



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Joshua E. Eyre	Project Number J1205
Project Title Can You Hear Me Now?	
Abstract Objectives/Goals The purpose of this project is to determine whether my sister, who has mild hearing loss, can hear better without hearing assistance, with hearing aids alone, with her desktop speaker system alone, or with both hearing devices used together, when in a classroom-like setting. Methods/Materials First, the decibel levels in my sister's classroom were tested and found to be between 40-80 dB, consistent with published studies. Then, with background noise set within the lowest decibel range (40-50 dB), I tested my sister's ability to hear and correctly repeat 50 phonetically balanced words without the use of any hearing devices. I then repeated this procedure and changed the independent variable by having her use hearing aids alone, her desktop speaker system alone, and then using both her hearing aids and desktop speaker system together. This process was repeated 3 times with the background noise set at increasingly higher decibel ranges. The dependent variable was measured by how many words she repeated correctly out of fifty. Results The use of the desktop speaker system alone either improved or did not hurt her hearing capability. Any use of hearing aids reduced her hearing capability. With increased levels of background noise, the desktop speaker system dramatically improved her hearing. Surprisingly, I determined that hearing aids did not benefit my sister when there is background noise. Conclusions/Discussion I believe that the data was accurate, precise, and could be reproduced easily with the same subject. If this experiment were to be repeated, I would have both a man and a woman speaking each word list to see if the patterns are the same at different frequencies. This could be important since some people have hearing loss only in higher frequencies and some have hearing loss in the lower frequencies. Another change would be to see if changing the volume parameters of the background noise or the volume of the live speaker makes a difference in the overall patterns or just the scores in general.	
Summary Statement Since my sister, who has mild hearing loss, has trouble hearing classroom instruction, this experiment was designed to test which device would allow her to best understand classroom instruction in the presence of background noise.	
Help Received Father helped create graphs; Parents proof read report; Mother helped cut out objects for the presentation board; Mother and Sister participated in experiment as speaker and test subject, respectively.	