



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Dana C. Pede	Project Number J1719
Project Title How Much Is Too Much? Are Students' Backpacks Too Heavy?	
Abstract Objectives/Goals I noticed on some days my school backpack was very heavy, and I noticed my friends complaining of the same problem. This project was designed to figure out if students routinely carry too much weight in their backpacks. I wanted to raise awareness, so that students, parents, and teachers would become conscious of how the students might be putting their backs at risk. Methods/Materials In this experiment, 213 weights of students and their backpacks were recorded and compared to national recommendations. The subjects were in grades 4-8. The backpack weights were divided by the subjects' body weights to calculate the backpack weights as a percentage of the child's body weight. A digital scale was used to record students weights, and a Microsoft Excel spreadsheet was used to calculate the percentage. Results 51% of the fourth and fifth grade subjects carried loads that exceeded 15% of their body weight. 48% of the middle school subjects also carried loads that were more than 15% of their body weight. Conclusions/Discussion Many health and chiropractic associations recommend carrying loads of no more than either 10% or 15% of the child's body weight, but the results show that many students may be putting their backs at risk by carrying too much. Approximately half of all the subjects tested carried a load that exceeded 15% of their body weight.	
Summary Statement In this experiment, 213 weights of students and their backpacks were recorded and compared to national recommendations.	
Help Received Parents helped format report and record data; Teacher helped improve report.	