

Trivial Treasure

New Mexico Supercomputing Challenge

Final Report

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Team #47

Hope Christian School

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Table of Contents

Introduction.....	1
Method.....	1-2
Data.....	2-5
Discussion.....	5-6
Conclusion.....	6
Bibliography and Citations.....	7
Appendixes.....	8-9

Introduction:

The decline of test scores in high schools across the United States is a big problem in our society today. We hypothesize that if the students were to grow up and enjoy school then they would have more interest in what they are learning. They would spend more time studying which would result in higher test scores. We read several reports on the subject. This directed us to our problem statement. We came up with an idea to create a study device that will get students interested in school at an early age.

Method:

We worked with a classroom of fifth graders for our research. Though we were unable to get a larger test sample size of thirty (30) students, we were able to get test results from twenty-one (21) students. We first gave them a parental release allowing us to use their child's data in our report and presentation. We developed a survey to collect preliminary data on the students before we tested them. The survey had such questions as: favorite subject, least favorite subject, do they play video games, do they enjoy video games, and how many hours do you play video in a one weeks time. We then gathered all the data into an excel worksheet and turned it into a graph. The three biggest subjects were math, science, and history in both favorite and least favorite. We decided to use these three subjects to develop an interactive game. For the game itself, we decided to use programming software called Alice.

Alice is a 3D programming software and language that emphasizes drag and drop

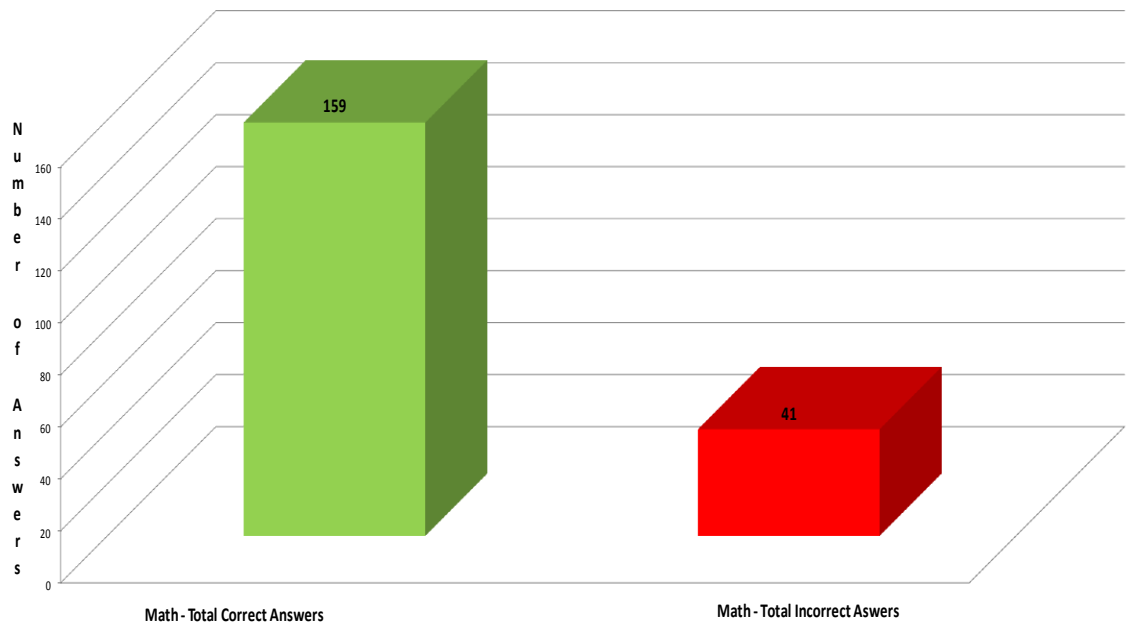
properties. It has Java based coding that allows for many basic functions. It allowed us to create a 3D, interactive world for the students to use. Alice which was a whole new language for us was much easier for us to learn because of the drag and drop properties.

Our main use of Alice was in programming the game itself. Initially, we were going to link C++ with a visual software but were unable to figure that out. After some research, we found Alice and discovered that it was exactly the language we needed. The whole game is programmed in Alice. It is fairly simple in the structure of the code. Another advantage Alice provided was that we didn't have to do any 3D modeling. Alice already contained what we needed. This allowed us to create the game much more quickly and efficiently while decreasing the total file size of the game.

