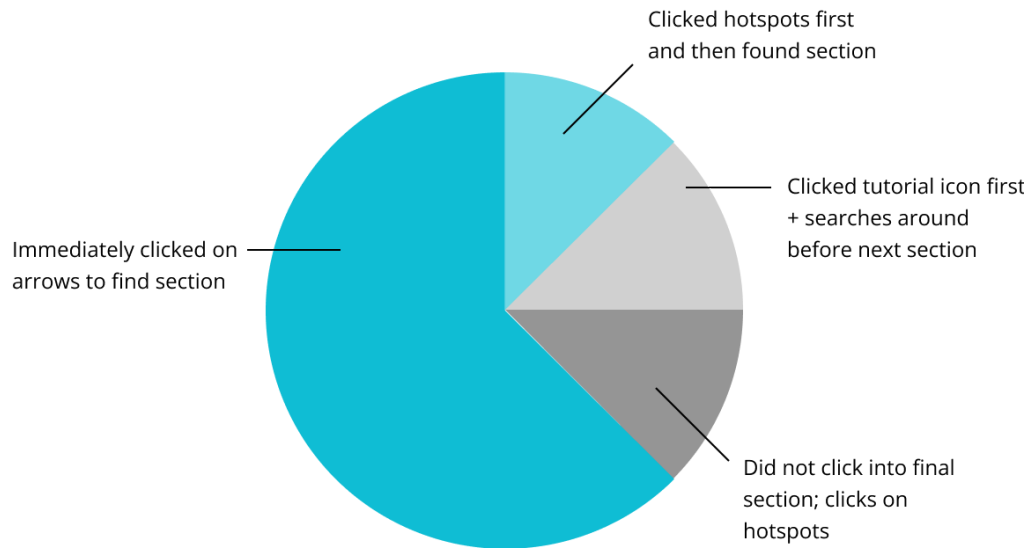
On question prompting users to access the tutorial:



On question prompting users to learn about the tusk:



On question prompting users to find the Feeding Habits section:



Discussion

Discussion of the results of the **Whale Box** testing will be conducted by returning to the original problem statements:

1) Can users successfully navigate linearly and nonlinearly in the *Whale Box* app?

All users (8/8) were able to navigate linearly by clicking the “Next” arrow. However, almost all users did not navigate non-linearly (7/8). Most users thought that it was a progress indicator, though some were able to navigate using the dots when prompted. The user that was able to navigate non-linearly had a strong background in games (e.g. Valorant) and was closer to the upper end of the age group, indicating that some experience is required to be able to navigate the **Whale Box** app non-linearly. This is consistent with our expectations that only more experienced users may be able to take advantage of nonlinear navigation.

Although the single successful user stated that they thought it was obvious the dots can be used for navigation, most users did not intuitively use them to navigate to different sections in any of the tasks requiring them to do so. This also proved to be a problem because there are no content categories listed anywhere on the starting page of the app or

the navigation controls, so users had to click through each section manually until they arrived at the page they thought they were looking for.

Can users intuitively interact with the 3D environment model?

Most users did not rotate the 3D cube during the task (6/8). Some users did not attempt to rotate the model during the task, but were eventually able to figure it out as the testing continued. A potential problem might stem from the phrasing of the question itself because it's possible that it was not phrased in a way that prompted the user to interact with the model. This may also indicate that there is no practical reason to rotate the cube as it is a function that is not essential to completing the other tasks or navigating the application in general.

Another issue stemmed from the fact that 4/7 users were using a trackpad as opposed to a mouse (3/7). During the debrief, it was discovered that users could not or did not attempt to rotate the model because of this limitation. Future testing sessions should make sure all users have access to a mouse for the best experience.

Can users access the tutorial?

About 2/3 of the users were able to access the tutorial. The tutorial was hidden behind the "?" button was not immediately apparent to most users. Many users thought that they had to click the next button to find the tutorial because "it is either right at the beginning or something that is hidden", implying that many users are more familiar with mandatory or scaffolded onboarding rather than having to find help on their own. Users also struggled to leave the tutorial, either clicking on the question mark again or on the screen. Adding an option to click off the tutorial overlay if it remains in this format is necessary.

Can users toggle the sound?

All users were able to toggle sound without any hesitation, which investigates whether the music icon was an obvious indicator for users to click on without further instruction. Some confusion arose after the music icon did not maintain a "sound off" state, which was a prototype functionality issue and not a design issue.

Recommendations

Below is a list of proposed next steps to create solutions to problems that surfaced during **Whale Box** usability testing.

Improved onboarding

The initial thought process behind **Whale Box**'s tutorial design was to make it as minimally invasive as possible. However, the current iteration of it led to some confusion and some users expressed the need for a "Start" button. We suggest improving the onboarding process by:

- Including indications of 3D interactivity with the cube model, whether within the tutorial (i.e. explicitly state that the cube can be rotated in the tutorial overlay) or within the application itself.
- Changing the format of the tutorial into scaffolded onboarding as relevant features become available in the application instead of being entirely optional and missable. Users can also be required to click on highlighted features to clear the tutorial requirements and move on to the next step.

