

IAT 405
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TEAM ARCADE

User Study Report

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User Study Overview:

On February 17, 2011 we brought our project to the 6th West Walley Scout troupe to perform a user study. We individually tested 7 Scouts whose ages ranged from 11 to 13. Since last semester, many iterations and changes have been made to our project, Thicket, which has now become what we call Skry. We have added interaction using a Nintendo Wii-remote and shifted the focus of the project to a Math-inspired exploratory game for children.

The purpose of this study was to determine how effective and elegant the interactions were given the recent shift over to using the Wii remote (wiimote) as a controller. We were also concerned with the quality of our aesthetic and gameplay. Our focus was entirely devoted to whether the game was a positive experience for participants. We were not concerned with the effectiveness of our system as a learning tool at that time. We used qualitative evaluation techniques, including observations and questions during the session and a few open-ended questions after each session was completed.

Project Summary:

Due to a struggle in designing interactions that were elegant, project-changing decisions were made. As mentioned, our solution was to change the interaction device to something more elegant and robust: the wiimote. As we found out in our study, we also get the added benefit of familiarity with a game controller that many youth already have experience with.

The prototype we tested consisted of a single screen with the user using the wiimote and nun-chuck attachment to control a fish-like creature. We used math to generate parametric curves that the player traced out with his or her character. The world was fairly large with areas of interest far apart, requiring the player to explore and search for each goal.

Preparing for the user study:

Similar to the user study we designed during the previous semester, we prepared a questionnaire for the users that we would use as a guide for questions to ask. We were looking for qualitative feedback. We also prepared an observation form for 3 other team members, besides facilitator and backend operator, so that the observers can take notes on the users' behavior, body language and comments. Learning from our previous semester's study, we prepared a series of tasks to give our users some simple goals and to direct their interaction for more consistency.

The Tasks:

- "Eat five bubbles": Collecting items is a common game mechanic that people of all ages can understand. We wanted something simple to allow them to get familiar with the game.
- "Complete a pattern": There were 3 patterns that could be completed in any order. To do so, the player had to trace one complete rotation of it by following a green line with their character and staying within a minimum distance.

If the player accidentally strayed out of the minimum distance, the pattern would continue to trace but they would have to start the rotation count again.

- "Explore the map": The map was a discrete size but with very few landmarks. We were wondering how well players would be able to find their way around.
- "Complete the remaining two patterns": Each pattern had a different difficulty. This way we were able to test how well the controls (and the player) held up to more challenging tasks.

We varied difficulty by increasing the speed of the line they had to follow as well as making the pattern more complicated therefore taking longer to complete.

Interaction with the User Group:

Before we conducted our user study, we first had to give a semi-formal PowerPoint presentation to the scouts group. We discussed who we were, what we were doing, where we were from, and what the project was about. We also explained to the group what a user study was and why we needed to do it. The presentation to the potential participants was important because it led to a distribution of the legal consent forms, which is needed to be signed by the users' parents giving us permission to conduct this user study on their child.

We went back to the group two weeks after we handed out the consent forms to conduct our study. When we arrived, we only received seven out of eight consent forms, but that was more than enough for our purposes. We did not use any audio/video recording devices with the Scout group due to their strict child protection and privacy policy.

Study Protocol:

Participants in the study were called up individually while the rest of the scout group continued with their regular activities. We had approximately 12 minutes per person and gave 8 minutes for the scout to play and complete the game leaving the remaining time for questions. We found we had to be a bit tight on time due to the game being more difficult for some than others. We first explained to each scout how the controls for the game worked, this included moving with the nun-chuck and boosting by shaking the Wiimote. We then gave them their first task, to collect 5 bubbles. They were told that they would be given a new task after completing their current one. They could also ask for a new task at any time or continue on their own if they preferred. As they were playing the game, we chose questions to ask based on what we were observing. We did not have time to ask every question to every participant.

Our Questions:

Participant Number: _____

AGE: _____

How much time do you spend outdoors? (per day/week/month)

What do you like to do outside?

What feelings did you have playing the game?

What do you think the THING you move around is?

 What made it feel like that creature/thing?

 What were your feelings on the movement of the creature/thing?

What did you not like or found rather boring about the game?

Were there any times when you had trouble with the controls?

What did you enjoy about using the Wii controls?

What was the one thing you found the most interesting or fun?

What would you have liked to see more of?

What was the most difficult thing to do?

What do you think of the patterns, shapes, and graphics?

