

Usability Test Results

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Task:	1
Starting Position:	Home Scene
Moderator Script:	You are going to learn how to prepare a fossil. Go to the tools information page and read about one tool's purpose and then close that tool. When you have finished, say "I'm done". Do you have any questions? You may begin.
Evaluation Measures:	<ul style="list-style-type: none">• User must stop at the tools information page and click one of the tools. User must then read about it and then click off of the tool to return to the tools information page.• Record if the user stopped at the correct page.• Did the user attempt to tap somewhere that wasn't interactive?• Record the path through the application.
Notes to Moderator:	If user lands on correct scene, do not close screen at end of Task 1, user will continue to Task 2 from this point.

Task:	2
Starting Position:	Continued from Task 1 (or if Task 1 incomplete: a_ToolsLayout Scene)
Moderator Script:	You are going to skip forward from this page until you come to the page with the plaster jacket and tools. First, drag an incorrect tool onto the jacket. Then drag the correct tool onto the jacket. When the animation has finished, say "I'm done". Do you have any questions? You may begin.
Evaluation Measures:	<ul style="list-style-type: none">• User must stop at plaster jacket page, drag an incorrect tool onto the jacket, and then the correct tool (saw).• Record if user stopped at correct page.• When the user dragged the incorrect tool onto the jacket, did the user attempt to then close the popup window via the 'x' or by tapping anywhere on screen?• Record path through application.
Notes to Moderator:	If user triggers saw animation, do not close at end of task. User will continue to Task 3 from this point.

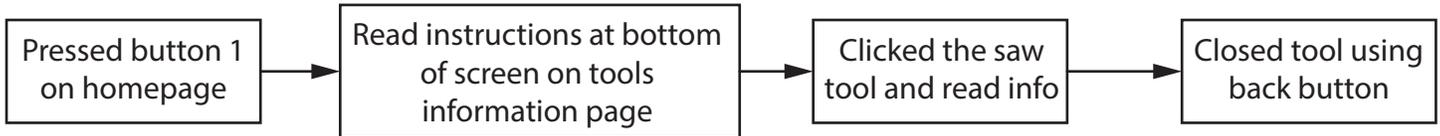
Task:	3
Starting Position:	Continued from Task 2 (or if Task 2 incomplete, a_Instructions Scene, press skip arrow)
Moderator Script:	Continue onto the next activity. Follow the directions on screen until the game ends. Do not press the skip arrows during the activity. Remember to explain your thought processes out loud as you go. Do you have any questions? You may begin.
Evaluation Measures:	<ul style="list-style-type: none">• User must bring game to completion.• Record # of buttons touched. Did user have trouble dragging the tools over the surface of the fossil?• Record path through application.

User 01: Results

Task 1:

User stopped on correct page, read about one tool (chose saw), and closed tool.

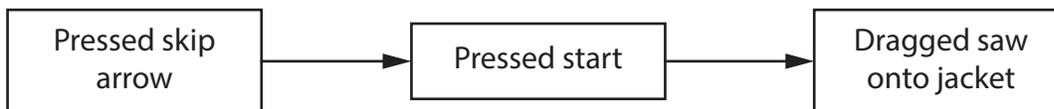
Path taken:



Task 2:

User stopped on correct page. User dragged correct tool onto jacket immediately.

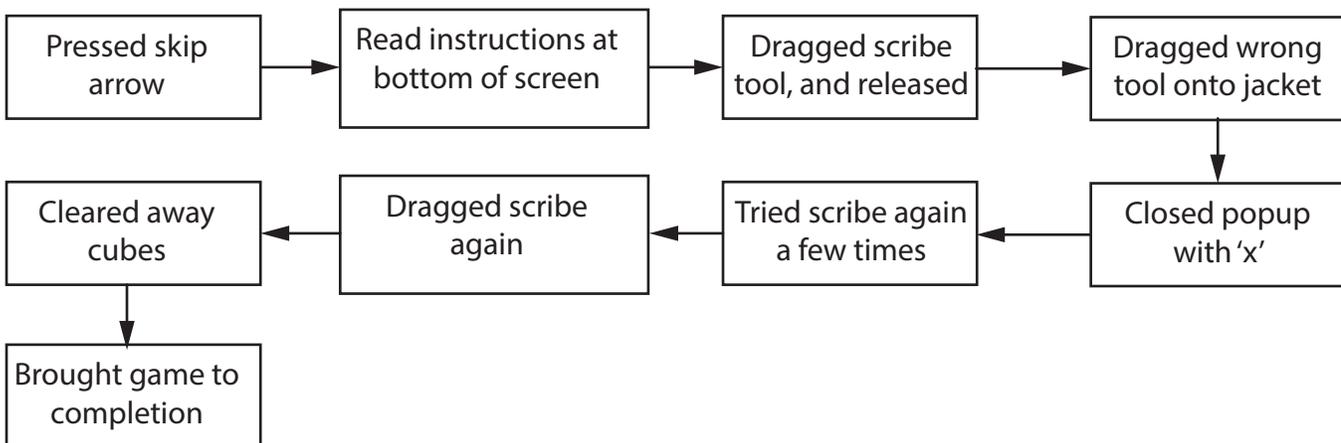
Path taken:



