CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

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Project Number

J0311

Project Title

Optical Illusions: Do Gifted Students See Optical Illusions Differently from Average Students?

Abstract

Objectives/Goals

Our objective was to study the difference in the perceptions of gifted students and average students. We compared responses of gifted and average labeled students, based on academic performance and school standards, to pictures of optical illusions to determine of there is a difference in how they perceive these ambiguous pictures.

Methods/Materials

We copied 6 optical illusions in black and white and lamenated them for protection. We questioned 20 gifted students, after receiving parental permission, and 20 average students about what they first see in each of the 6 pictures. Each subject was tested individually and their comments were kept confidential.

Results

We concluded from the experiment that intelligence does not significantly affect how a young subject views an optical illusion. When comparing gifted and average student responses, it was basically 50/50 whether the groups agreed with each other. Rather, we determined life experiences play a much greater role in what an individual sees instead of intelligence.

Conclusions/Discussion

By analyzing our results, we found our hypothesis, that gifted subjects will perceive illusions differently than average subjects, was incorrect. There was no clear difference in responses based on the label of the two groups. Using the research we conducted, we analyzed the data to explain how the brain tries to solve an illusion. The research, and our experiment, both indicate that background experiences work with the eyes to fill in ambiguous pictures so they make sense to the brain. Therefore, life experiences rather than intelligence show a difference in how each individual perceives an illusion.

Summary Statement

We tested gifted and average students to determine how intelligence levels affect perception of optical illusions.

Help Received

Our mothers helped type pieces of the report. Our teacher taught us the scientific process and supervised the testing to maintain anonymity and respect for individuals. She also helped cut the tag board since it is thick and can be dangerous. We discussed how to analyze the data we acquired with our teacher and a