Reading Comprehension

Since the age range of the users we tested was quite wide (ages 10-19), the porti

- Improve textual hierarchy
- Lower the reading level to accommodate younger audiences and implement a way for users to find definitions of more complex terms. For example, definitions of bolded terms could pop up on hover or include links to outside sources for more information. The key is to balance the complexity of the content being presented with accessibility.
- The animals and items appearing in each section of the module should have names and definitions pop-up on hover, as some users had trouble understanding what some of them were and connecting the information in the text to the scene shown.

Technological Requirements

Technological issues that arose during testing should be addressed by:

- Improving application responsiveness to screen size and making sure items do not overlap on non-standard screen sizes
- Home page appears black instead of white on some screens (laptop users with Windows 11 OS). Cross-compatibility needs to be improved between different operating systems.

Content Categories

While the UI and navigation was intuitive to most users, it can be improved by:

- Including a clear table of contents at the beginning of the module, or with navigation tools. Users should be able to see where they can find specific information at a glance without having to blindly navigate through the modules.

Appendices

Appendix A: Orientation Script

[Logging into Zoom and waiting period]

Welcome to **Whale Box** user testing! **Whale Box** is an experience that guides you through the lives of different whales and marine animals.

My name is _____ and I will be guiding you through the user testing session for today. I'll be asking a series of questions to guide your progress through the **Whale Box** application. _____ will be helping me out.

Do you know what user testing is? We can explain.

Whale Box is created for people between 10 and 19. During user testing, we would like to get an idea of how easy it is for you to navigate and learn from our application. This usability test isn't testing you, but the application—you can't do anything wrong!

While you're using Whale Box, please talk as you go through the app—this includes what you're thinking about, the reasoning behind your choices, and anything you're confused about. Don't be afraid to be honest when you're confused, or if something doesn't make sense. Does that sound okay?

This session will take about 15 minutes. We will be recording you through Zoom, the thing we're talking to you on now. You can decide that you want to stop at any time, and you don't have to give us a reason. (We're not going to hold it against you.) Is this okay with you?

Before we get started, I'll walk you through setting up the **Whale Box** on your computer. Would you be able to share your screen? Thank you!

[Walk through set up: .zip password: 'corrin']


Please don't touch anything on the screen just yet! Are there any questions you have before we begin?

Great, I'll start recording your screen.

Now I'm going to ask you a series of tasks. Let us know when you start, and when you feel that you have finished a particular task, please tell us when you are done.

[Go through the task list]

Appendix B: Logger Form

 Appendix B: Logger Form & Background Information

Appendix C: Debrief

That was the end of the Whale Box testing - thank you for helping us out! Before we officially finish, we have some time for some final questions, and you can ask any questions you may have for us.

- How did you find the overall experience?
- Did you find any part of the WhaleBox challenging or confusing? (What was the most

challenging part of the WhaleBox experience?)

- Were you using a trackpad or a mouse to navigate through the app?
- Have you used any 3D applications in the past? (Which ones?)
- Do you have any general comments or questions you would like to ask us?

[Walk user through steps to close the app]