Task 3:

User stopped on correct page. User had trouble dragging tools and using them properly.

Path taken:



Additional Comments by User:

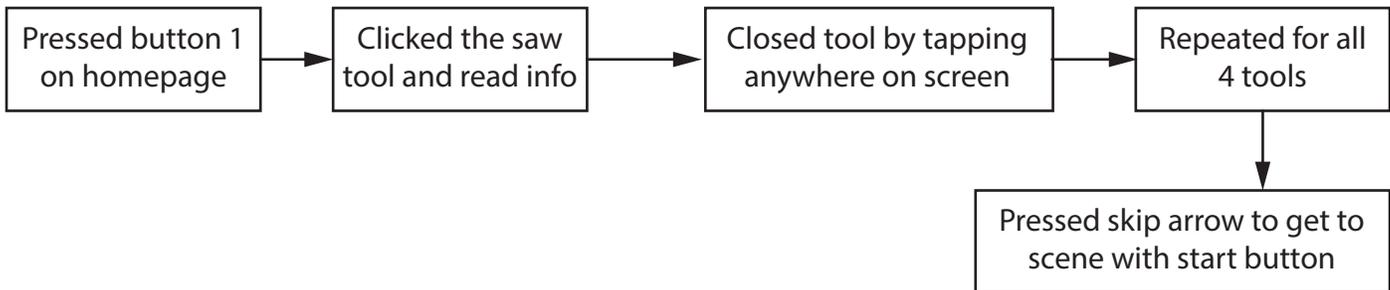
- [When the wrong tool popup came onscreen] I liked that it tells me when I'm wrong.
- The program seemed intuitive.
- It was difficult to tell which tool side was 'up' (the tip that does the action). It's harder to see on the iPad than the computer. Maybe the tool should face downwards so that the tip is down when it's dragged.
- When I was attempting to break apart the rock, I was looking for a violent-looking tool but they all looked pretty harmless. But, if I was actually doing this for real, I'd have read all of the details of the tool, so I would've known more about which to choose.
- I was confused at the end for a bit because I thought I'd done everything [in reference to removing the cubes with the scribe]. Then, I realized there was one leftover.

User 02: Results

Task 1:

User had difficulty pressing the preparation button (button 1) on the Home scene. User read information for each tool rather than just one as specified by moderator.

Path taken:



Task 2:

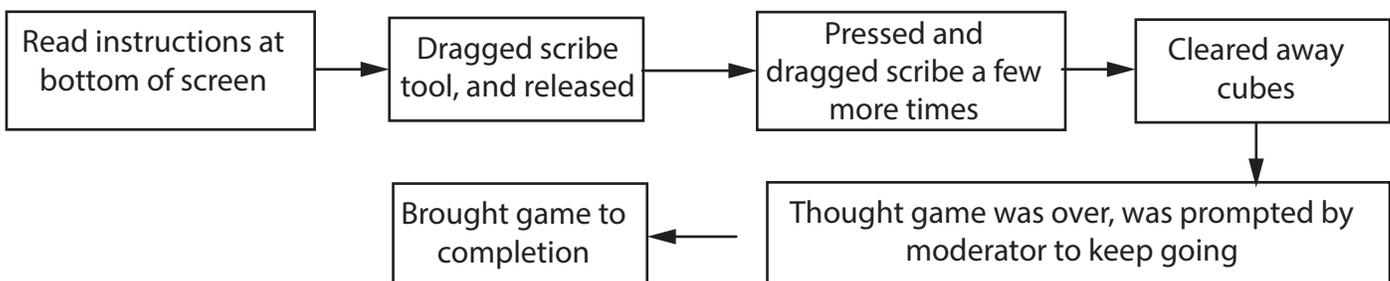
User stopped on correct page. User dragged incorrect tool onto jacket, closed error popup, and dragged saw onto jacket. Made sound of excitement when saw animation was triggered.

