Sun and Shadow

New Mexico

Supercomputing challenge

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Team # 2

Melrose High School

Team members:

James Hutson

Nathaniel Flores

Teacher:

Alan Daughtery

Donna Montague

Project Mentor

Area of Science: Astronomy and Engineering

The past year of our supercomputing challenge has been pretty fun. We have been working hard on our computer model and project. Next year we would like to build on to our model, do more physical buildings, and research on this project. Our team has been working on the sun and shadow project. The idea being to help people who are first time gardeners and maybe builders. For Example, things like greenhouses, animal shelters, and buildings that might use solar panels to power there houses. Our project shows the sun in different locations and where the shadow is when the sun is setting or rising. With this we can see where not to plant gardens and where to plant gardens. It will also help show where to put solar panels, animal shelters, and green houses.

This project will be very helpful because the angle of the sun affects light entering a shed for animals and how buildings can cast shadows on possible planting areas for farmers, ranchers, and gardeners. The Reason we appointed this project was because we are involved in many agriculture activities. Those activities require us to adjust for cattle in the winter for less shade and to put more sunlight in the barn for them to stay warm. With these buildings you want just enough opening for the air circulation and for the sun so the cattle don't freeze. The same with gardens, you want the garden in the sun not in the dark. Otherwise your plants will not succeed to grow. Our Project will help show farmers, ranchers, and gardeners how to keep their cattle alive, keep their crops growing, and gardens growing better.

Our project has 2 main components. The first main component is the position of the sun at any time on any date. Then determining the amount of shade blocking the sun.The position of the sun effects many aspects of our project. The sun effects how much sunlight given in an area and how much shade is given in the area. The reason behind this is because when somebody picks where they want to plant a garden or build a cattle shelter they will need to know where the sunlight is hitting on the ground and the most accurate areas of sunlight, so when you put your garden or cattle building it grows

the best and the cattle stay warmer. In the summer the suns position will be higher and in the winter the sun will be lower quadrant. In our project we have had some great things happen and some bad things happen. than the summer sun.Our team has discussed the project. One team member is doing the math and astronomy. Another team member will be finding average dimensions of livestock buildings. Our last two team members will be working on the NetLogo programing. We are currently beginning our project and will put in any variable we need. Our main focuses is on the amount of shade and sun needed for gardening, the right amount of sun needed in houses and barns, the ground temperature around buildings, driving conditions and any outside applications that depend on natural light conditions.

Expected Results:

We expect to be able to use this project for many life skills. There are many jobs that require the

use of natural light and we would like to learn more about this subject for our future use. This is useful