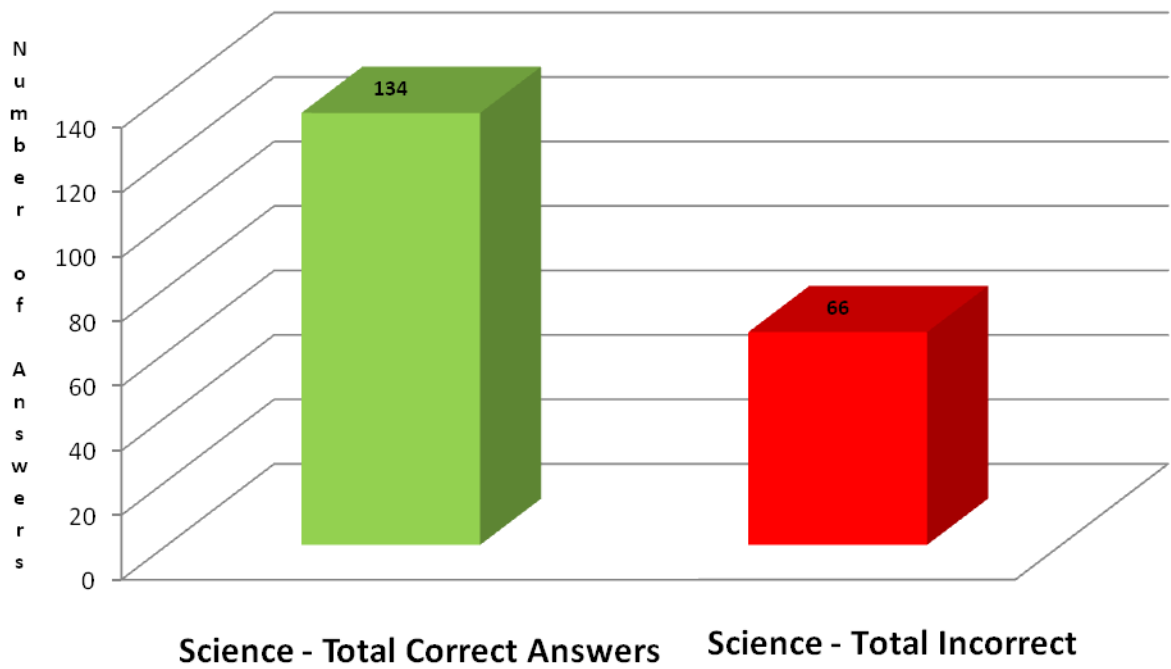
Data:

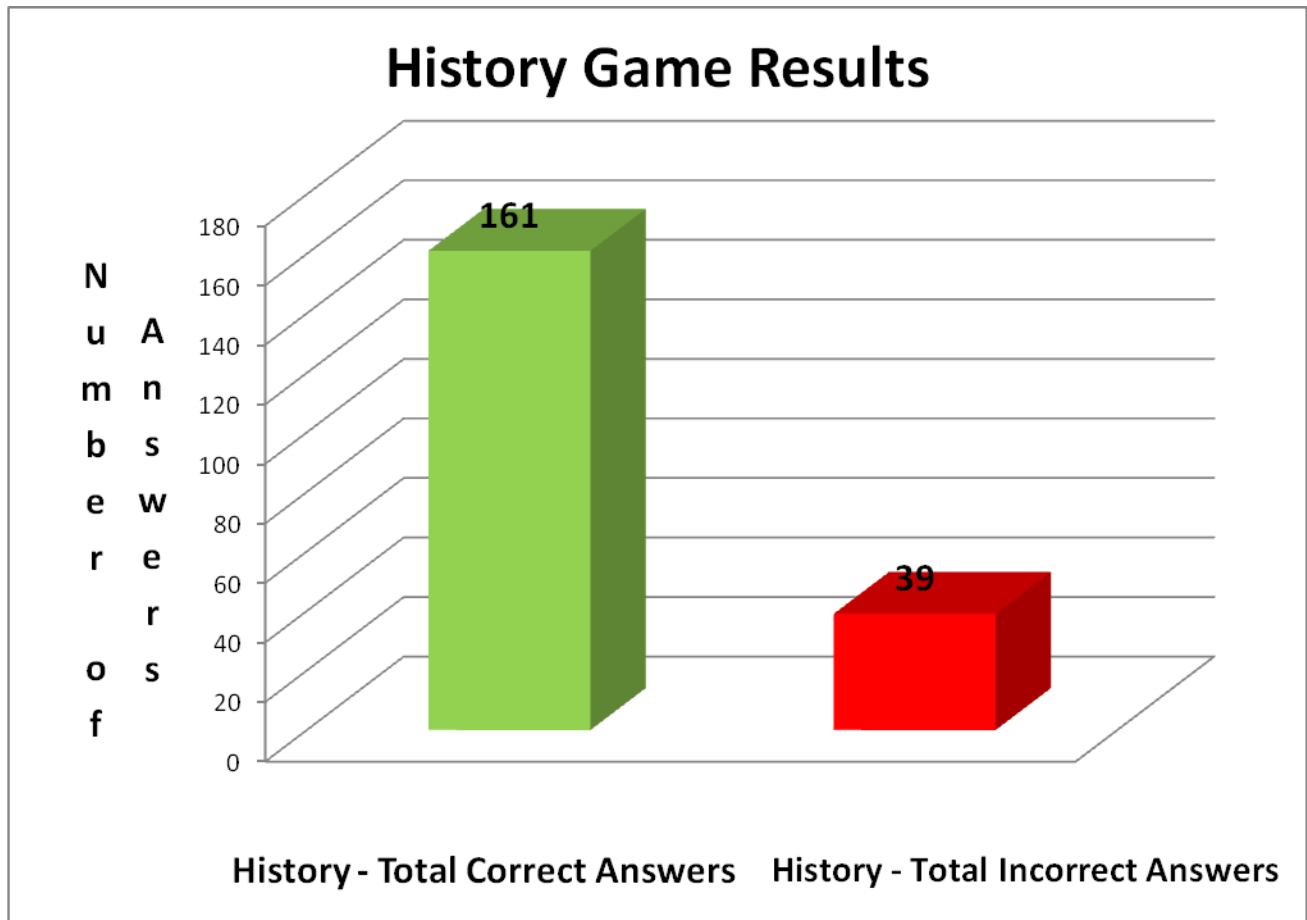
Our test group played the inactive game in one day. The test group was rather small, a total of 21 students. The students played the game answering the questions on Math, Science and History. We recorded their scores. These scores were put on an Excel Spreadsheet with three (3) graphs, one for each subject. The graphs are as follows.

