



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Kaleb S. Kingston	Project Number J1511
Project Title Hot Pockets Continued	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In a previous test, the inside material of a heating pad was tested. In that test it was concluded that beans retained the most heat. In the test this year the outside material of the heating pads was tested to see if the material on the outside of the pad made a difference in the retention of heat in the pads. If the materials did make a difference, which material is the best one to use for the purpose of a heating pad. When testing fleece, flannel, and thermal on the outside of the heating pad, I believe that thermal will get the hottest and retain the heat the longest.</p> <p>Methods/Materials Three heating pads were sewn the same size using different material on the outside. One was made with fleece, one with flannel, and one with thermal. Each pad was filled with four cups of dried pinto beans. Each pads temperature was measured with a digital thermometer and then placed into the microwave one at a time for 90 seconds. A temperature was taken immediately after the pads were done in the microwave and then logged. Temperatures were taken every two minutes for 15 minutes. This was repeated three times for each heating pad.</p> <p>Results The results of Test 1 were fleece won by only losing 13.14% of its heat. Flannel got second with a 21.79% heat loss. In last thermal got a 22.21% heat loss. In Test 2 fleece won again with a 15.25% heat loss. In second came thermal with a 17.81% heat loss. In last came flannel with a 18.22% heat loss. In Test 3 Fleece won with a 12.96% heat loss. Thermal came in second with a 16.35% heat loss. In last came flannel with a 20.28% heat loss.</p> <p>Conclusions/Discussion The hypothesis was wrong, thermal did not retain the most heat. Fleece had an average of 13.78% heat loss. Thermal was next with an average of 18.79% heat loss and flannel was last overall with an average heat loss of 20.97%. Even though fleece had the lowest percentage of heat loss. Fleece was actually the worst material to use for the heating pads, because the material is thick and the heat to soothe the muscles did not transfer well. Thermal is the best material to use for the purpose of a heating pad. The next test will be on the shape or the surface area of the heating pad, and whether or not that will make a difference in the function of the heating pads.</p>	
Summary Statement Heat retention was tested by using different materials on the outside of a hot pad.	
Help Received Mother made the heat pads, helped with the board, and printed papers; Dad helped with testing and research.	