**Raffi and Bryce’s**

**Super Duper Report**

# OVERVIEW

Our Game, Math Gladiator is directed at pre teens who wish to better their mathematical skills. By being involved in an animated, non graphic combat system we hope that our audience will find using our game engaging and fun as well as better their understanding of the laws of mathematics. The mechanics of our game revolve around a turn based system in which the user answers a math question to do damage to the opponent. When the user or the opponent reaches zero, the game is over.

## Changes

The only visual changes that we have made since assignment 2 is that now users have to start playing from level one and unlock further levels by beating the previous ones. We have made other back end changes, to record and store information and tweaked how some tasks are completed. A healthbar was also added as a visual representation of the player and enemies health.

# DATA COLLECTION

## Questions to Address

The aspects of our game that we are interested in observing directly revolve around the users experience. We want to determine:

1. how far the average user progresses through the game for each mathematical operation (addition, subtraction ect).
2. If the levels of difficulty of the game are appropriate for our users.
3. If users used the tutorial or not
4. If users found the app entertaining
5. If the users learned from our game

These are the same questions as stated in Assignment 2 except for the addition of question five.

## 2.2.Data Collected

To determine the first four questions we used the tactics stated in assignment two. To answer question 1 from the previous section all we would have to do is record the level of difficulty the user achieved for each section. Question 2 requires more observational data, including the number of questions asked in each level in each section and recording how many were right and wrong. We would also record the total time spent on each section. This will allow us to see the rate of change between right and wrong answers as the levels increase. Question 3 merely requires the logging of time spent of the tutorial. Question 4 requires the logging of total time spent on the app. In theory, if users spend large amounts of time using the app, it is indicative that they enjoy it, or at least feel that it is worth spending time on.

In order to answer question five we altered the method of collecting the data from question 2. We no longer hold one set of data for each level in each section, now after the user finishes a level then that information gets recorded and does not override any other information. This allows us to see if the user has improved when finishing a level by comparing the old and new data.

## 3.TESTING

Jamie was one of the users who tested our game. She was instructed to at least play till level 5 and then she could stop there or continue playing if she wished. We got the users to play the game on the corona simulator since it served easy access to the data that we collected. Jamie is henceforth referred to as user A.

Jeremy was the Second user who tested our game. He was instructed to play the game to at least level 7, and to lose at least one level so we could demonstrate losing statistics. Jeremy is henceforth referred to as user B.

## 3.1 User A

The results of user A’s data is shown below.

Figure 1 A

Figure 2 A

Figure 3 A

Figure 1 shows the number of questions asked sided with the number of questions answered correctly on each level. In this case the user only decided to play up to level 6. The graph shows that the user only gets a maximum of one question wrong and this is not surprising since the user is far beyond the age range of the game. The incorrect questions may be due to a miscalculation or an accidental click but it is clear that the user understands the concepts and would have gotten board quickly. This promotes the idea of having the game adapt to peoples scores and give harder questions to people correctly answering more frequently.

Figure 2 shows the time spent on each question. This trend is not what we are looking for but due to the current implementation of the program, is to be expected. Currently as users progress through levels they have a chance of encountering harder problems but they can encounter easier ones from earlier levels as well. As we can see from the graph the user is encountering hard questions making her take a little longer on each level. On level five and six, by chance, she encounters some easier questions allowing her to answer quicker. In accommodation, level three and four have another question, taking up more time. In our final implementation we will make sure the user is garenteed to encounter harder questions and will not see easier ones. With this implementation we would expect to see more of a positive parabolic shape with time increasing on each level compared to the level before.

Figure 3 holds the distribution of time spent throughout the game. We can see that the user spent a total of

1) 373 seconds (6 minutes and 13 seconds) playing the game

2) 12 seconds in the tutorial

3) 20 seconds navigating throughout the app in total

4) 341 (5 minutes and 41 seconds) playing the levels

(times are stated like this because not all the titles fit)

This data shows what we were hoping to see, that most of the time is spent playing the game and little is spent navigating. We do need in incorporate a “Play next level” button once the user completes a level and this is drastically reduce navigation time as the user wont have to return to the home page after every level. Time spent in the tutorial is as expected. Our tutorial is still only one screen so we do expect the time to increase in the future but it is our goal to keep is as minimal as possible seeing as pre teens have a short attention span.

## 3.2 User B

The results from user B’s data is shown below.

Figure 1 B

Figure 2 B

Figure 3 B

## 3.3 Summery Of Results

Our results are what was expected from two adult users. Very few questions were answered incorrectly , except in the case where user B was asked to intentionally lose a level. In the case of user B, one statistic that stand out is the 273 seconds navigating the game. This can be explained, as the user was watching TV at the time they played the game and kept getting distracted while in the menu screen.

Our results show the progression of two users. It is important to note that both users are adults and wouldn’t be considered part of our target audience. With that in mind, the data collected does tell us a few important facts. First, the data shows that there are no levels that are too difficult, or that no levels are too significant of a jump in difficulty. Secondly, and more importantly, the data shows our ability to easily gather user data. This would allow us to analyze any data gathered by more, age appropriate users. This, in turn, would allow us to update and improve the game accordingly.