



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

<b>Name(s)</b> <b>Alejandro G. Gonzalez</b>	<b>Project Number</b> <b>S0412</b>
<b>Project Title</b> <b>Finding a Relationship between Toys and STEM Careers</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> 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?</p> <p><b>Methods/Materials</b> 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.</p> <p><b>Results</b> 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.</p> <p><b>Conclusions/Discussion</b> 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 <math>1.105 \times 10^{-10}</math> 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.</p>	
<b>Summary Statement</b> To determine if there is a relationship between childhood toys and STEM careers.	
<b>Help Received</b> 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.	