

**New Mexico
Supercomputing Challenge
Final Report
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**Team 33
Jackson Middle School**

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Executive Summary

Verbal bullying in middle school can spark a chain reaction throughout middle school. We have researched verbal bullying, and the effects on the school and student being bullied. We found a substantial way of finding current and usable information to incorporate into our program. We took Ted Reeds suggestion, and made surveys we gathered from three separate middle schools. Once we analyzed our surveys, we incorporated data into a Netlogo model and used this information to make assumptions in the creation of our model. We have further refined our model to validate our assumptions. In our model we discovered verbal bullying has many componets to it, such as intensity.

Statement Of The Problem

Verbal bullying is defined in Webster's dictionary as "a means of using words in a negative way such as insults, teasing, put downs, etc., to gain power over someone else's life," The idea of a transmission is, once a student becomes bullied they will either continue getting bullied or become a bully. This is the overall problem throughout our project.

Methods

We came up with multiple ideas throughout processing our project. We all

were talking about bullying, but didn't know what type of bullying we wanted to research. We finally decided on verbal bullying to research because of past experiences. There were not many valuable sources so we asked for some help from Ted Reed (who has worked with facebook for many years and has seen many types of bullying); he suggested we create a survey. We agreed and created a survey. We created questions, (9 Multiple choice, all in which you could write a little more if they would like, assessing the idea if they were bullied and 1 open ended showing how they feel about the topic) for example "What grade are you in?" and "What is Verbal Bullying to you?" Most of the questions are multiple choices, but two of the questions the students wrote their answers. "Have any of these things ever happened to you?"

- a. Someone called you a name
- b. Someone made a joke about your race
- c. Someone started a rumor about you
- d. Someone talked bad about you behind your back
- e. I have had none of these things happen to me
- f. Other:

The surveys data told us what's the student's point of view on bullying like how many people have been bullied and how? And what do they categorize as bullying. Presently, we have 178 surveys. The three middle schools we distributed the surveys to were Jackson, Kennedy, and Willson.

When doing data analysis for our surveys, we categorized our data and found what was useful to our program, such as percentage of kids being bullied, presently and how many bullies are there. We tried to find out if people knew what verbal bullying is and if it has affected them from questions two and three, what is verbal bullying to you? And has any of these things ever happened to you? For the next part of our data, we were looking if they were verbal bullying, and then became bullies themselves using questions two and eight. For question five we used the results to find how long their bullying lasted to incorporate the duration of our program. Lastly for question four, we analyzed the results of this question to see if it ended in waiting, telling a teacher or a trusted adult, or confronted them in a peaceful, or non-peaceful way. Throughout this project we have found other sources to help support for our chain effect theory besides our surveys.

Programming

In our programing project we were fairly new to the programming language NetLogo TNG. At first we struggled with grasping this new language but, we soon got the hang of it. We started finding the behavioral patterns of both bullies and their victims through our surveys. As a base program, we altered a Zombie Model which used a basic epidemic model. We altered this model based on data we found in our surveys because bullying can spread to people as a disease would to people. Throughout this process we modified most of the program to include our information that we gathered from our surveys. We added different shades of colors to show more intensities of bullying. We plan to

continue our coding before the Expo.

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