Paper Prototyping Midterm Report

Sifteo Application Designing - Balance it

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Introduction

"Best of what's new award" - Popular Science

Sifteo - the small cubes allow users to play games through interactions such as tilt, flip, shake and neighbor. This system requires three to six cubes to play games. Users can receive cues as well such as visual or sound while they are playing games. These cues give users some feedbacks about the system's status.

Sifteo cubes are using some movement to input, it comes with screen reflection and sound to give feedback.

In this project, heading to understand the spec and design in paper prototyping. There are several processes to go through the design status. It goes with research and reading the spec of Sifteo. Second, do brainstorming to create the ideations. Then, choose an idea to develop. In paper prototyping process, it goes with sketch first, testing for conceptual acceptable. At last, higher fidelity prototypes bring a completed testing with the main idea.

Design Exploration

"Design is the difference" - whatsdesign.tumblr.com

In this project, the users are set in "seven years old child." There are some questions jump up immediately. How does the child know to play the game? How to design an easy-play game for a child? What kind of game is good for a 7-year child?

Since this is game for seven years old children, we thought "educational" could be a main idea for this project. The explored game ideas need to have educational meanings. We came up as following games.

Seesaw balancing

It's a math game. Users need to make the seesaw balance. There are two sides on the seesaw. One side is a number, user should put another number to another side. Two numbers should be the same to be success. The game can teach to learn numbers in order, bigger or smaller.
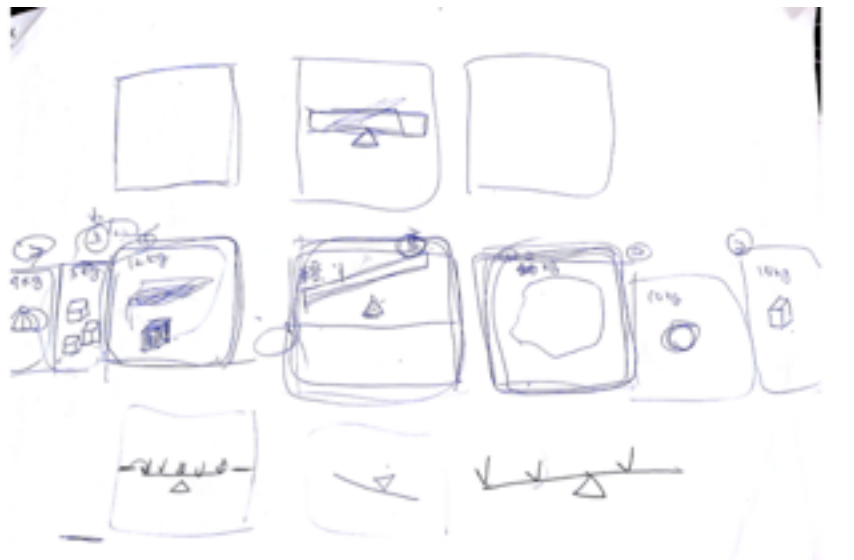
The first sketch of Seesaw Game

Puzzle

It's a matching game. Users need to tuen the cube and neighbor them. If there are two or more puzzle on the side, it could solve. The game can train user's eyes and hands. Children can learn color and have the neighborhood idea with it.

Color mix

The color mix game is teaching how to produce the color. For example, yellow color with blue color will become to green color. The cube screen is a good element to show the color mix result.

Water pipe

It's another kind of puzzle game. There are some empty water pipes, the water goes out from side. User needs to connect the pipe to make sure water won't flow out. The game can train user's sense of space.

