



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Ciann Amalan; Abby Yamashita	Project Number 38173
Project Title Are Handheld Devices Really Affecting Your Body?	
<p align="center">Abstract</p> <p>Objectives/Goals The objective of this study is to measure the difference of degrees between head/upper back posture to texting posture in 11-14 year old students and comparing both males/females. Our goal is to test how type spent on an electronic handheld device affects pressure on your neck, back, or spine.</p> <p>Methods/Materials The equipment we used were a normal sized school chair, a goniometer (a device to measure the angles of the body), a tape measure, a phone case, and a normal weighted backpack (the weight did not change). We first had each student sit on the chair and used the goniometer to measure their normal everyday posture, then their normal texting posture. The student had to then stand up and wear the backpack while being in their texting posture which we measured with the goniometer. The last test was to measure their upper back posture sitting down using a tape measure while being in their normal posture, then in their texting posture.</p> <p>Results After looking at our data, the results showed that the majority of males aged 11-14 had a less change in posture than females aged the same. In the first test, 13 year-old females and 12 year old males had a less change in posture meaning their posture remained fine after texting. In the second test the majority of 14-year-old females and 13 year-old males had a less change in posture while 13 year-old females and 14 year-old males had a greater change. In the last test, 11 and 13-year-old females and 14-year-old males had the worst change in posture while the majority of 14 year-old females and 12-year old males had a considerable change in posture.</p> <p>Conclusions/Discussion In conclusion, our hypothesis was stated wrong since we hypothesized that girls at a younger age would have a higher change in head and back posture, but it was males that were more susceptible. This was because 98 percent of the 13-14 year-old students we surveyed stated that they texted 4 hours+ a day, while about only 6 percent of 11-12 year-olds stated that they had a phone, but used it rarely. Males also texted with their back more hunched affecting their thoracic and lumbar spine than the center of their cervical and thoracic.</p>	
Summary Statement We tested the difference of degrees between normal head/upper back posture to texting posture on 144 students, 11-14 years of age, by comparing the results of both gender and ages to see which subjects would have a greater change in posture	
Help Received Dr. Ryan Monreal helped us find out a strong test while teaching us how to work with professional materials. Mrs. Pamela Yamashita was a physical therapist who helped us understand all the parts of the body. Mr. Jeffrey Yamashita was an athletic trainer who helped with the scientific names of our devices.	