

Team number: Melms45
Area of science: Astronomy

School name: Melrose Schools

Project title:

“Sunsational Sun Dials”

Problem definition:

Our project is going to be based on astronomy and will be about making a sunlight clock. It will show the sun’s rays hitting a mirror and shining to a frame that has the time of the day and what day of the year it is. Our computer model is going to illustrate how the sun’s rays change angles during the day and throughout the year.

Our team is interested in doing a project that involves more math calculations, and working with any concept that is astronomical provides that opportunity.

Plan for solving:

We are going to break our project down into smaller sections to make it easier to work with and to have the computer code progress from simple calculations to more difficult calculations.

- 1st- The model will plot the shadow of an object each day at sunrise through a window. It will calculate the location of this shadow based on the latitude of the house, and its orientation toward the east.
- 2nd- Next we will have our model show the time of day based on the shadow’s location during daylight hours.
- 3rd-To have a mirror system able to reflect sun rays to different locations will require us to calculate the geometry of the room and the entry point of the sun rays.
- 4th- Combining these three parts will complete our project.

To make this project work we will do research on how to determine the sun’s position in the sky at any date and time. This information will help us build math equations to use in our model to calculate shadow positions to calculate sun ray positions.

Description of progress:

So far our team has come up with a plan of action containing programming, researching, and typing. Brody and Brady are working on programming and Brandon and Xander are working on writing the paragraphs.

We are researching the topics to help us with this project and will be listing those in the citations below. These topics include astronomy, sun dials, Stonehenge, and solar energy.

Results expected:

Our expected results are to make a model to show how the sun can be used to show dates and times. Our inspiration was learning about how Stonehenge was used as an ancient observatory.

Citations:

Astronomy Today by Eric Chaisson made on July 6, 2010 publisher Pearson (7th Edition)

Solar Energy: An Introduction made 2015 by Michael E. Mackay published by Oxford University Press
csglobe.com

<https://en.wikipedia.org/wiki/Sundial>

<http://www.history.com/topics/british-history/stonehenge>

Team Members: Brody McAlister Brady Sorgen Brandon Garcia Xander Chavez

Sponsoring teacher: Alan Daugherty