(If they completed a pattern) What do you think the patterns represent?

Remaining space reserved for observations and other notes

Study feedback:

Appearance: The most common question that we asked was - what the user thought the thing he/she moved around was? At that time the main object in the game was still the “fish” from the first semester. The answers we received were rather surprising; as none of the seven participants answered “fish” even though the smooth shifting movements were supposed to replicate something of a fish. Things that resembled the physical form of the fish came up like “keychain”, “angel” or “alien”. This made us question whether we should just keep the form of the main object as the way it is, or if we wanted to change it to actually look like a fish, or whether change of form was really important to improve the project design.

Boundaries: A couple of interesting answers came up when we asked what they disliked about the game. The scouts felt it was awkward to just be pushed away when they reach a boundary in the game. Some of their expressions told us that it was unnatural because there was no indication of where the game actually ended. This was an issue we all came to agree on. Either we needed to place a border or something to block the path so that the user would instinctively know where the game world ended.

Other Creatures: Another surprise was that some of the scouts found the companion “fish” that join the player character distracting. It was such a problem that some participants actually lost track of which character was theirs. At that point, we thought we just over looked the equipment being a bit lacking in the brightness because we used a projector in a lit gymnasium. We also discussed on what changes could be made to differentiate the two types of fish.

Bubbles: One of the things that seemed to keep the users attention was the collection of bubbles. We implemented these bubbles in order to help the user to get used to using the controls; however, we were surprised at how many of the participants came to actually enjoy collecting

bubbles regardless of the bubbles serving no further purpose in the game. This actually helped us to reflect further on how we can implement a purpose or effect to these bubbles to improve the game play experience, and maybe reward the user somehow for collecting them. The only issue with the implementation of the bubbles was that they were difficult to see on screen due to the projector set up we had at that moment.

Boosting: The biggest issue that occurred with many, if not all of our users, during our tests was the “boost” function. Many of the users had trouble using the Wii remote’s motion sensor on the z-axis. When they shook the Wiimote it was very unresponsive. This was a problem because we actually incorporated the need of this boost function in order to finish one of the patterns, which may have contributed to why the majority of participants could not finish pattern 3. One of the suggestions we received was to bind it to a button instead so that it is more “controller” like. This feedback was from a user with much Wii experience. However, we were not entirely convinced that a button would be better and opted to first try to improve the gesture detection.

Patterns: We also noted that there were some problems with the visual cues when the user followed the pattern: they were confused whether to follow the line mirroring the fish or the pattern fish itself. Furthermore, they did not know that this was the goal of the game without us explicitly saying so. Some form of in-game tutorials will be needed.

Feel: One last observation that we all found was that the game seemed to be quite immersive for the kids. These Scouts were a pretty energetic bunch but when put in-front of our game individually they seemed to calm down a lot and get really focused. This was exciting for us because it was exactly what we were hoping for.

Changes Based On Feedback:

The fish remains reasonably the same form, although we have discussed a variety of alternatives. We will be adding a bit more to it for the final presentation but we definitely want it to look like an imaginary creature rather than something from our world.

Boundaries will be added to the game to indicate where the game world actually ends. Initially we were planning to implement some form of rocks or crystals to replicate a pond or sea of stars, but in the end we went with hatches as a border for simplicity; in addition, we did not want to go in to the “uncanny valley” and replicate an actual pond.

For the differentiation of the two types of fishes, we reduced their visual dominance with a faded line so they fall into the background a bit more. We also gave them a different motion according to a sin wave.

The bubbles have been redesigned to serve more of a purpose in the game. They are going to determine how much boost the user is allowed to use and the bubbles will be animated so that it is more responsive when the user collects it.

In regards to teaching players the mechanics of the game, we’ve separated the game into stages, using the first 2 as a way to introduce different game mechanics. More detail about the specifics of these tutorials is available in our final report.

A Second Informal Study:

One week later, during the open house, we held a second informal user study. Our intent was to receive feedback from users outside of our target audience's age range. By this time, we had already made several improvements to the game. Most significantly we added a ring that appears when the player is following a pattern correctly. This helps them to know the distance they need to stay in. Results of this addition were positive, with nearly all participants in this second study being able to complete every pattern. The most notable response from the testers was that they found the game less interesting than had our younger audience. This wasn't necessarily negative feedback because the game itself wasn't designed for users of the age groups of late teens to early twenties and beyond. We were actually happy to know that we were on the right track as this game seemed to be more immersive and engaging to our younger audience.