Path taken:



Task 3:

User stopped on correct page. User had trouble dragging tool. It took a couple tries before the user understood how to use the tool to interact with the jacket (not just click, drag, release, but click and continuously drag over the surface). Thought game was over once scribe action had finished removing cubes. Was prompted by moderator to continue, then finished the game.



Additional Comments by User:

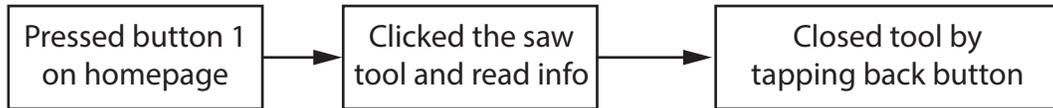
- Unlike the previous activity with tools, this tool behaves differently and is counterintuitive. The previous interaction with a tool by dragging and immediately releasing sets up the expectation that the next set of tools will behave in the same manner.
- I'd like to see a response to touching the tool, either a sound or it appears to press in or something.
- By the time the activity starts, I forgot the information I'd read about the tools in the previous section. I wouldn't want to go back one step or two (depending which activity I'm doing) to have to read about the tools again. Have the information available on the activity scenes by either double tapping the tool, or something.
- Having consistency in the tools is important. I want the tool's tip to line up with my finger so that it appears that the tip/my finger are doing the action of interacting with the cubes.
- I thought the game was over because I didn't notice the bottom text change. Make it stand out more.

User 03: Results

Task 1:

User stopped on correct page, read about one tool (chose saw), and closed tool.

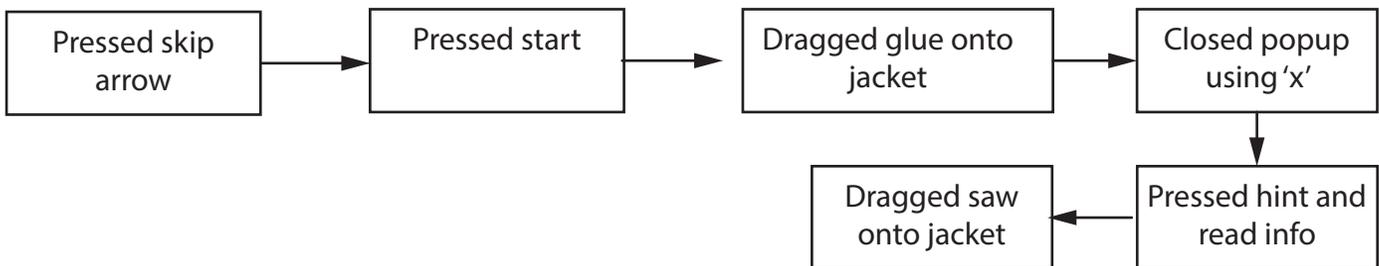
Path taken:



Task 2:

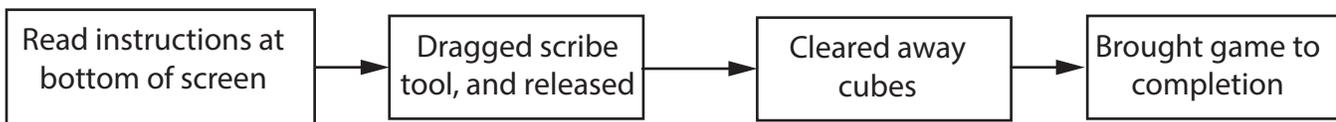
User stopped on correct page. User dragged incorrect tool onto jacket, closed error popup, and dragged saw onto jacket.

Path taken:



Task 3:

User stopped on correct page. User had trouble dragging tool. It took one try before the user understood how to use the tool to interact with the jacket (not just click, drag, release, but click and continuously drag over the surface), but had a few problems with the tool lagging and grabbing the tool in the first place.



