CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
J0701

Project Title
Does Time of Day Impact Students' Test Performance?

Abstract

Objectives/Goals
The objective of this experiment was to discover if time of day had an effect on performance of eighth graders on a multiplication test.

Methods/Materials
Two different tests with 40 one digit-by-three-digit multiplication problems were designed for this experiment. Both tests had the same questions in a different order: one was used for morning testing; the other was used for afternoon testing. On the front of the test were self-assessment questions on the student's level of fatigue and preferred time of day for optimal test performance. The tests were then administered to about 175 students in five separate classes, once in the morning and once in the afternoon. Students were given four minutes (on a digital timer) to complete as many questions as possible. The tests were graded, and the data was entered into spreadsheets electronically. Each student's individual score in the morning and afternoon was compared, and analysis was performed on all the students as a cohort.

Results
Sixty percent of students performed best in the morning, 31% performed best in the afternoon and 9% performed equally well at both times of day. Students on average performed 12.5% better in the morning than in the afternoon. Using the self-assessment questions to analyze the data, neither the students' level of fatigue nor their preferred testing time of day seemed to impact the results.

Conclusions/Discussion
Previous research has concluded that students generally performed better in the afternoon or that time of day had no impact on performance. The results of this project are unique because they have shown that students perform better in the morning. This experiment suggests that teachers should test middle school students in the morning and that the STAR tests should be administered in the morning.

Summary Statement
This experiment tested eighth grade students with multiplication tests to discover whether time of day affected the students' performance.

Help Received
Mrs.Gillum helped me through this project; Mrs.Rick reviewed my math test; my parents taught me how use Excel to do data analysis and graphing and proofread my work; and Mr.Honda, Mr.Rick and Mrs.Gillum allowed me to test their classes.