CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
J0327

Project Title
Development of Conservation of Liquid in Preschool Children

Abstract

Objectives/Goals
The objective of this project is to determine whether children are beginning to develop a sense of conservation of liquid during the age range of 3, 4 and 5 years.

Methods/Materials
Thirty children participated in this project: ten 3 year olds, ten 4 year olds and ten 5 year olds. Each child was presented with two identical, clear glass containers. An equal volume of blue water was poured into each. The child was asked to determine whether each glass has the same volume, or whether one has more. Then the child watched as one of these containers of blue water was poured into a third container which was also clear glass, but was much taller and thinner than the original pair. The tall, thin container of blue water was compared to the original container of blue water, which was shorter and wider. The child was asked to determine whether this new pair has the same volume, or whether one has more.

Results
Data for the three age groups fell into two categories: overall scores (comparing equal volumes of liquid in identical containers) and conservation scores (comparing equal volumes of liquid in containers of different shapes). On overall scores, 4 year olds were slightly higher than 3 year olds and 5 year olds were very significantly higher than 4 year olds or 3 year olds. On conservation scores, 3 year olds and 4 year olds were identical, while 5 year olds were slightly higher than the younger groups.

Conclusions/Discussion
Data shows that the ability to judge same or different is not the same as the ability to recognize that the volume of liquid remains the same when it is transferred into a container of different size and shape. The data shows that judging same or different is clearly developing between ages 4 and 5. However, data suggests that, although conservation of volume of liquid is slightly stronger in 5 year olds, none of these groups have fully achieved that ability. Therefore, the hypothesis is rejected. Further research comparing 5 year olds, 6 year olds and 7 year olds is recommended.

Summary Statement
My project was to investigate when preschool children begin to get the idea of conservation of volume of liquid.

Help Received
My father helped me with the statistics, the graphs and thinking about the results. My mother helped me research the paper. My science teacher guided me with the write-up process and scientific method. My former prechool teacher helped me recruit my subjects.