CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
Alejandro G. Gonzalez

Project Number
34833

Project Title
Finding a Relationship between Toys and STEM Careers

Abstract

Objectives/Goals
To determine if there is a relationship between childhood toys and STEM careers. Studies have shown that there is a very low percentage of our youth pursuing a STEM careers. Could childhood toys influence a child into a STEM career?

Methods/Materials
I will develop and administer a survey to adults. Surveys will be separated into 2 groups, STEM and Non-STEM surveys. Participants will be identified as having a STEM career if they attended college, completed a year of a college science class, and completed a year of a college calculus class. In the survey these adults will be asked to rank the category of toy they played with most frequently. The categories of toys are: building toys; collaborative toys; comfort toys; performance vehicle toys; role-play toys; skill toys; and strategic toys. My hypothesis is that adults in STEM careers will chose the category of building toys as the toys they played with most frequently during their childhood.

Results
Looking at the quantitative data the toy category #building toys# was selected more often than the other categories of toys by adults in STEM careers. After surveying 628 adults, 317 of those adults were identified as having a STEM career. Of these 317 STEM participants 35% selected building toys as the category of toy they played with most frequently in their childhood. The percentages for the other categories were as follows: 22% collaborative toys; 2% comfort toys; 10% performance vehicle toys; 16% role-play toys; 8% skill toys; and 6% strategic toys. Using the one proportion z-test, the data shows that building toys will have a p-value of 0.9999 which has a z-value of -5.223. This shows that the probability of there being a relationship between STEM careers and building toys alone is unlikely.

Conclusions/Discussion
My hypothesis is partially incorrect. The qualitative data shows that there are three toy categories that show a relationship with STEM careers. These toy categories are: building toys; collaborative toys; and performance vehicle toys. If these three toy categories are combined then the quantitative data of these three toy categories shows a definite relationship between STEM careers and toys. These three categories of toys will have a p-value of 1.105 X 10-10 which has a z-value of 6.347. Parents and educators should encourage building toys, collaboration toys, and performance vehicle toys to help foster a STEM career.

Summary Statement
To determine if there is a relationship between childhood toys and STEM careers.

Help Received
Dr. McGregor and Dr. Simani looked over the surveys before I distributed them. Mr. Ortiz, a statistics teacher at my school, helped me apply and understand the statistics used in my project.