CATGAMES USER TESTING REPORT

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INTRODUCTION

1.1 Introduction of Design Challenge

The CATgames interface presented us with a threefold design challenge. First was the original challenge CATgames presented us: to design a prototyping interface for a broad-spectrum of tangible games. In this challenge we dealt with the complexity of prototyping games which didn't exist through the simplification of what a "game" is. We then designed our interface around the currently active CATgames objects, dice. CATgames later came to us and asked us to gear our development towards the prototyping of board games, which required a re-design of our initial interface, morphing our initial "sandbox" idea of combining objects and rules in favor of a tabbed interface, which still incorporated the sandbox idea. The second challenge was to cater this design towards teenage and young adults, instead of a much more computer-literate developer audience. As children aren't programmers, we found we had to simplify the implementation of rules like "roll again" or "double roll". As a conceptual model to aid us in this, and the adding of special tiles to the board, we used existing games as our precedent. Instead of adding them simply as rules, kept the concept from original games and added them as drag-and-drops onto an empty grid. For example, instead of implementing negative movement as a numerical value ("land on this square, move -5 squares) a snake in Snakes and Ladders was implemented as a tile which one drags between two different squares. Our third challenge came in designing into our paper prototype many of the interactions we wanted, such as drag and drop. Using the example given above, implementing snakes was a paper design challenge in that we couldn't pre-define the length of a snake. Doing so would defeat the purpose of the prototype.

1.2 Purpose and Rationale

The purpose of our testing is to see if our prototype was usable, and if we were successful in guiding our target audience through a difficult concept using our interface.

PROTOTYPE

Our paper prototype was designed on letter-sized paper to imitate the ratio and dimensions of a 1024x768 computer screen. We drew out the background of the screen along with File and Help at the top task bar. Screens were cut out with their corresponding button from the main button menu and placed on post-its so that they would be removable when the screen changes. With the drag and drop features, we drew the icons on post-it squares which would allow the tester to take the post-it and move, or drag to where they want on the interface. In sections where the user needed to indicate a path by drawing,

Tracing paper was placed on top so that they would be able to see what they are drawing on. We also had feedback pop-up windows to indicate the functions that were executed automatically by the system or when the user tried to access an area of the interface that we had not developed yet.

We paid attention to the aesthetics of our paper prototype because we understood that our user group, high school students aged 15 to 16, would respond to the interface according to how it appeared. If the interface appeared to be sloppy or unpolished, they would treat the user testing less seriously. But because it was clear that the prototype was developed with care and concern, our users responded accordingly and took the user testing sessions seriously.

note:
due to participants being under legal age, images are censored to protect their identities.

METHODS

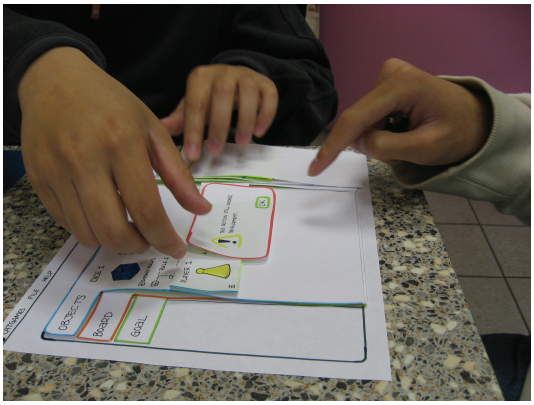
3.1 Participants

Participants were two girls and three boys, aged 15-16 at David Thompson High School. Participants were chosen for their proficiency with computers and computer interfaces. We tried to choose participants who rated themselves as moderate to expert computer users, as well as an even mix of boys and girls. The testers were primarily Asian, from middle-class families and (regardless of proficiency) regular access and use of a computer. The testers, on the whole, were studious and didn't expend extra energy on things like fashion, etc. During the testing, we asked them to describe their main uses of computers: 1 of the girls responded as a "gamer", and the boys felt they were proficient with computers, and played video games while waiting for their turn to be tested. They seemed familiar with normal basic and non-basic computer interactions, such as saving files, clicking and having menus appear, as well as interactions such as dragging and dropping and dragging to draw lines.