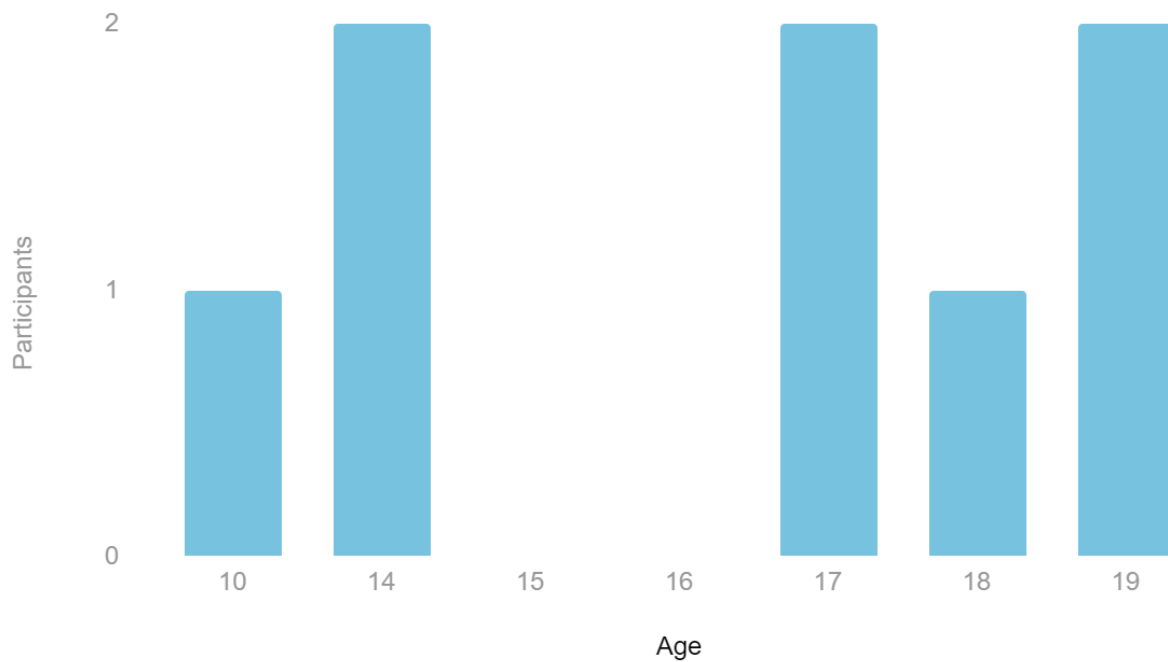
Appendix D: Testing Schedule

User	Testing time (EST)	OS	Moderators
1	12 pm	Windows	Abeeshan/Viktoriya
3	1 pm	Windows	
5	2 pm	Windows	
7	3 pm	Windows	
2	12 pm	Windows	Jenn/Aimy
4	1 pm	Windows	
6	2 pm	Mac	
8	3 pm	Mac	

Appendix E: Raw Data

Note: Failed tasks are marked in **red**. Names of the participants have been removed from the completed logger forms to maintain anonymity as per the consent form.

Whale Box participant ages



Participant No. 1 - Age 17		Moderator: Abeeshan	Logger: Viktoriya
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	y	Clicks on narwhal	<ul style="list-style-type: none"> - Finds narwhal immediately - Clicks on narwhal
B. You're now on the narwhal welcome page. Where would you find the tutorial?	y	Arrows → finds ?	<ul style="list-style-type: none"> - Arrows beneath the welcome box - Points out "?" as the tutorial - Browses the tutorial, able to exit - "Putting the "?" there is clear, layout is clear and nice"
C. Can you go to the next section?	y	Clicks on arrow immediately	<ul style="list-style-type: none"> - Navigates to the next section
D. Explore the different animals on top of the cube. Name them all if you can!	n		<ul style="list-style-type: none"> - Finds puffins, narwhals, polar bear - Does not rotate the cube
E. Where can you learn about the narwhal's feeding habits? (1)	y	Clicks on hotspots first, but is then able to find the right section	<ul style="list-style-type: none"> - Clicks on orange buttons on the "Habitat" page → nothing happens - Clicks on next - Starts rotating the cube → really likes you can rotate the cube - Finds the feeding habits section
F. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	y	Sound button	<ul style="list-style-type: none"> - Turns off sound immediately using the sound button
G. Remember the habitat section at the top of the cube, with the polar bear?	y	Back buttons	<ul style="list-style-type: none"> - Uses the "back" arrows to navigate back to the home screen

Navigate to the habitat section at the top of the cube from your current screen. (1)			
H. Navigate to the Whale Box application home page from your current screen. (1)	y	Home button	- Clicks the home button on top

Background Questions	Participant Response
How did you find the overall experience?	<ul style="list-style-type: none"> - Pretty good, the ui is easy to use - Visuals are nice - 3D cube is cute, really nice to see everything - A bit confused at first with the tutorial, but that was because they were not looking at every button → but was pretty clear afterwards
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - The orange buttons → confusing that they were not working - Pretty easy overall
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - Yes, can't think of anything specific - This is part of the reason why it was easy to use → seemed familiar
Were you using a mouse while using this app?	<ul style="list-style-type: none"> - Trackpad
Do you have any general comments or questions you would like to ask us?	<ul style="list-style-type: none"> - Would clicking on the narwhal on the home page work the same way for the other whales?

Participant No. 2 - Age 18		Moderator: Aimy	Logger: Jenn
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	Y	Directly clicked on Narwhal icon	- Immediately found it
B. You're now on the narwhal welcome page. Where would you find the tutorial?	N		- Said it was intuitive so just didn't look for it, immediately went to play arrow - Next button > Rotated cube > Clicked on hotspots - Diagrams are clear - Feels like she's completed the task
C. Can you go to the next section?	Y	Clicked on the next button	
D. Explore the different animals on top of the cube. Name them all if you can!	Y	Clicked on the next button	- Said polar bear, puffin, someone ice fishing, narwhals - No...rabbits...
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	Y	Clicked through all hotspots until the pop-ups appeared	- "Intuitive, clear diagrams"
F. Where can you learn about the narwhal's feeding habits? (1)	N	Clicked on arrows to move down to physical features	- Looks like they're circling schools of fish, assumed that was the food - Found the feeding habits a little later during general questions
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	Y	Click on volume button in bottom right	- "I'm clicking on the music icon"

H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	Y	Click on the arrows to return to the first section	
I. Navigate to the Whale Box application home page from your current screen. (1)	Y	Clicked on home icon	- "On the home icon"

Background Questions	Participant Response
How did you find the overall experience?	<ul style="list-style-type: none"> - Very clean UI, intuitive UI - Icons are contrasted a lot with the color palette
Are you on a trackpad or a mouse?	<ul style="list-style-type: none"> - Mouse
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Confused - Thought that hotspots were all connected to different storyboards, but surprised that they're all connected to one storyboard
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - PC, phone → A little bit of minecraft - 8/10 <ul style="list-style-type: none"> - Playing games - Architecture major, has to 3D model
Do you have any general comments or questions you would like to ask us?	<ul style="list-style-type: none"> - Nope