Fire fighter

There's a house on fire. You need to save it. Users use the other cube which show the hydrant, change the angle to put the water on window - to solve fire. It trains user's sense of space and understand with angle.
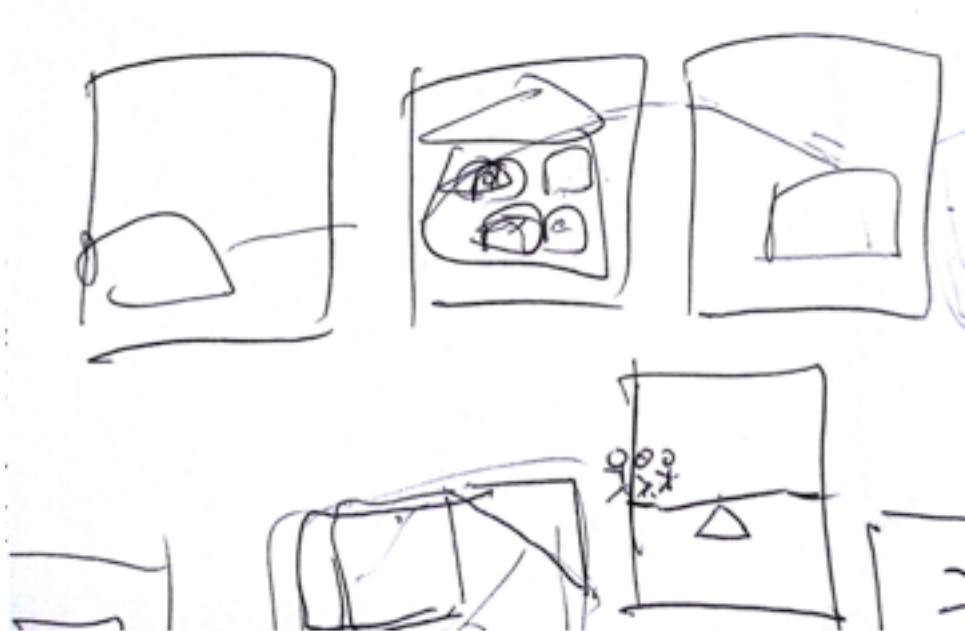
The sketch of Fire Fighter

Car driving

It's another kind puzzle game. User connects the cubes to let car keep running. User also needs to press screen to let car changes lanes. It teaches drive safety and sense of space.
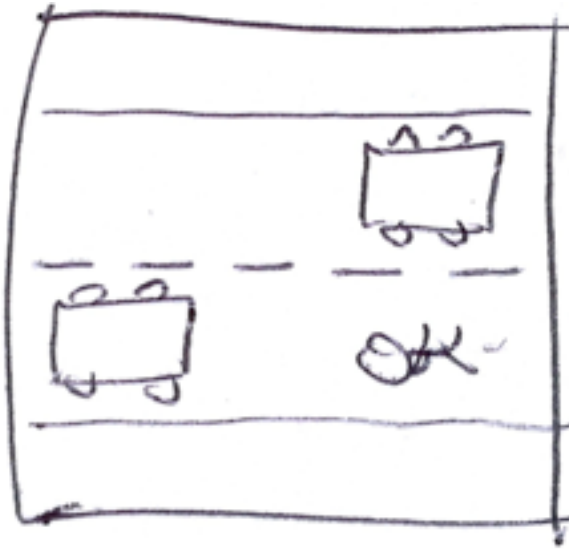
The sketch of Car Driving

In the first part, we used score board to decide the project topic. There are four issues, easy to design, good educational, fun to play, and do we like it. After the score calculating, we pick up two ideas to develop more. The two games are seesaw game and puzzle game. We did a very beginning prototyping and did a survey, after that we make the decision.

A beginning prototyping

The concept be selected is the math game, which is realized through seesaw game. Through this game, children can learn to compare numbers in easy mode while learning solve math problem in advanced mode.
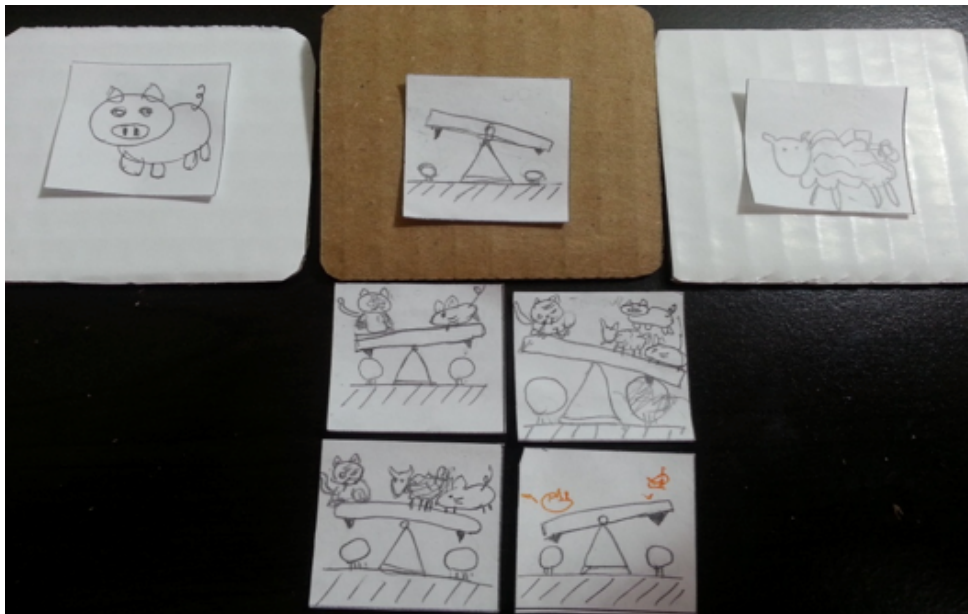

