



California Science Center  
**CALIFORNIA STATE SCIENCE FAIR**  
**2001 PROJECT SUMMARY**

<p><b>Your Name</b> (List all student names if multiple authors.) <b>Stephen W. Laughery</b></p>	<p><b>Science Fair Use Only</b></p>
<p><b>Project Title</b> (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) <b>Temperature: Does It Affect the Response Time of an LCD?</b></p>	<p style="font-size: 2em; font-weight: bold;">J0620</p>
<p><b>Preferred Category</b> (See page 5 for descriptions.) <b>6 - Electricity &amp; Electronics</b></p>	<p><b>Division</b> <u>X</u> Junior (6-8) _ Senior (9-12)</p>
<p><b>Abstract</b> (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.</p> <p>Do you use LCD monitors? Have you ever seen that ghost around your mouse? This is due to the LCD's response time. This project "Temperature, Does it Effect the Response Time of an LCD?", investigates how much response time changes at different temperatures.</p> <p><b>Methodology</b> The LCD was placed in a freezer and allowed to cool to -24oC. The LCD was then tken out and connected to the electronics with the light sensor placed in front of it. A signal was input to the electronics causing the screen to blink from white to black in a consistent rythm. The light sensor was then connected to an oscilloscope which was used to measure the response time of the LCD. The response time was measured in increments of ten starting from -20oC to 40oC. Five cycles of this were done to ensure that the results were valid.</p> <p><b>Results</b> The results show that the lower temperatures effected the the LCD response time greatly and could easily be seen, particularly at -20oC. At higher temperatures, the LCD#s response time changed much less dramatically.</p> <p><b>Conclusion</b> The response time of an LCD does increase at lower temperatures and decreases as the LCD warms up.</p> <p><b>Further Research</b> Further research could be done to see if different types of LCD#s would have better response times at cooler temperatures.</p>	
<p><b>Summary Statement</b> (In one sentence, state what your project is about.) This project is on Liquid Crystal Displays(LCD's) and how temperature variations affect the response time, which is the time it takes the LCD to change from white to black</p>	
<p><b>Help Received in Doing Project</b> (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Father supplied electronics, helped with measurements and report</p>	