Participant No. 3 - Age 14)		Moderator: Viktoriya	Logger: Abeeshan
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	y	Clicks Narwhal	- Unsure which one is the narwhal - continuously asks moderator if she's correct
B. You're now on the narwhal welcome page. Where would you find the tutorial?	n	Doesn't click anywhere - just stays on welcome screen	- Confused what the tutorial is
C. Can you go to the next section?	y	Clicks Next icon	
D. Explore the different animals on top of the cube. Name them all if you can!	n	Doesn't rotate	- Names the puffin as a penguin - Just moves mouse around, doesn't try to click and rotate
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	y	Clicks next section > clicks hotspot after some time > clicks through navigation buttons	- Unsure what a tusk is - unsure what 'adaptations' is - Arrows for hotspot not working in prototype - Drawings are cute
F. Where can you learn about the narwhal's feeding habits? (1)	y	Clicks into next section	- Unsure what the animals in the 3D cube are - Likes the narwhal attacking squid
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	y	Clicks sound icon	

H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	y	Clicks arrow icons twice to go to habitat	- Doesn't try clicking buttons on the side
I. Navigate to the Whale Box application home page from your current screen. (1)	y	Clicks home icon	

Background Questions	Participant Response
How did you find the overall experience?	Okay <ul style="list-style-type: none"> - Felt like the app was cute and likes 3d component - Home page was difficult to name animals
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Not a lot was confusing - Feeding part - unsure of most of the animals in the cube
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - Nope
Were you using a mouse while using this app?	<ul style="list-style-type: none"> - Trackpad
Do you have any general comments or questions you would like to ask us?	<ul style="list-style-type: none"> - Cute (sees it as a game)

Participant No. 4 - Age 19		Moderator: Jenn	Logger: Aimy
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	Y	- Clicked on the narwhal icon	- Clicked on the next section
B. You're now on the narwhal welcome page. Where would you find the tutorial?	Y	- Clicked on the next button - Found the tutorial on second try	- Didn't notice the tutorial section initially
C. Can you go to the next section?	Y	- Clicked the next button	- Intuitively clicked through the sections before prompt
D. Explore the different animals on top of the cube. Name them all if you can!	N	- Attempted to click the plus	- Clicked on next instead of rotating the cube - Narwhal, polar bear, two forms of birds - Presumed that the hotspots were not clickable
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	Y	- Clicked through the different slides in the hotspot	- Clicked through all the slides in the hotspot before finding the information
F. Where can you learn about the narwhal's feeding habits? (1)	N	- Did not click through to the final section	- Tried to click on different hotspots in the Physical Features section, landed on the "prey stunning" section
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show	Y	- Identified and clicked the music section	- Commented on the clicking bug

me how you would do it? (4)			
H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	Y	<ul style="list-style-type: none"> - Navigated through arrows 	<ul style="list-style-type: none"> - Found the dot navigation after prompting, found it difficult to notice/understand at first - Likes the dot navigation in the hotspot slides more than the main page
I. Navigate to the Whale Box application home page from your current screen. (1)	Y	<ul style="list-style-type: none"> - Clicked the home button 	<ul style="list-style-type: none"> - Straightforward, no thinking time

Background Questions	Participant Response
How did you find the overall experience?	<ul style="list-style-type: none"> - Nice, I guess - I like general design - Clear what everything does - Whales are really cute - Move over whales, becomes color version
Are you on a trackpad or mouse?	<ul style="list-style-type: none"> - Trackpad
Did you find any part of the Whale Box challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Nothing really challenging or confusing - Straightforward
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - Playing games: Valorant - 3D programs: Only a little bit - -3/10
Do you have any general comments or questions you would like to ask us?	<ul style="list-style-type: none"> - N/A

Participant No. 5 - Age 17		Moderator: Abeeshan	Logger: Viktoriya
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	y	Click on narwhal	- Found narwhal immediately
B. You're now on the narwhal welcome page. Where would you find the tutorial?	y	Hover over arrow → click on ?	- Says arrow first → then sees ? - Clicks on ?
C. Can you go to the next section?	y	Next button	- Clicks on next button
D. Explore the different animals on top of the cube. Name them all if you can!	n		- Names polar bear, bird, narwhal, human, flying bird - Rotate the screen slightly, but doesn't notice it or try to rotate more
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	y	Next button → hotspot → navigate between hotspot slides	- Navigates to the next section, clicks on hotspot - Is able to click through the hotspots using the navigation and exit
F. Where can you learn about the narwhal's feeding habits? (1)	y		- Clicks to the next section, rotates cube, tries to click hotspots but they don't work - Clicks on tutorial again - Keeps rotating the cube
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you	y	Sound button	- Clicks on the sound mute button

would do it? (4)			
H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	y	Right side navigation panel	- Uses the right hand side navigation menu to go back to the habitat section
I. Navigate to the Whale Box application home page from your current screen. (1)	y	Home button	- Clicks on the home button
User comments (Point form) A: Why use the right side navigation panel? K: thinks it's intuitive, faster to get to the main page rather than using back button, seen it in other apps Note: first clicked on the very top circle → then clicked on the 2nd one once she realized the top circle was the whole cube view			