3.2 Apparatus

Aside from the paper prototype itself, our apparatus is as follows. We used 2

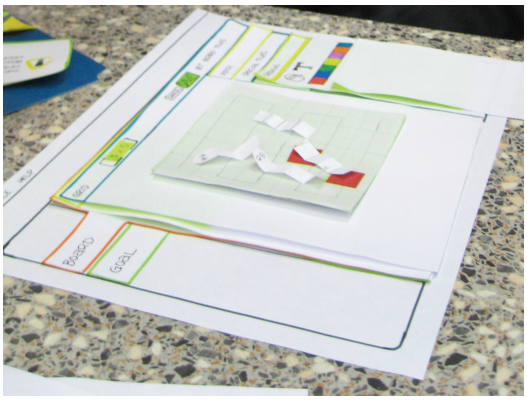
laptop computers, one for the observer's note-taking and one for the participants to fill out their post-test surveys. On those computers, we used basic text editors (notepad & OpenOffice) to conduct the observations and the surveys. To visually record our test subjects, we used a Canon PowerShot point-and-shoot camera, as well as description of actions and emotions in our observer's note-taking.



The next two tasks were focused on adding to the traditional game of Snakes and Ladders and implementing rules that would display the added abilities that the CATGames smart objects allow. The second task was to add a rule to the smart objects and the third task was the add the rule directly to the board.

Task 2:
We ask the Participant to pretend that Snakes and Ladders is too boring for his/her tastes, and to add a new rule to the game to spice things up: The rule added would be whenever a player rolls the dice, and the dice bounces during that roll, the player gets to move twice as many tiles. They were asked to add this rule to the dice using the interface.

Task 3:
We finally asked the participants to think of one more thing that will improve this game of snakes and ladders, and that is a special, "red ladder". The object-task added was whenever a player lands at the bottom of this "red ladder", once they climb up it, they get to roll again. The participants were directed to take one of their current ladders, make it red, and add the additional rule to the red ladder using the interface.



Game board with the modified 'red ladder' piece added.

PROCEDURES

We met up with the participants after school. We then gave a brief introduction to what we're doing, the type of test they'll be participating (paper prototyping) so they have a full understanding of what to expect. Participants were asked to sign the ethics consent form, read a brief introduction about the project, and was presented with their working task. We had a short question period before the usability test to assure that the participant understood what they had to do. The test was done in an isolated area where other participants waited at another location; this is to reduce the chance of gaining familiarity with the prototype. Participants were asked to treat the prototype like a computer interface, using their pointing finger like a mouse cursor and tapping for a clicking action. They were also asked to vocalize their thoughts, and what

they were doing with the interface.

The test area was set up with note takers, a facilitator, a human emulated computer and a work area for the participant. The participant had the task list next to them, so they may reference it. Facilitator encouraged the participants to speak aloud by asking questions; reason why they were confused, why they executed the task, and their instantaneous thoughts of the interface. Computer dealt with all the actions the user performed on the paper prototype. The computer also gave feedback to participants (eg. Tooltips, by speaking), they updated the screen accordingly and gave audio and visual feedback for errors. Visual feedback were the paper prototype where each piece was stuck onto the "work area" interface depending on where the user clicked. The note taker had a laptop-computer handy, used to record all actions the participants did, they also had a camera to take pictures of the entire process.

When we designed the paper prototype we had a specific sequence in mind. For most of the test, the participants followed closely to these steps (without aid) we had in mind. Sometimes, when they speak aloud, they offer their own intuitive, trivial interpretation of what the system should do (expectations). We accommodated these actions/feedback by proceeding with the test if the interpretation were both reasonable and defined by our paper prototype. An example is adjusting the board grid, originally we wanted the user to enter in 5x5, but we noticed that most user would rather drag a 5x5 grid. Because of this, we allowed such procedure to go though, as opposed to strictly forcing the user to type in 5x5. We allowed this because we wanted to have an interface that can accomplish various task in multitude of ways, like Photoshop.

