**User Tests: Description, Analysis, and Conclusion**

**Description and Analysis**

Subject 1: There was some slight frustration in the movement of the lightweight prototype itself, in that it did not have smooth movement because the paper caught on the sides. While this is a problem that we can easily fix, it brings up a good point because in this game, smooth screen movement is very important. It should also be made explicitly clear in the programming that the ship cannot move horizontally on the screen in race mode.

Subject 2: Make it clear how to control speed. Provide a more in-depth description of control keys besides just ‘thrust’, ‘left’, and ‘right’. All in all, gameplay was interesting and original. Could use better understanding before game starts (this could be a reason to throw in a tutorial). Often times the best way to explain the game from a designer’s perspective is to allow them to play in a “sandbox” of sorts. Even if it wasn’t a full tutorial, maybe we can add an empty screen to the end of the instructions, which would allow the user to play around with the ship, and change environments (coefficient of gravity) to experience gameplay before they start.

Subject 3: The main menu could use clarity in design. We can experiment with adding secondary menus for single player and multiplayer modes because currently, the labels are just headings. The design right now attempts to use a parallel design and repetition of the “challenge” mode in the same place under both headings to signal to the user that the game modes were where they needed to click. We also can experiment later with this design, as right now the contrast of the colors on the constructions paper could be a limiting factor.

Subject 4: This user recommended the same improvements as above. They also used expertise to point out that in web design, text that is underlined usually signifies that it is something that can be clicked on – that is, it has become a sort of affordance for clicking due to common design practices. This person also suggested for us to look at thickness and contrast later in the design process – obviously a digital perspective will be different from one using construction paper. Also, it was unclear as to whether or not top and bottom were boundaries. We should mention these both in the instructions, as well as in a clearer border to the game itself to show that the top and bottoms are borders. Finally, he requested better descriptions of the game modes.

Subject 5: The gameplay went well. They liked the simplistic controls, in that there are not many things to press and the maneuverability is fairly self-explanatory. The criticism came with the menus, with them again saying that they were confusing and did not clearly show where each click would lead them. They were not extensive menus, but the first time was hard to figure out.

Subject 6: The main criticism was in the instructions. We need to give thought into how much to write them without being verbose. Perhaps a story narrative, like some games include, would be a useful addition to explain the mechanics in a basic manner while keeping the user’s attention? Again, the user said that the affordances of the controls were pretty easy to follow. It also helps that we are building off of a control structure used before (i.e. the game Asteroids or a variant thereof). Finally, added the point that the gameplay from the in-game screen was very intuitive.

Subject 7: This subject said that the game itself was very easy to understand. They did, however, bring up some interesting suggestions or questions. The first was the aspect of a login screen, which after some research proves to be a very manageable task. Also, on that note, when viewing the high scores, the user questioned if they were just viewing local scores, or global scores. Furthermore, would there be a way of toggling between the two? These are all good points and suggestions to include in the design.

**Conclusions:**

The glaring conclusion is that the menus need work. We can go about this change in two ways. First, we could add additional menu screens for multiplayer and single player. In this way, everything on the main menu (except the game title itself) would be clickable. This would give very obvious affordances, but might be slightly more complicated than the sleek look we were aiming for. Another choice is to change the font of the headings on the main menu, and add underlines to the things that you can click on. An even better solution would be to only underline the text when it has been scrolled over. This is an oft used technique that shows the user what can be clicked on and what can’t whenever they move the mouse quickly across the screen. We can also use further contrasts in font size and play around with further user tests using a digital medium.

Another aspect in gameplay is that if we choose to move forward with the idea that the ship remains at a constant x-position on the screen throughout the race, then this concept needs to be very obvious to the player. What that means is that any sort of lag cannot affect the ship and screen differently. They need to be fundamentally connected. That said, we also stumbled upon another solution to this problem. The idea is this – the screen only moves when the ship gets a certain fraction of the way over in the x-direction. So when the ship reaches the halfway point of the screen, the screen can begin slowly scrolling, not allowing the ship to travel beyond a certain threshold across the screen (say ¾). Furthermore, when the ship slows down, the screen would at first continue at the old speed and slowly decelerate. This would look much more natural, as right now the problem that we can run into is that it looks like the user thrusting just controls the velocity which the screen scrolls at. The fact that the ship does not move horizontally is very unnatural. Especially in this test, it was hard for the user to grasp that concept (the very fact that the users did not understand quickly, shows how unnatural it was). This would be a more in-depth implementation, but after we get a simple scrolling prototype working, it would definitely be something to look into.

Some final thoughts are as follows. The top and bottom border need a clearer sign that they result in death. We can solve this by adding the same style blocks as the obstacles are to this area as well. Also, the idea of a login system had come up, and now after research, we have realized that the implementation is not terribly difficult. This could further impact the depth of the high score system, in that we can add a local and global scope. Finally, we first include a “story mode.” Because some users expressed interest in a tutorial or sandbox mode, we could revive this idea for that purpose.