Background Questions	Participant Response
How did you find the overall experience?	Very aesthetic app, likes the colors and the drawing style
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	Some of the arrows (hotspots) didn't work
Have you used any 3D applications in the past? (Which ones?)	Yes, played video games
Were you using a mouse while using this app?	Yes
Do you have any general comments or questions you would like to ask us?	Feeding habits – was it intentional to have it not be clickable?

Participant No. 6 - Age 14		Moderator: Aimy	Logger: Jenn
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	Y	Click on Narwhal	<ul style="list-style-type: none"> - :O expression - "Wow it's really cool" - Clicked into physical features - Navigated by clicking on the arrows - Exited by clicking on the exit button for the panels - "I really like the animations. I think they're really engaging." - Clicked all the way through the entire app
B. You're now on the narwhal welcome page. Where would you find the tutorial?	Y	Clicked on the question mark	<ul style="list-style-type: none"> - Clicked on the question mark, clicked around on the page, eventually clicked on the X to exit the page - A few seconds of confusion!
C. Can you go to the next section?	Y	Clicked on next arrow	
D. Explore the different animals on top of the cube. Name them all if you can!	N	Clicked throughout the entire app and explored ALL animals	<ul style="list-style-type: none"> - Saw the birds, narwhals, polar bear, fisher - Didn't know what a puffin was - Albatross bird flying in the air - Fish (clicked down to next section)
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	Y	Observed at first...then clicked into the hotspot	<ul style="list-style-type: none"> - "Looks like they're herding fish..." - "Oh!" clicked into the hotspot

F. Where can you learn about the narwhal's feeding habits? (1)	Y	Clicked next	<ul style="list-style-type: none"> - Prototype was confusing - AT THIS POINT FINALLY ROTATED THE CUBE
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	Y	<ul style="list-style-type: none"> - Clicked the Music icon directly 	<ul style="list-style-type: none"> - Clicked on the tutorial button to check where the sound was
H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	Y	<ul style="list-style-type: none"> - Navigated using the arrows 	<ul style="list-style-type: none"> - No hesitation
I. Navigate to the Whale Box application home page from your current screen. (1)	Y	<ul style="list-style-type: none"> - Clicked the home icon 	
User comments (Point form) <ul style="list-style-type: none"> - Prompted about the dots on right-hand side of the screen <ul style="list-style-type: none"> - User realized it was ways to navigate through the app - Something that they just noticed just now - Didn't realize that you can navigate through the dots at the bottom of the panel, only thought it was for information about the progress 			

Background Questions	Participant Response
How did you find the overall experience?	<ul style="list-style-type: none"> - Engaging, looks really cool

Are you on a trackpad or mouse?	- Mouse
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Nothing really challenging or confusing - Nothing that really surprised the user
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - No programs - 3/10
Do you have any general comments or questions you would like to ask us?	-

Participant No. 7 - Age 19		Moderator	Logger
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	y	Clicks the narwhal	
B. You're now on the narwhal welcome page. Where would you find the tutorial?	y	Clicked on question mark/tutorial icon	- Initially clicked outside 'X' to try to close tutorial
C. Can you go to the next section?	y	Clicked next icon	
D. Explore the different animals on top of the cube. Name them all if you can!	y	Rotates around the cube from the get-go	<ul style="list-style-type: none"> - Clicked on the orange plus on the polar bear - Rotated the cube, rotating as participant explores - still missed the rabbits
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	y	Goes to physical features section > Clicks hotspot > doesn't click through hotspot panels	- Says it's for sensory abilities
F. Where can you learn about the narwhal's feeding habits? (1)	y	Clicks tutorial icon > searches around > finds it in next section	- Confused at first, eventually finds it in next section
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	y	Clicks sound icon	-

H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	y	Clicks back button twice	
I. Navigate to the Whale Box application home page from your current screen. (1)	y	Clicks home	-

Background Questions	Participant Response
How did you find the overall experience?	<ul style="list-style-type: none"> - Cool - Liked the design and aesthetic - Liked colors
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Home page > confused about what to press - expected words ('start')
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - Nope
Were you using a mouse while using this app?	<ul style="list-style-type: none"> - Mouse
Do you have any general comments or questions you would like to ask us?	<ul style="list-style-type: none"> - No

