User Test Report

Tyler Upchurch, Burak Polat, Ryan Edelen, Conor Byrne, Edward Zapanta

Miami University

English 313

Dr. Amanda Stevens

March 31st, 2017

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Introduction:

The purpose of this instruction set is to guide the reader through the process of building a LEGO seaplane. In order to guide the reader through the process of construction, an instruction set was written with step-by-step instructions that contains photographs of all of the pieces involved as well as pictures of the assembled product. The instruction set is divided into 4 main sections that consists of first assembling the wings and rudder of the plane, followed by the building of the body of the plane in part two. Part three describes the assembly of the bottom portion of the seaplane, and the final part involves the connection of the upper portion of the plane to the bottom portion of the plane, resulting in a completed seaplane.

The actual testing was conducted by two members of the group, while the remaining two group members recorded the results of the testing and asked the participants follow-up questions.The responses to the follow up questions were recorded and were then used by the group to improve the instruction set.

Executive Summary:

The usability test was conducted during class on Wednesday, March 8th and involved four male participants. Only one test was conducted in class with another group from the class and lasted around 5-10 minutes. Immediately after the construction of the seaplane, the participants were asked follow-up questions and were given a Likert-Scale to complete for the collection of feedback.

The purpose of this test was to collect information regarding the difficulty involved with following the instruction set in a real world scenario. Conducting this test allowed the group to receive feedback from our peers in order to improve our instruction set based on any concerns they had or any difficulties in the construction process of the seaplane. Following the collection of the feedback, our group examined the instruction set and made changes in order to make the instruction set more user friendly.

From the post-test questionnaires, we received some very useful information that allowed our group to isolate some problems that needed to be corrected.The main difficulties that highlighted the problems were as follows:

- Difficulty placing blocks correctly under the propeller
- Difficulty assembling the three different sections of the plane together
- Testers struggled to find the correct pieces in part 2 of the set

The problems encountered by the participants did not stop them from assembling the seaplane entirely, but they did make the process take longer and resulted in some minor confusion. Overall the participants were able to successfully assemble the plane by following the instruction set and only encountered difficulties with a few specific parts of the seaplane involved in the assembly process.

Methodology:

To begin, the participants were recruited by sending out fliers and we collected a group of four students in order to test our product. All of their responses to our process were recorded and their feedback is attached. The participants preferred that their information remain private, so all their feedback is anonymous. Some of the feedback was done as a group, and some questions were answered individually.

We conducted one test session with a group of four individuals. It last approximately 15 minutes, which includes introduction to the project, build time, and response time. We began the session by giving them access to an instruction set, and briefly describing how our instruction were modeled, which was in a modular and section-based format. Then, we allowed them to build the model as a group, and they were allowed to ask the facilitators questions, but they chose not to. Once the build was complete, the group returned to our attention and we directed them to our post-production questionnaires, including a Likert-Scale and some follow-up questions.

The participants were asked to look at our instruction set, and as a team, construct the final product out of the LEGO pieces that we set before them. They were asked to work together and follow the sections piece by piece in order to finally put together one finished product. During the post-test sessions, we asked them questions about how well they believed our instruction set was put together, and how well it aided them in completing the seaplane model. We asked them to give individual responses to our Likert-Scale questions, and as a group, they answered our follow-up questions.

As mentioned previously, we gave the participants two post-test questionnaires. One being a Likert-Scale and one being a series of follow-up questions. Most of the questions pertained to the way the instruction set was put together, including the usage of words, the angle of pictures, and the overall helpfulness. Along with these two questionnaires, a member of our observational team put together an observation table that involved his perceptions of issues the test group encountered, why they had those issues, and his perceived solution to these

problems. As a group, we have taken these things into consideration and will take this knowledge with us moving forward in order to improve our final set of instructions.

Participants:

In total, we had one test session which included four participants. The testing took place on Wednesday, March 8 around 3:00pm. All of the participants were male college students, likely between the ages of 18 and 22. Two students were Caucasian and two were of Asian descent. All the participants were able to communicate well with one another as they all spoke a common language. We did not conduct a background questionnaire in order to obtain demographic information directly from the participants, so this information is just what was gathered on a purely observational basis.

Evaluation Tasks:

We created the task scenarios for the instruction set as a group. We decided on four main sections for our instructions, and they are listed below:

- Task 1: Creating the winds and the rudder - Conor Byrne
- Task 2: Creating the body of the sea plane - Edward Zapanta
- Task 3: Creating the bottom / skis - Tyler Upchurch
- Task 4: Putting it all together - Ryan Edelen

Results:

As a group, we determined how we would split up the group work on the day of testing. The group members that were present on testing day were Tyler, Ed, Conor, and Ryan, so we split up the work half and half between sets of members. Tyler and Ryan were put in charge of giving the initial instructions to the participants and distributing questionnaires during post-test interviews, and Ed and Conor were in charge of tracking observations and the test group's errors.