Math Game Results



Science Game Results





The graphs show how many total correct answers were achieved. There were a total of thirty (30) questions per student and we tested twenty-one (21) students. The average number of correct answers per students was 22.7. Not one student got all questions correct in all three subjects, but students did get all the questions correct in one or two of the subjects.

We got an average number of correct answers for each subject. The average number of questions correct for Math was 7.57 out of ten (10) questions. The average number of the questions answered correctly for Science was 6.38 out of ten (10) questions.

History had an average of 7.67 answers correct out of ten (10) questions. This showed that the students had their strengths and weaknesses in certain areas of study. Some students prefer Math over History and Science or any other combination of like and dislike between these three.

At the end of the testing, the students were interviewed to receive some comments and statements from them. All of the comments were great sources of constructive criticism. The main problem that the students had was using the interface correctly. They thought the way in which to choose an answer was confusing at first. Once they figured it out and got the hang of using this interface, they went through the game with relative ease.

Discussion:

Over the course of our project, we had to face many challenges with the game and Alice. Since we didn't plan to use Alice in the beginning, we had to learn an entirely new language by ourselves without any outside instruction. We also were having trouble creating questions in the choice format. We finally were able to make the questions in a True/False format. However, we consulted with our mentor and she was able to give us direction on how to approach a multiple choice format. This allowed us to enhance the game as well as the end quality of our data by incorporating a multiple choice format.

In the next year, we are going to expand the program and make it more effective. We are planning to make it with a more user friendly interface. We are also planning to make it so that the questions come up at random and are not in the same order for the entire game. One other thing that we tried to work on this year but were not very successful was a score keeper. We

have been working on this from the beginning and have decided to leave it out for this phase of the game. Next year, we are hoping to make a huge breakthrough with this area and get this part up and going for Phase Two of the game.

Conclusion:

The results showed that the students, for the most part, did really well on the game. They had more answers correct than incorrect. The total average of answers correct answers per student was 22.7. The students thought the game was very fun and interesting. They thought that the interface was a bit tough to use. Once they got used to it, the test subjects did fine.

The students thought that the game was a rather helpful review. The questions came from material that was covered last semester so it took some memory to do well on our game. The students gave a few comments that helped us come to this conclusion. The biggest problem was that we were unable to get a large testing group. If we were able to get a larger testing group, then we would be able to have better results and more data to show. This also could have changed our results.

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Appendixes:

This is an example of some Alice code.

world.my first method ()
A = a , B = b , C = c , D = d
// Math Question 2 (Example)
Do in order
Do together
print What does DECA mean?
print (a) 10 (b) 100 (c) 1000
If ((ask user for a string question = What does DECA mean? (a) 10 (b) 100 (c) 1000) == A)
Do together
print Correct!
Loop 3 times times
Do in order
Do together
sphere set isShowing to true
sphere2 set isShowing to true
halfTorus set isShowing to true
Do together
sphere set isShowing to false
sphere2 set isShowing to false
halfTorus set isShowing to false
Else
Do together
print Wrong.
Loop 3 times times
Do in order
Do together
sphere3 set isShowing to true
sphere4 set isShowing to true
halfTorus2 set isShowing to true
Do together
sphere3 set isShowing to false
sphere4 set isShowing to false

							halfTorus2 set isShowing to false
Wait 1 second							