Additional Comments by User:

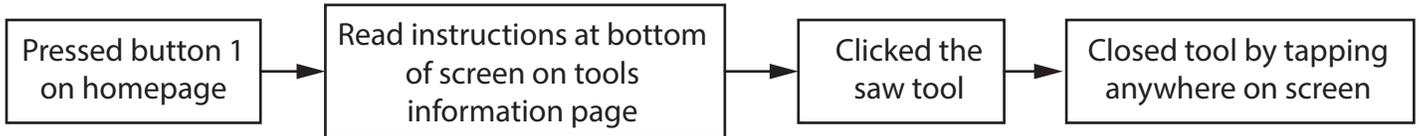
- Have the next arrow brighter or light up to draw attention.
- The distance between the user's finger and the tip of the tool should be brought closer.
- There are different mechanisms for closing things throughout the game and make them consistent.
- Make the ROM background darker on the homepage so that the buttons stand out more.
- Clicking the arrow should do the task for you (like a next button). Have the word "skip" pop up on the arrow when an animation is playing so that the user knows that it can be skipped.

User 04: Results

Task 1:

User stopped on correct page, read about one tool (chose saw), and closed tool.

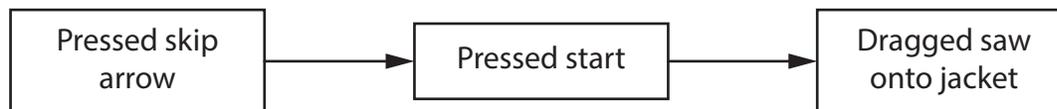
Path taken:



Task 2:

User stopped on correct page. User dragged correct tool onto jacket immediately.

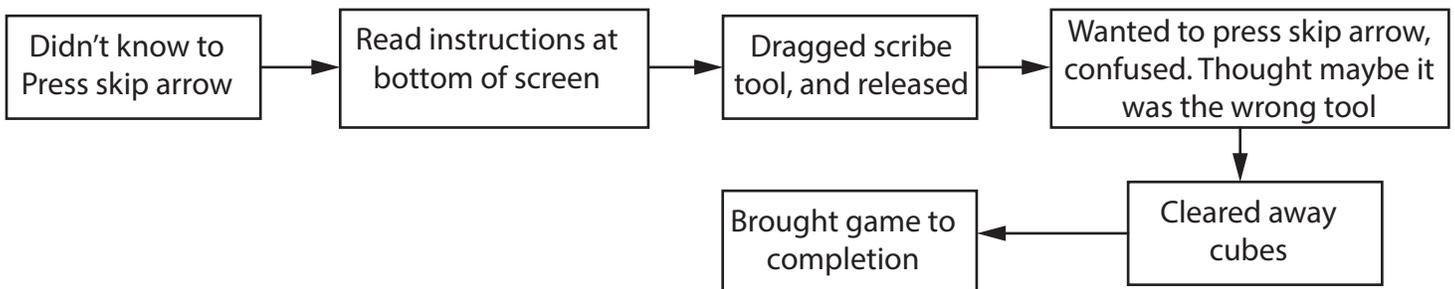
Path taken:



Task 3:

User stopped on correct page. User had trouble dragging tools and using them properly.

Path taken:



Additional Comments by User:

- When I highlight a tool on information page, I shouldn't have to tap off and then tap onto another tool. I should just be able to click on another tool to open it without the extra step in between.
- Trouble with the touch response. Thought that the I had grabbed the wrong tool (scribe) even though it ended up being correct because used same action as previous game and it released and nothing happened. Thought that it was wrong tool and was confused about what to do next.
- Thought that the arrow meant that the task was done and you'd press it to move onto the next thing. Didn't know it was a skip button.
- Have the tools do their action when grabbed/selected to help user remember what they do. Reading it wasn't enough to implant it in the mind.
- Didn't know had to press arrow to skip forward after jacket was cut open, thought had to keep doing things to the jacket. Feedback to move on.

Comments by Moderator after User Testing Completed

- Should have the Hint button trigger a popup or have it closer to the textbox because didn't notice anything changing. Maybe change the textbox colour to the same green but transparent. Make the hint button smaller because you don't really want the user touching it unless they really need help.
- Consistency with closing things. The 'x' wasn't used in every case when something needed closing.
- Get rid of the Start button and have the arrow do this.
- Maybe have text over the arrow when it means 'skip' or 'start'.

Discussion

I was very eager to test my Proof of Concept (POC) on users so that I could see if the interactions I created would be successful or not. After collecting data from four people, some interactions were well received and others yielded problems (some foreseen, some not). The following discussion will analyze the results and suggest how any issues could be corrected.