PROCEDURES

Overall time:
Without actually using a stop-watch, we felt that the overall time it took the participant to complete a task was a measure of success: the less time they spend doing a task, the less their frustration with the interface was overall.

Time between steps:
Our observations showed that the longer a participant took between completing steps in a task, the more confused they were: we took this a measure of success in terms of having a natural mental model for the interface.

Learnability:
Many of our tasks and many of the tasks in the interface themselves involve using the same menus multiple times. We therefore felt that Learnability was a priority in our interface and in our testing.
From the five user tests that we conducted, some of the key results that stood

out overall were the following:

RESULTS

Users had the most trouble on the second task of adding rules to the objects based on the amount of time that it took them, their actions and expressions, or by their comments.

All of the users also had to frequently be redirected to their tasks, especially when they were confused or when they took a considerable amount of time on one task. We found that this may have to do with the user group and their attention span, which we will have to take into careful consideration throughout our prototyping process.

The users took a considerable amount of time reading the rules menus that are icon based. The interface may have too many ambiguous icons for this user group.

One of the main menus, Goals, was frequently confused for Rules. The Goals menu was originally for setting what determines the winning factor of the game (ie. Highest score, time limit, reach end of board, etc.). When the users were trying to implement the rules from the second task, many of them tried to go into the Goals panels.

All the users had a hard time grasping **the concept of implementing rules to objects versus implementing the rules to the board.** When asked to do the third task of adding a rule to the ladder on the board, almost all of them attempted to return to the objects manager where they had just implemented the rules to their smart objects.

It was interesting to note the differences between the male and female participants. The boys were very task oriented but had more trouble figuring out the tasks. On the other hand, the girls were often driven by aesthetics but they were also able to go through the tasks fairly quickly.

The first task was, on the whole, performed very well. The participants were able to grasp the board designing task very quick. The more observant users would actually specify the 5x5 section, others just dragged and dropped their board dimension.

DISCUSSION

The low-fi experiment taught us many things. Particularly of note was the different ways the boys and girls interacted with the interface. We did not expect that gender would factor into the way that our interface was received,

and were very specific in the steps involved in each task. However, we found that the boys and girl reacted very differently to the interface.

The boys found themselves fairly focused on the task, but confused. We have come to the conclusion that they were overwhelmed by what they had to do: conceptually, CATgames is large, and the introduction we gave to the project was almost a page long. In tandem with tasks which were conceptually simple, but involved many steps, the boys found themselves with long lists of things to do, and particularly in our first participant, Mason, the stress of this situation showed. The presentation of an unfamiliar idea, paper prototyping, as well as user testing and being observed weighed on the minds of all our participants. We feel that this is partially due to their age: while 15 year old are used to being watched as a part of large groups in classes, individual, focused observation by a small group of people took them out of their normal mental state. While this is an issue with all user testing, we believe it was magnified in the case of our users due to their age. The boys in comparison to the girls, however, remained much more focused on the task, and appeared more interested in the idea of adding rules and making a game. While the girls also added rules, they again strayed towards creativity: though they read the task, and knew what rule they had to apply in scenario 2, one of the girls immediately tried to make her own rule.

The girls, in contrast, seemed to want more creativity in the interface. Without prompting and almost immediately in the first two tasks, the girls both went for the “Design” menu, and both tried to decorate their boards, with the only motivating factor in this decision being aesthetics. The girls were less confused with the overall interface, but in this search for creativity often forgot the task: both drew the paths immediately, but forgot to adjust the grid to 5x5 as the scenario stated. The usability test, and our own discussion within the group afterwards about how we use interfaces has lead us to the conclusion that the genders, regardless of age use different interfaces very differently. If possible, we'd like to bring into balance the different types of creativity the genders bring to game design: visual design and aesthetics for the girls, and flexibility and freedom in the rules interface for boys.

