CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)

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Project Number

S1402

Project Title

Can You Hear the Mo-skee-to?

Abstract

Objectives/Goals

In this project, you will discover how the ear works. People will hear a variety of different frequencies played through a computer using audio software and depending on the condition of the inner and outer hairs in one's ear, they may or may not be able to detect the pitch.

Methods/Materials

Computer, speakers, audio software, human test subjects, paper, pencils, and a printer.
Step one: Find a good audio program online where you can download a wide variety of frequencies (ranging from 8 khz to 22.4 khz).
Step two: Recruit test subjects in 4 different age groups (13-18, 19-30, 31-40, and 41-55).
Step three: Give a basic hearing test involving voice comprehension.
Step four: Use audio program to test the subject's ability to hear different frequencies.
Step five: Record results on paper and later put into a Microsoft Excel program.
Step six: Use data to make charts and graphs on Microsoft Excel.
Step Seven: Print results and data.

Results

The hearing of the different mosquito ring tones decreased from ages 31-40.

Conclusions/Discussion

We were able to test the different age groups and it is determined that most people over 40 cannot hear the mosquito ringtone at 14.9 khz. Based on this information, our hypothesis was correct. There are some experimental errors however. We were unable to get equipment such as headphones to work with the software, so we had to rely on the computer#s speakers to carry the sound to the subject#s ears. Another source of error was that we forgot to ask people if they had a case of hearing loss or listened to music or to the radio with high volume. This could have meant that their inner and outer hair cells were partially or completely damaged and were unable to pick up the high frequencies we played on our audio software. Through these possible experimental errors, we learned that next time we need to perform more thorough tests of the subjects before the final test. We also need to find a way to hook up headphones to our computer so the ringtone is isolated to the subject#s ears. Through this experiment, we learned that there are frequencies that may or may not be heard based on the age of the subject. This information proves to be useful to most teenagers trying to get away with using their cell phones in class. The only information they need is their teacher#s age, which is usually classified information.

Summary Statement

We are trying to determine the aproximate age at which people are unable to hear the mosquito ringtone.

Help Received

Neighbors, family and friends helped with our sample size