The score board we used to decide the order

Early Prototype

We try to make the seesaw game be realization. In the early prototype, the sketch shows the conceptual. In the first version, the seesaw couldn't move. When we did the test, we needed to change the paper very fast. It was hard and always interrupt users. That's the first issue make us to fix it.

Version 1

The conceptual in the game is "Big and Small", user need to choose right animals to put on it. We discuss about how to show the animals on a small screen. That could be a problem.

After that, we designed the second version with a seesaw can move. Due to the problem we found, we made a decision to change the rule - put it become the math game. We changed the animals to numbers.
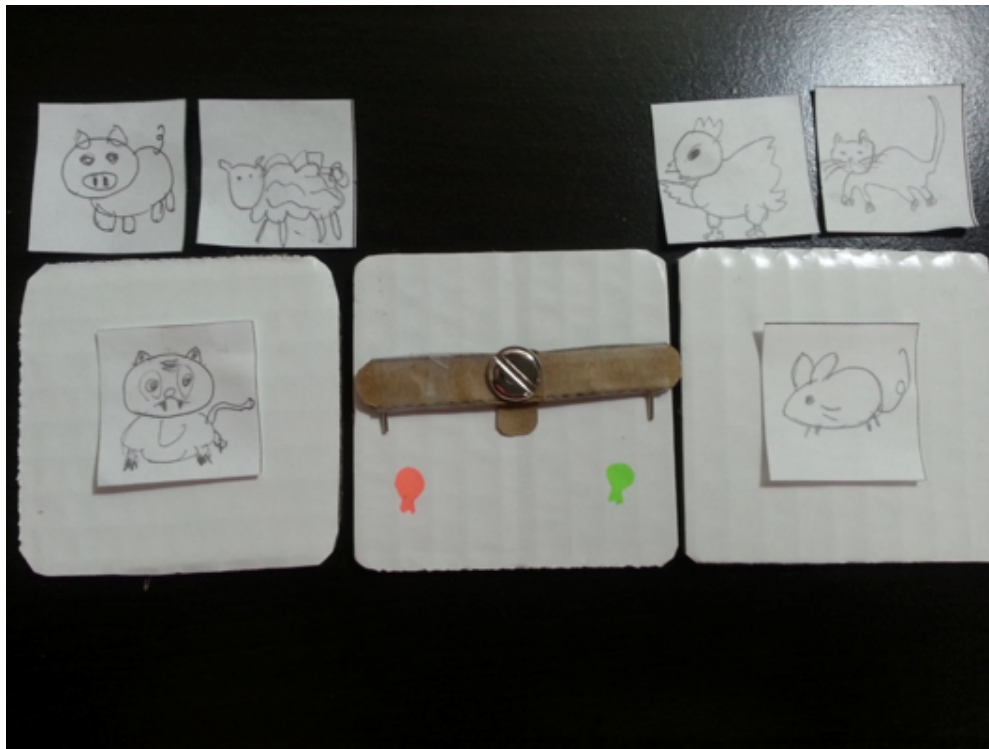
Version 2

In this version, we used a movable seesaw to show the concept. The users said they felt better than before. We can use the movable seesaw so let users know what happened next.

Informal Walkthroughs: Summarize key findings across the users

Without visual instruction, it is very hard for them to know how to play this game.

It is very difficult to show the movement of seesaw accordingly when users add new animal on it and change screen of each cube.

