



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Paloma Kasad; Emilio Vizcaino	Project Number J0409
Project Title Technology's Blue Light and Its Effect on Our Sleep	
<p style="text-align: center;">Abstract</p> <p>Objectives The purpose of this project is to find out what will help people all over the world get better and improved sleep. 95% of US citizens use some sort of technology before bed, and studies have shown that exposure to blue light or technology causes a drop in melatonin. Melatonin is the chemical in your body that helps the body fall asleep, so if a person is exposed to a blue light emitting screen for 2 hours before bed, then they will wake up feeling 30% more tired than normal and they will feel groggy in the morning because when you go on technology your melatonin levels drop. The variables for this project were exposure to light and no exposure to light. The variable that was manipulated in these tests was the light levels from technology, 5 nights of no exposure and 5 nights of maximum exposure. The way the variables were measured was that all the subjects filled out a survey about how they slept. After multiple tests, over a span of ten days testing 2 hours before bed, it was found that the most prominent difference between no exposure and exposure to this light is the level of grogginess. As a result, it was found that most subjects found it easier to fall asleep at night when there was no light exposure in the room, but it was a slight difference. In conclusion, it was found that there is a subtle difference in spending time on a screen and not spending time on a screen. The way this test could have been done more exact would have been if the subjects had all gone to bed at the same time, all were on the same mattresses, and in a lab where all the light levels can be controlled.</p> <p>Methods</p> <p>Materials</p> <ul style="list-style-type: none">- 4 0 Blue Light Emission Lights- 4 handheld devices (Phone/Tablet)- 4 earbuds/Headphones- Movies/Videos/Audio Books/Books/Podcasts/Music (Subjects Choice)- 4 Alarms <p>Steps</p> <ul style="list-style-type: none">- Select 4 people to test.- Confirm that the subjects rooms have no light pollution. (night lights, streetlights coming in through the windows, alarm clock lights, and indicator lights)- At 7:30 pm subjects will shut off all the lights and lay in bed watching something on the handheld screen.- Watch until 9:30, then go straight to sleep.	
Summary Statement After testing multiple subjects and the effect that blue light had on their sleep, we found that the subjects slept 17% better when they were not exposed to technology within two hours of going to sleep.	
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