



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Ryan M. Dubois	Project Number J0309
Project Title Most Effective Home Made Solar Heating Device	
Objectives/Goals My objective was to find out if there was an easy way to help poor people in third world countries be able to cook without electricity. This led me to the question: Which of the three main ways to collect heat from reflecting sunlight with mirror optics is the most effective when home made: Trough System, Power Tower System, or Dish Engine System?	
Abstract	
Methods/Materials 1. Build 3 devices from cardboard, mylar, and some scrap pieces of wood: Dish Engine System, Trough, and Power Tower. Make sure each has a 3 ft by 3 ft reflective area 2. Build a stand that can hold an empty soda can in the focal point/line of your trough and dish engine. 3. Paint a soda can black. 4. On a sunny day aim your devices toward the sun. Prop if necessary. 5. Put the can in the focal spot of the dish engine and measure temperature for 2 min and take the highest reading, then measure the temperature of the can using an infrared thermometer. Repeat for the trough and power tower. 6. Repeat steps 4) & 5) as many times as possible until it gets dark.	
Results The Dish engine system was by far the most effective solar heating device, with an average of 605.85 degrees fahrenheit, the other two devices were both below 300 degrees fahrenheit.	
Conclusions/Discussion The Dish Engine System is the most effective home made device, because it concentrated the same amount of energy to a smaller area. I discovered that it would be possible for citizens of 3rd world countries to cook using solar power, and some cardboard, glue, and reflective material. One thing I noticed about the dish was that it reached its peak temperature at around 1 minute and 30 seconds then it started to decrease. This shows that if you really wanted to cook with the device you would need to constantly be adjusting it to the angle of the sun.	
Summary Statement I wanted to help people in third world countries be able to cook without electricity, so I made three home made devices and explored which is the most effective.	
Help Received My dad helped me build the devices and helped when I needed an extra hand	