



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Gabriela Munoz	Project Number J1220
Project Title Effects of Background Light Intensity on Eye Fatigue	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this project is to test which surrounding light intensity would cause greater eye fatigue while on electronics.</p> <p>Methods In this project, three subjects read the Snellen Chart using their right, left, and both eyes to measure eye fatigue. Each subject read line by line until he or she could not read anymore letters. Then, each subject read for 30 minutes on their electronic device. Three different background light intensities were used: 100%, 50% and 1%. To evaluate eye fatigue, the subjects were asked to reread the Snellen Chart using their right, left, and both eyes.</p> <p>Results The amount of eye fatigue was determined by the percent accuracy calculated when reading the Snellen Chart. When both eyes were evaluated there was less eye fatigue at the lowest light intensity. However, when the individual eyes were tested, there was less eye fatigue at the highest light intensity. In addition, the analysis shows that our eyes work more efficiently in brighter or dimmer light but have, on average, the most eye fatigue in between light intensities.</p> <p>Conclusions The hypothesis was that the dimmest background light intensity would affect eye fatigue the most while using electronics. The data did not support my hypothesis as the analysis shows, on average, the most eye strain was caused by reading at the in between intensity. Based on the data, the recommended intensity to read at is at least 49.6 lux. I did this experiment because I wanted to see if there was another way to decrease eye fatigue that individuals could control and not be dependent on electronic companies.</p>	
Summary Statement This project was done to evaluate which surrounding light intensity would cause greater eye fatigue while using electronics.	
Help Received I performed and designed the experiment myself. My science teacher, Marcia Nogueira, and Dr. Lorena Barron helped review my results.	