Participant No. 8 - Age 10		Moderator: Jenn	Logger: Aimy
Test Task	Success (y/n)	Path to Completion	Observations (Point form)
A. To start off, could you find the narwhal? (1)	Y	- Located the narwhal icon and clicked on it	- Clicking was prompted
B. You're now on the narwhal welcome page. Where would you find the tutorial?	N	- Does not know how to find the tutorial	
C. Can you go to the next section?	Y	- Intuitively used the arrows	- No hesitation
D. Explore the different animals on top of the cube. Name them all if you can!	N	- Did not try to rotate at all, did try to click on the hotspots	- Clicked on the orange hotspots - No idea what birds are, polar bear, a narwhal
E. Can you go to the next section and find at least one function of the narwhal's tusk? (1)	N	- Clicked on the next arrow -	- Catching fish, mating (intuition, did not attempt to click on hotspots) - Learned behaviour - previous icons did not work - hotspot slides were expected
F. Where can you learn about the narwhal's feeding habits? (1)	Y	- Clicked on the next arrow	- Process of elimination - assumption
G. In the final app, there will be music playing. If you wanted to turn off the music, can you show me how you would do it? (4)	Y	- Successfully identified the audio button	- No hesitation
H. Remember the habitat section at the top of the cube, with the polar bear? Navigate to the habitat section at the top of the cube from your current screen. (1)	Y	- Clicked on back arrows until you reached the top	- No hesitation

I. Navigate to the Whale Box application home page from your current screen. (1)	Y	- Clicked on X from the panel	- No hesitation
User comments (Point form) <ul style="list-style-type: none"> - Hotspots did not initially work, learned behaviour - Function of dot navigation intuitive when prompted <ul style="list-style-type: none"> - Did not navigate non-linearly 			

Background Questions	Participant Response
How did you find the overall experience?	- Very interesting
Are you on a trackpad or mouse?	- Mouse
Did you find any part of the WhaleBox challenging or confusing? (What was the most challenging part of the WhaleBox experience?)	<ul style="list-style-type: none"> - Nothing that was really challenging - Facts were surprising and really cool! - Paragraph a little hard to understand b/c didn't understand what it meant - Very good
Have you used any 3D applications in the past? (Which ones?)	<ul style="list-style-type: none"> - 4/10 - Games on phone: E.g. Roblox
Do you have any general comments or questions you would like to ask us?	- None

Appendix F: Consent Form & Instructions

Consent form & availability initial email script:

"Hello there!

Thank you for your interest in Whale Box Usability Testing!

To participate, you will need:

- A computer that you can use to open .exe files
- A monitor that displays in 1920x1080 resolution

Before we can complete the session, **please take a look at and fill out [this consent form](#)**.

Whale Box user testing will happen on Monday, April 18th, 2022. To pick a time that's right for you, **[please use this scheduler](#) to highlight your availability**.

We will follow up with:

- A Zoom link
- The file you will be testing
- The time that you have been assigned.

Please get in touch if you have any questions! Thank you for your help in making Whale Box better.

The Whale Box Team"

Follow-up email:

"Hello there,

Thank you for agreeing to participate in Whale Box Usability Testing. Attached to this email, you will find:

- The file you will be testing (WhaleBox.zip)
- [Instructions on how to open and close the file](#)

The Whale Box file is password-protected. (Remember that we are testing the app, not you—we want your honest reactions to using Whale Box for the first time.) We will send you the password to open the zip file before we start your test.

We suggest you put the Whale Box file in a convenient location before your testing session.

Your testing time will be _____ at this Zoom link. A calendar invitation will follow.

See you Monday!

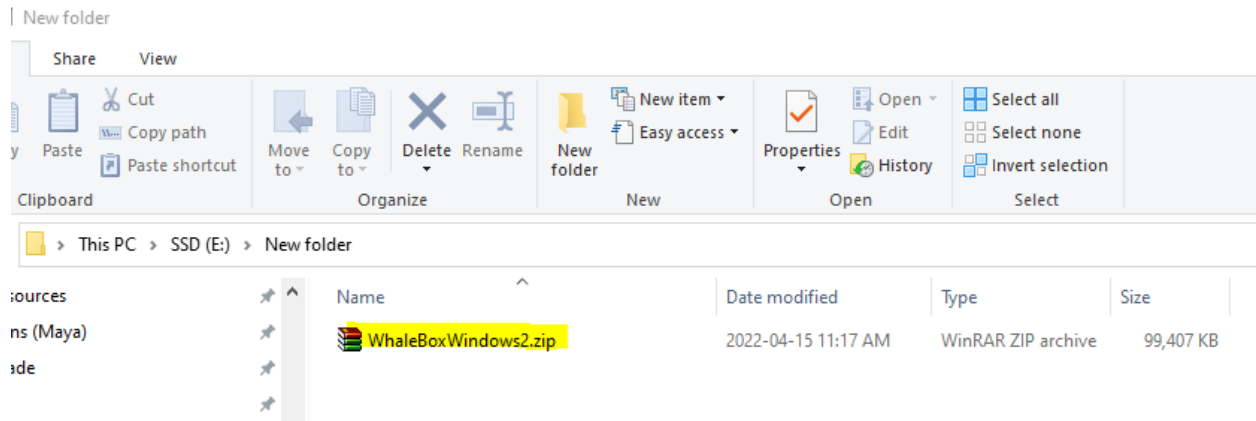
The Whale Box Team

- For the instructions:
 - Include Whale Box app (of the appropriate OS)
 - How to set up the app
 - Do not use the app when you're setting it up!
 - How to exit the app
- ZIP PASSWORD: corrin

