



Big Ideas in Science: Science meets real life

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SC300: Big Ideas in Science: From Methods to Mutation

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Synopsis

The Question	Why are students missing school?
Research	Available for review are: school event calendars, interviews with the students' parents, attendance records, announcements, and messages. <i>See details of research below.</i>
Hypotheses	Can exposure to the West Nile virus be causing the children's symptoms? Can unsanitary food conditions be making the children sick?
Analyzing the Data	Performed analysis of school event calendars, interviews with the students' parents, announcements, and messages. <i>See details of analysis below.</i>
Final Report	The band students from Truman and Jackson Middle Schools have food poisoning due to unsanitary food conditions in the area. They have spread this bacterium through school events.

Investigative Report

A health department investigation has been initiated to discover why students have been missing school. In my research I have found both Truman and Jackson Middle Schools to have above average absentee records for the month of May. I was able to review school event calendars, interviews with students' parents, attendance records, school announcements and messages. These items for review are what I used to be able to present my evidence and form my two hypotheses. Hypothesis number one is, "Can exposure to the West Nile virus be causing the children's symptoms?" Hypothesis number two is, "Can unsanitary food conditions in the area be making the children sick?" I was able to dismiss further questions whether the West Nile Virus could be the culprit, as there was only one school announcement mentioning it, and there was no other evidence to support the spread of the West Nile Virus. However, upon a thorough investigation of my second hypothesis, concerning unsanitary food conditions, I found two restaurants that had been cited for poor sanitary food practices. And, after the examination of the schools' event calendars and attendance records, I was able to deduce that band students at both schools had very similar symptoms of sickness, which where: stomach ache, diarrhea, fever, and some vomiting. There

were spikes in band student absences twice; each time was after a school event in which they had contact with each other. My final assessment is that due to unsanitary food conditions at two different restaurants, band students have contracted food poisoning, and spread that bacterium through shared school events to a total of sixteen band students. Please review the details of the investigation for further information.

Details of Investigation

Is there is a common reason for the absences? Explain.

Without reviewing all the evidence first, I still would state that there are a few common reasons that would account for the students being absent. One, there could possibly be a cold bug or virus going around and they have caught it. Two, something at the schools could be making the children sick, like food or water. Three, the children could be visiting a common restaurant, playground or other shared community event where they are being exposed to an unknown variable.

Come up with two testable, clear hypotheses about what you think is behind the absences. Be sure to base your hypotheses on the evidence you have obtained (e.g., Health Department Restaurant Inspections) and be thorough in your explanation of who, what, why, when, and how to support your hypotheses.

Can exposure to the West Nile virus be causing the children's symptoms?
Can unsanitary food conditions be making the children sick?

Research 1 of 6 - Is the weather warm enough to nurture the West Nile Virus?

After reading the latest announcements, there was one announcement about the weather warming up and how to limit contracting and the spread of the West Nile Virus. No further information was found.

Analyze data

The weather *is* warming up, but it is not warm enough to allow the West Nile Virus to spread. In comparing the West Nile Virus symptoms to what the children are exhibiting, I would say the symptoms are somewhat different. The symptoms the children are exhibiting are stomach ache, diarrhea, fever, and some vomiting. The exact symptoms of the West Nile Virus are fever, headache, tiredness, and body aches, and the occasional skin rash and swollen lymph glands.

Assessment

The children do not have the West Nile Virus.

Research 2 of 6 - Are there certain groups of students that are being affected by this sickness?

After reviewing all the evidence from the school calendar's and the attendance records, band members are the targeted group.

Analyze data

Compared to other student attendance records (PE and Art), the band members are missing the most school.

Assessment

Band member from Truman and Jackson Middle Schools are the groups of student that are being affected.

Research 3 of 6 - Could under cooked meat be contributing to the widespread sickness?

In the review of Restaurant Inspections, the restaurant DELicious, located at 1296 Dale Street, was sited with a violation of not using meat thermometers.

Analyze data

Cooking food to proper temperatures will kill bacteria. If food is not cooked to proper temperatures, a person could contract food poisoning.

Assessment

The meat from DELicious could be contaminated with bacteria that are making the students sick.

Research 4 of 6 - Is the food that the students are eating stored in clean areas?

In the review of Restaurant Inspections, two restaurants were found to have unsanitary conditions.

The restaurant, Take Your Chances Diner, located at 413 West Oak Avenue, received two violations concerning cleanliness. One, there were dirty shelves found in the walk-in freezer. And two, the wash clothes used for cleaning surfaces were not clean.

The restaurant, DELicious, located at 1296 Dale Street, had a shelf that was not at least six inches above the ground. This shelf had food on it.

Analyze data

If food is found in unsanitary conditions, unsafe bacteria could begin growing on the food, especially on low shelves and dirty wash clothes that were found in use at DELicious.

Assessment

Some food was not stored in clean areas in two restaurants. Thus there is a good chance that the food has become infected with unsafe bacteria that can lead to food poisoning.

Research 5 of 6 - Is what the children have contagious?

After reviewing the band calendars and attendance records of Truman and Jackson Middle Schools, there were spikes in absences 3 days after the May 5th event, *May Day Parade*, as well as 1 day after the event, *Battle of the Bands*, on May 19th.

Analyze data

The band students attend the school events on the 5th and 19th of May.

Assessment

The band students are contagious and spread the bacteria on the May 5th and 19th school events.

Research 6 of 6 - Are the symptoms the children are exhibiting the same?

Reviewing the interviews, I have found that stomach ache, diarrhea, fever, and some vomiting are common among the sick students.

Analyze data

Sixteen students are exhibiting almost the exact same symptoms.

Assessment

Yes, students' symptoms are very close to the same, which leads me to believe there must be a common denominator that is affecting both Middle Schools.

Is the following statement a suitable hypothesis: "The Brentwood Indians basketball team lost the state championship because there is bad stuff in the stars happening with Mars in Aquarius"? Explain why or why not.

This is *not* a good hypothesis as it is not specific enough when it says "bad stuff"; it does not give us something to measure or prove. A good hypothesis would have been, "Does the gravitational pull between Mars and Aquarius effect basketball players?" But even this question would require hi-end testing equipment, as well as specialists to know what they are looking for. A better, more measurable, question would have been, "Can dirty hard wood floors affect the outcome of a basketball game?" This would give us some something tangible and practical to test for; which is basically dirty hard wood floors versus clean hard wood floors and their effect on basketball games.

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