There is no absolute standard of animals' size and weight. Thus, it is vague for users to decide which one they should put on seesaw in order to balance it not to mention the summation weight of animals.

Higher Fidelity Prototypes

Since there are a lot of screens for this game, we show screens of three cubes one each time after users give inputs. Moreover, when they have correct answers, they can receive green visual cues and correct sound. When they give wrong answer, they would obtain red visual cues and wrong sound.

In order for user to understand how this game works, we add a tutorial section in this game. Therefore, we don't have to explain to users by ourselves rather than let them play tutorial section and move on to game section. This way of showing game rules is the same as other games.

We decided to show three screens of cubes at one time. It is a faster way for users to perceive the system response. We create all kinds of possible answers to the questions.

We removed the vague comparison among animals and replaced it with math problems. Thus, there would be a absolute answers to each questions.

Prototype Test

We conducted four sessions for user testing at quiet room. Two of them are male and the other one is female. Each session was 20 minutes and 5 minutes for us to prepare for next user. We first explained what interactions are available for sifteo cubes. Then, we directed users to begin tutorial section and followed by official game. We had a brief interview between tutorial and game section. The purpose for this short interview was to confirm what part was confused as a user. After testing, we interview them about their comments.


Users are confused about the picture of first page. They put cube as following picture. They didn't realize that they were unable to see those screens in this way. However, the meaning for this picture was to remind them flip cube in order to stack them.

The tutorial cube didn't have too many functions. But the description text was confused first three users to put two cubes side by side rather than stack them. Therefore, we changed instruction for the fourth user from 'First, put the cube on the top. Neighbor them to the next' to 'Put the number on the top and neighbor them to next'. As the result, the fourth user did stack these two cubes.
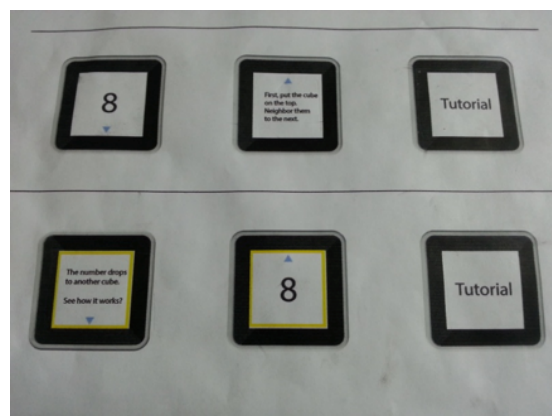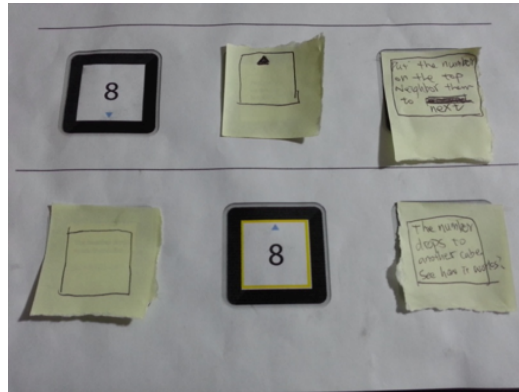
The third cube shows the picture and is used as selecting answer. However, the first three users spent some time to figure out how to choose in order to finish the first task, entering tutorial section. We then replace the picture with 'select' label in order to minimize confusions for the fourth user. The fourth user figured out how to enter tutorial section by the select label very quickly.
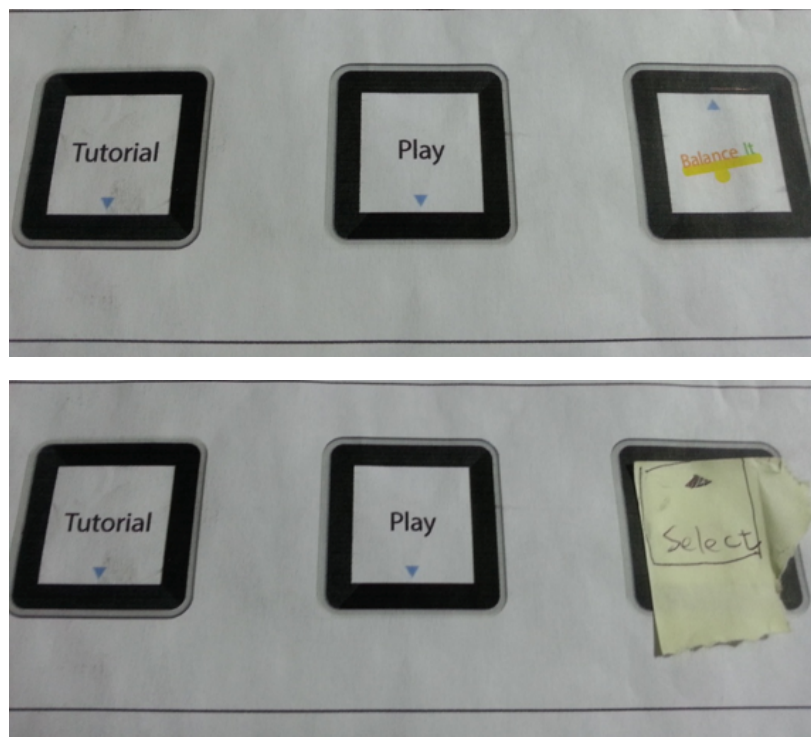
During this game is user want to exit current screen, they need to press two screens. However, in the pause status, they have to select when they are going. We used pause label for first three users. They were all confused at the pause label when they need to select the place they want to go. This concept to stack the answer to the pause cube is contradictory according