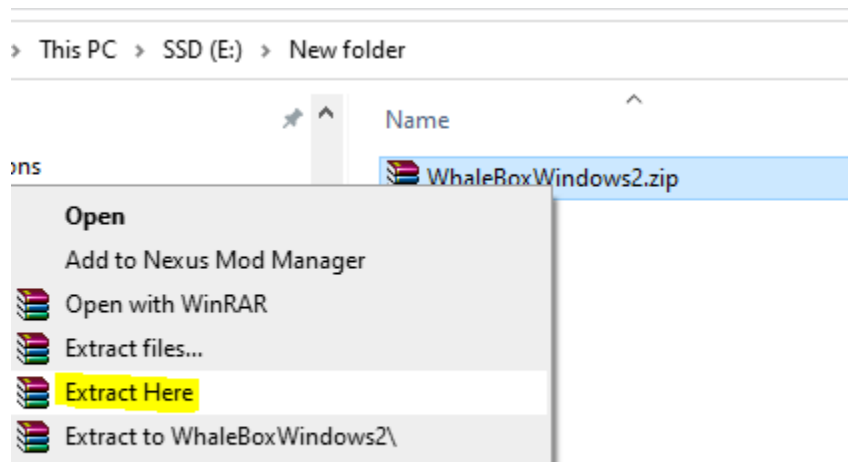
Instructions

How to download and set-up Whale Box Windows

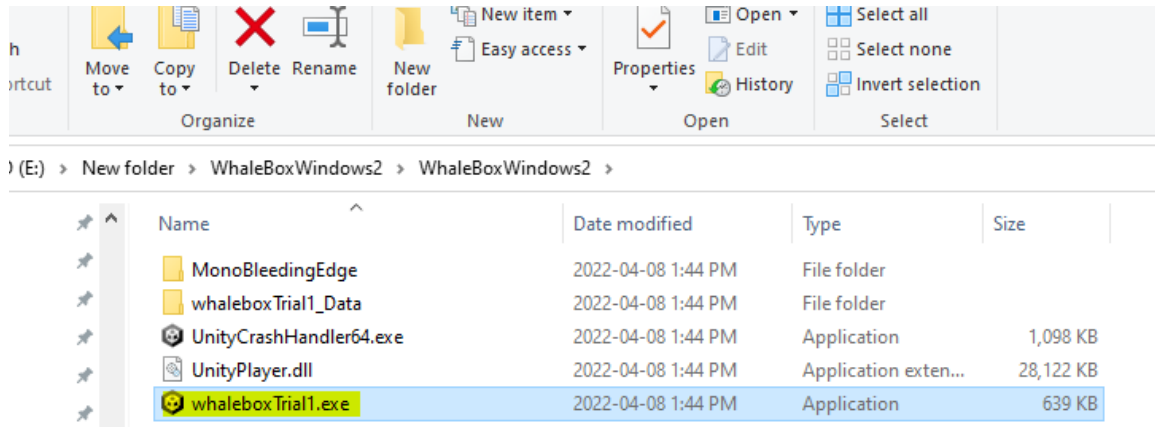
1. Download the **WhaleBoxWindows2.zip** folder



2. Unzip/Extract the files from the .zip folder. You will need a password to extract the file - this will be provided to you on test day.



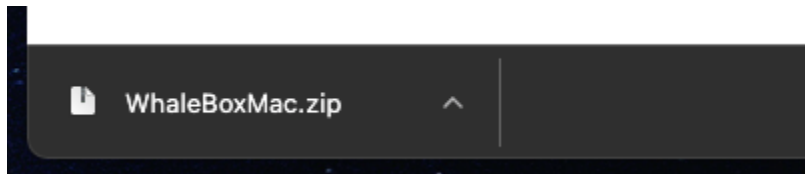
3. Open the **WhaleBoxWindows2** folder and navigate to the '**whaleboxTrial1.exe**' application



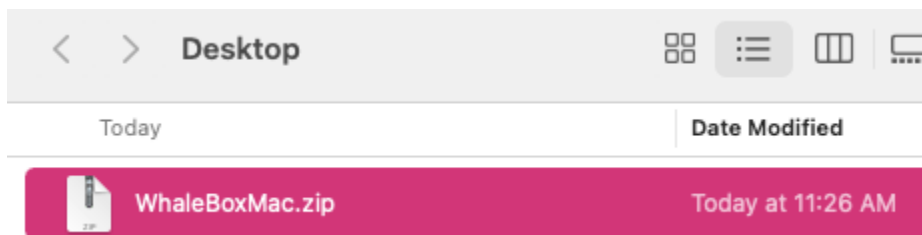
4. Double click the application to open the Whale Box app