Task Completion Success Rate:

Tasks	Easy to comprehend	Somewhat easy comprehended	Neutral	Somewhat difficult to comprehend	Very difficult to comprehend
Task 1	X				
Task 2			X		
Task 3	X				
Task 4					X

Time on Task:

In total, the readers took between 3 and 4 minutes to complete each task, which lead to a fifteen minute completion time. Task 4 took the most time to complete.

Errors:

Overall, there weren't too many errors made by the participants. Errors were recorded by the entire team to ensure everything was tracked down correctly, and all errors were written down on the observation sheet.

Of the four separate tasks to complete the Seaplane, the second task was perhaps the most difficult, emphasized by the most errors. The participants had difficulty locating the necessary pieces, due to the instructions displaying all the pieces at once and not the necessary ones for the specific step.

The majority of the tasks were made without a non-critical error. The participants completed Part 1 with ease, had slight difficulty finding the correct pieces, completed Part 3 with ease, but were stopped by Part 4 completely. The reasoning for the critical error in Part 4 stemmed from the lack of instructions regarding a small orange piece that rested on the body and the wings.

Test Reader Comments:

Overall, the build tests went over positively with testers responding positively across the board. All the testers rated their satisfaction on the Likert-Scale with at least an "Agree." The participants found the overall organization and format of the instructions to be the best part of the testing process. Using this design, they were able to successfully build the seaplane in a fairly quick timespan. The least liked aspect of the testing is the visual models used to aid in the construction. There were some points where the picture used were unclear on what pieces were needed/where the pieces needed to go.

Recommendations:

The largest recommendation made to our group was to do a little revision of the model photos that were used to aid the building process. The main complaint came with how the second section of the build displayed the pieces, where the actual build was pictured too far for the tester's view. The only true recommended change was with the pictures. We decided to fix this problem by produce the visuals using a lego building software for cleaner look.

Conclusions:

Participants found that that they were, with little problem, able to produce a lego seaplane. The testers found the instructions to be clear, concise, and easy to use. Having even clearer visual aids help in a situation such as this where parts can often be confused with each other. After implementing changes recommended by the testers, the instructions will continue to be a steady guide for those seeking the seaplane option with the given pieces

Attachments

1. **Likert-Scale Test Questions**

1. I could easily distinguish what piece the instructions were looking for before beginning each building phase

Strongly Disagree	Disagree	Neutral	Agree	**4x** Strongly Agree

2. The entire build process was separated into sections that made sense

Strongly Disagree	Disagree	Neutral	**1x** Agree	**3x** Strongly Agree

3. The instructions were easy to follow and effectively guided the user in the building process

Strongly Disagree	Disagree	Neutral	Agree	**4x** Strongly Agree

4. Were you able to complete Part 4 and piece together the final seaplane model

Strongly Disagree	Disagree	Neutral	**1x** Agree	**3x** Strongly Agree

5. The pictures were clear and aided in the building process

Strongly Disagree	Disagree	Neutral	**3x** Agree	**1x** Strongly Agree

2. **Observation Sheet for User Test**

Problem (What difficulty did the tester have?)	Interpretation (What may have caused the difficulty?)	Solution (How can we solve the problem?)
Difficulty placing blocks correctly under the propeller	Picture resolutions may have been too small to distinguish the next step	Creating closer up pictures with more helpful angles
Assembling the three different sections of the plane together	There a few pieces that aren't added to the plane until the end that may have confuse them	Add on to the instructions that there are pieces that will be remaining until they are required
Testers had difficulty find the correct pieces in part 2	The pictures display all the pieces at once and not the essentials for the step	Only show pieces that are needed for part 2 in each step; keep it detailed

3. **Follow-up Interview Questions for Readers**

1. What section of the plane did you have the most difficulty building, and why?
    - Part 2 was the most difficult because the pictures were too zoomed out and cluttered, hard to see what part they were doing.
2. Were there any sections of the instructions that you found to be confusing?
    - Part 2 was confusing. In Part 1 or 4, add instructions to connect the wings and rudders. In Part 2, all the pieces were present in every picture, so it made it a little confusing.
3. Were the instructions separated into appropriate sections?
    - Yes. Very clear.
4. What could be improved about the overall flow of the building process, how would you restructure the process?
    - Crop out pictures that involve too many pieces. Order of building process made a lot of sense. Connecting the wings was missing from the instructions.
5. Did the picture and/or the angle of the picture accurately reflect how the pieces should fit together? If not, please point out which were flawed.
    - Part 2 was confusing because the build process was in the background and the rest of the pieces were in the front. The other sections seemed okay.