to their comments. Therefore, we changed the label to select before conducting the fourth testing. Finally, the fourth was not confused at this screen.
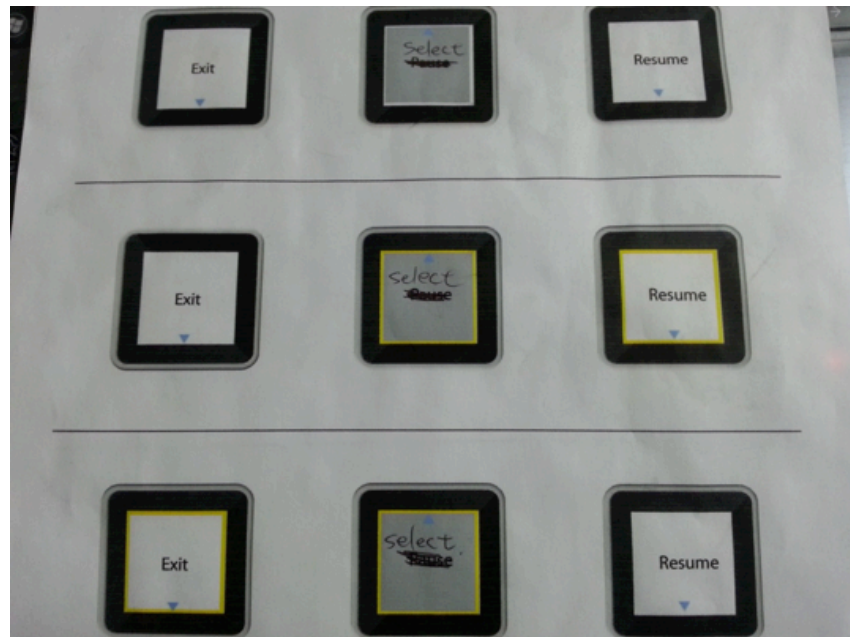
Lessons Learned

When designing application, the first thing is to understanding constrains of hardware just like the day we got this assignment. We watching the video to know how sifteo cube works.

The iterative process helps to improve design. We could see the content of this game became better after each refinement especially games. Since game uses a lot of cues to guide users, clearly label and intuitive figures are things users can rely on when playing a game.

When conducting user-testing, patterns are extremely important. Just like our user-testing, three users were confused at same screens. This kind of pattern gives us clues to problems which we need to improve.

Users became nervous when they cannot figure out what tasks ask them to do or they are told that the system is not responding. As facilitators, their responsibility is to soothe their emotion and elicit problems from their mind. These kind of techniques need to acquire by learning.

The test script is very important. To make sure the everything staying on right way. When we do test, a script is necessary to keep an interview and test on the track.

The soft wording in the testing is also necessary. I had used some strong words in the test, such as "right" and "wrong". The users could feel bad if I say "You're wrong." The wording I found is more soften, such as "You dis well, but you haven't touch the real reflection that I designed."