Mac

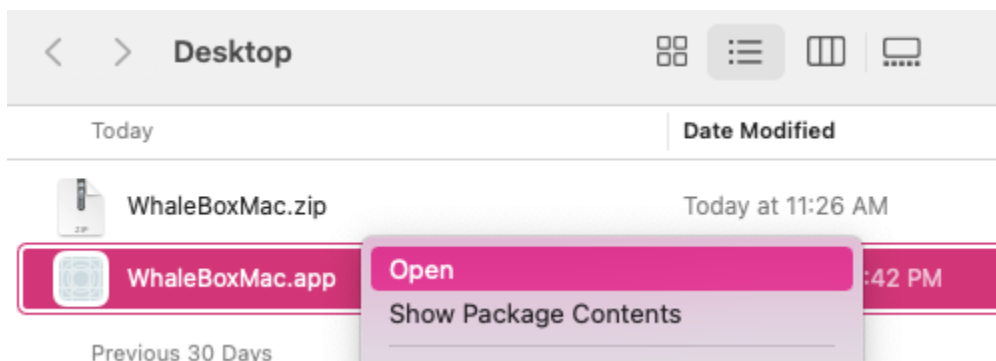
1. Download the WhaleBoxMac.zip file



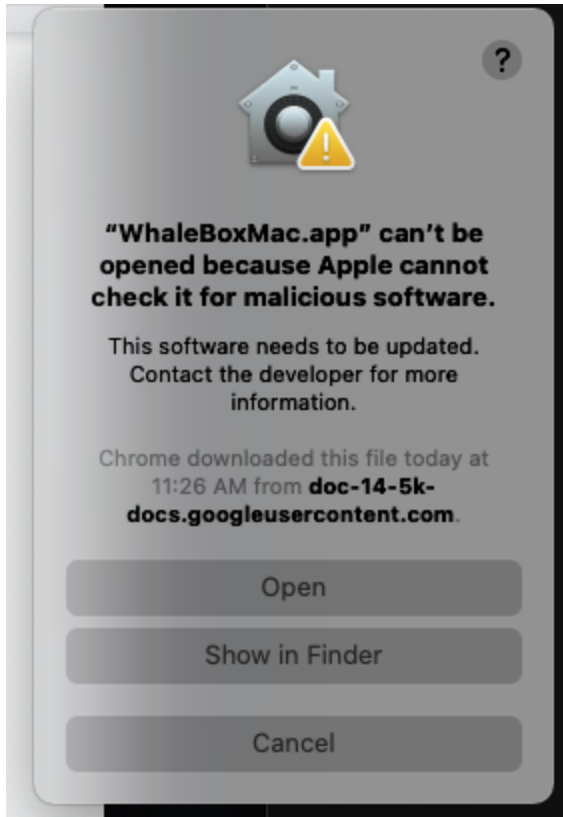
2. Double-click on the WhaleBoxMac.zip file to extract the files. You will need a password to extract the file - this will be provided to you on test day.



3. Right-click on "WhaleBoxMac.app" and click "open"



4. A pop-up will show up. Click "open" to open the app.



How to close the app

Windows

1. Hit the Windows key, right click the app in the taskbar → “Close Window”

Alternative:

1. Press ctrl + alt + del together to open the task manager.
2. Open the task manager and find the whaleBoxTrial1 task
3. Click it and click ‘End Task’ in the bottom right to close the app

The screenshot shows the Windows Task Manager window with the 'Performance' tab selected. The 'Processes' section is expanded, showing a list of applications. The process 'whaleboxTrial1 (2)' is highlighted in yellow. The table below represents the data shown in the Task Manager interface.

Name	Status	7% CPU	37% Memory	0% Disk	1% Network	8% GPU	GPU engine	Power usage	Power usage t...
Apps (11)									
Zoom/Meeting (2) (x64)		1.0%	239.6 MB	0 MB/s	2.6 Mbps	2.3%	GPU 0 - 3D	Low	Very low
Windows Explorer		0.1%	81.7 MB	0 MB/s	0 Mbps	0%		Very low	Very low
whaleboxTrial1 (2)		0.7%	83.1 MB	0 MB/s	0 Mbps	2.9%	GPU 0 - 3D	Low	Very low
Task Manager		0.5%	35.5 MB	0.1 MB/s	0 Mbps	0%		Very low	Very low
File Explorer		0%	2.3 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Microsoft Word		0%	90.7 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Microsoft OneNote		0%	42.6 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Microsoft Excel		0%	70.7 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Mail		0%	0 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Google Chrome (64)		0.4%	5,624.4 MB	0.1 MB/s	0.1 Mbps	0%		Very low	Very low
Calendar		0%	44.7 MB	0 MB/s	0 Mbps	0%		Very low	Very low
Background processes (133)									
Zoom Meeting Host (2) (x64)		0%	5.0 MB	0 MB/s	0 Mbps	0%		Very low	Very low
HostProcess (2)		0%	1.6 MB	0 MB/s	0 Mbps	0%		Very low	Very low

Mac

1. Press cmd + q to quit the app

Alternative:

1. Press cmd + tab to switch out of the app
2. Right-click on WhaleBoxMac in the dock and click "quit"