It should be noted that some users had problems following the directions given to them by the moderator. This confusion was most likely due to a poorly-worded task. For instance, the second task asked users to drag an incorrect tool onto the jacket, followed by a correct one. The intent behind this was to see how the user interacted with the popup error screen. Unfortunately, the instructions on the activity screen itself say to drag the correct tool onto the jacket. This is most likely what caused confusion and could account for why half of the users followed the on-screen instructions (dragging the saw onto the jacket immediately) rather than those of the moderator. However, this didn't really cause great problems.

Many users enjoyed experiencing an immediate response from the application after pressing something. Some enjoyed the highlighted tool effect when a tool was selected on the instruction page, as its brightness and motion made sure the user knew that it was the tool of focus at that moment. The popup windows also received the same response as it let the user know they had done something incorrect (chosen the wrong tool) and should try something else. However, there were also issues with these elements. Once a highlighted tool is selected, the user either must press the 'BACK' button or press anywhere on screen, whereas the popups are closed via an 'X' or pressing anywhere on screen. I think that it is important to include two closing options. The first POC showed many users attempting to close an element by simply clicking off of the object anywhere on screen, while for the second POC, half used the provided button (whether it was 'BACK' or 'X'), while the other half just pressed anywhere on screen. I think that technology-savvy individuals would be angry if they can't simply click anywhere to close an application, but having an obvious closing button helps those individuals who aren't familiar with typical touch interfaces. Where the issue lies is in consistency. Having both the 'X' and 'BACK' button perform the same task seemed to draw complaints from users. Finding a clear and consistent way to accomplish interface tasks will be very important for the updated application.

While the highlighted tool was helpful to focus attention, users also wanted to be able to click another tool immediately. The extra action of having to click to close the tool of focus, and then click again to open another tool some found tiresome. Also, while this information page was useful, it was suggested that an updated version have the tools move and make sounds for those that aren't great text learners. This was something that was intended to be added at a later point and thus hearing that feedback was encouraging. Another user suggested having the tools information accessible throughout the game as well. This person felt that having to go back to get that information and then go forward to the game was not a good system. He suggested having a double tap on the tool within the game to bring up a reminder of the tools function.

However, a small button in the corner may also be useful as a short, summary popup of the tools' functions.

I had considered adding a status bar into the activities section as well when the user is expected to use the scribe and abrasive to remove rock (or cubes in the case of the POC) to help the person know if they are almost finished. During the testing, one of the users thought they had finished clearing away all of the cubes and was confused why nothing changed on screen. They soon figured out that they'd missed one cube and suggested that a bar be added into the module to let them see their progress. This, again, was encouraging to hear as it agreed with the future plans I'd had for adding one.

Some problems with the iPad itself that need to be taken into consideration are its size. Many users had trouble seeing that the tools were moving at points. Items should be rescaled and tested on the iPad with more frequency as the computer screen is not a good indicator of final size.

Similarly, there was a lag when the user touched the tool and when the tool followed the finger on the screen. This wasn't a problem experienced by the programmer during self-testing, and so this application should be tested on multiple computers to see if this could be a problem in the future. This problem caused a lot of confusion in tool selection. Many users thought they were grabbing the wrong tool because of the delay in response. Similarly, consistency in tool selection also caused confusion. While the Task 2 activity required a quick drag and drop, Task 3 required a constant drag across the surface of the fossil. It took some users a long time to understand that they needed to physically control the rock matrix removal. Again, consistency is important. Perhaps activity 2 should, then, also have the user open the jacket rather than simply dragging and dropping. The tool/finger interaction was something users felt needed changing as well. Due to the screen size, it was difficult to tell that the tip of the tool was at the top of the tool. Many felt that once the user selected the tool, the tip should line up with the finger so that it is the finger that seems to be performing the action of clearing away the rock.

Finally, the users requested that changes be made more obvious. For instance, when the user presses the hint button, or arrow button and the text at the bottom changes, some didn't notice this and felt it needed to be made clearer. Similarly, many didn't understand that the arrow could be pressed once the animation was triggered to skip through this part or that the arrow needed to be pressed to trigger a new scene. If the words 'skip' appeared on the arrow, or if the arrow itself glowed/flushed, it would help the user understand it could be pressed at that time. Darkening the homepage background so that the buttons stand out more was also something requested.

This user testing session of the second Proof of Concept was very informative. Much of the feedback will be implemented in the new version being created.