Something else we noticed was that, conceptually, both the boys and the girls felt that "rules" were a whole. While we conceptualized rules as belonging to objects and to the board, when our participants tried to add rules to the board in scenario 3, all of the users got somewhat to very confused when it came to locating the rules on the board. All of the boys, at some point during scenario 3, went back to the "objects" pane to try and add the rules. They conceptualized the Red Ladder as an object to which they could add rules to: "when I want to add a rule, I need something that symbolizes it. So I guess dragging

the original thing itself to where the rules are would bring them together."
Since we decided to take on the CATgames project, something that we as a group have struggled to conceptualize is rules, and how to associate them with different parts of the game. Due to the response from our users, and the different suggestions they gave us (one of the boys mentioned the Starcraft level designer) something that we will be considering from scratch is the rules part of our interface.

APPENDIX - USER INTERVIEW QUESTIONS

Interviewee #1
1. How old are you?
16

2. If you were able to make a physical (non-video) game, what would you make?
A game that requires like.. body skills..?..

3. How would you rate your proficiency with computers?
Intermediate

4. What physical games do you enjoy playing? (ie. board games, cards, billiards, foosball, etc.)
thinking games (any kinds), big two, sparring...

5. Do you always play by the rules when playing board games?
Most of the time
Comment: Well, for games that take forever (ie. Monopoly), we'd usually take out the rules that make it forever.. or we'd just play the buying part.

6. What do you think is required to make a game of dodgeball? both in terms of physical objects, rules, and links between rules.
A ball and people. I personally like "jailbreak" rules, so a jail would probably be necessary.

Interviewee #2
1. How old are you?
15

2. If you were able to make a physical (non-video) game, what would you make?
cops and robbers

3. How would you rate your proficiency with computers?
Basic

4. What physical games do you enjoy playing? (ie. board games, cards, billiards, foosball, etc.)
Billiards

5. Do you always play by the rules when playing board games?
Most of the time

6. What do you think is required to make a game of dodgeball? both in terms of physical objects, rules, and links between rules.
enough dodgeballs... (atleast half the amount of people playing) Rules: No head shots... catching the ball of an opponent mean they are out. When out, go to the other side of the gym/room and u are freed when someone from your team throws you a dodgeball which u succuessfully catch without interference.

Interviewee #3
1. How old are you?
17

2. If you were able to make a physical (non-video) game, what would you make?
not sure

3. How would you rate your proficiency with computers?
Intermediate

4. What physical games do you enjoy playing? (ie. board games, cards, billiards, foosball, etc.)
Badminton

5. Do you always play by the rules when playing board games?
Most of the time

6. What do you think is required to make a game of dodgeball? both in terms of physical objects, rules, and links between rules.
- the dodgeballs - rules - players / teams - a court

Interviewee #4
1. How old are you?
14

2. If you were able to make a physical (non-video) game, what would you make?
if i can make a physical game i would make a game that dodgeball and basketball would be related.

3. How would you rate your proficiency with computers?
Advanced

4. What physical games do you enjoy playing? (ie. board games, cards, billiards, foosball, etc.)
volleyball, badminton

5. Do you always play by the rules when playing board games?
Always

6. What do you think is required to make a game of dodgeball? both in terms of physical objects, rules, and links between rules.
i think to make a game of dodgeball is get a ton of soft balls and the rules to hit the person above the waist, and to get everyone out.

Interviewee #5
1. How old are you?
15

2. If you were able to make a physical (non-video) game, what would you make?
EXTREME BASKETBALL!

3. How would you rate your proficiency with computers?
Basic

4. What physical games do you enjoy playing? (ie. board games, cards, billiards, foosball, etc.)
BASKETBALLL

5. Do you always play by the rules when playing board games?
Sometimes
Comment: money...i like to take more then required

6. What do you think is required to make a game of dodgeball? both in terms of physical objects, rules, and links between rules.
Balls