Abstract

Project Title: Getting Sick Might Be In Your Hands

Project ID: 654

I did this experiment to find out which place out of three common places that kids go to will give them the highest count of germs on their hands, and what are other factors that might affect that count of germs. The places that I studied are: school, the park, and an indoor play place.

The purpose of my experiment was to initially help raise awareness of how easily we can get germs on our hands and that we need to make sure we practice proper hand hygiene. My experiment will benefit people in general, including: parents, school staff, and owners of indoor play places in particular. It will highlight the importance of having good hand hygiene to stay healthy, prevent spreading germs, and getting sick especially among kids. It will draw parents' attentions to certain places and activities that their kids will participate in and get germs on their hands from, so they can make sure their kids clean their hands properly after going to these places to minimize the chances of getting sick. School staff and owners of indoor play places will pay more attention on keeping their places clean and sanitize them more often to minimize the count of germs that kids can be exposed to, especially in flu season. And in light of the COVID-19 pandemic, I believe my experiment would be very helpful to also go on to show how often it is we come into contact with places that are full of germs from many different people, which shows how easy and fast we increase the count of germs on our hands.

The questions I set out to answer were: 1) Do kids get more germs on their hands after going to the following places: school, park and indoor play places? 2)Which place do they get the most germs on their hands from: school, the park, or indoor play place? 3)Does the number of germs on kids' hands differ according to their age and which age group has the most? 4)Does the count of germs on kids' hands differ according to the weather temperature and in which season do they get the most germs?

I hypothesize that the germ count on kids' hands will be more after going to school, the park, and indoor play place than before going there. I hypothesize that the count of germs on kids' hands will be the most after going to the park, then school, and lastly an indoor play place. I hypothesize that the highest count of germs will be on the hands of preschoolers, then elementary kids, then middle schoolers, and lastly will come high schoolers. I hypothesize that the count of germs on kids' hands will be higher during colder weather temperature than during the warmer weather temperature.

This experiment was done by using cotton swabs stored in nutrient test tubes to collect bacteria from the hands of 4 different age groups of kids (Pre-K, Elementary, Middle School, and High School) before and after going to 3 different places which are: School, the Park, and an Indoor Play Place. These samples were studied by growing the collected bacteria on agar plates and then counting the bacteria that grew on the plates across three trials.

The count of germs on kids' hands increased after going to school, the park, and indoor play place. The place that kids got the most germs on their hands from was the Indoor Play Place, then School, and lastly came the Park .The High-School age group got the most germs on their hands, then the Pre-K age group, then the Middle-School age group, and lastly with the least bacteria on their hands is the Elementary age group. In the colder temperature there were more germs on the kids' hands than in the warmer temperature.

My hypothesis was partially wrong. I was right that the count of germs on kids' hands will increase when they go to the 3 tested places (school, the park, and indoor play place). However, I was wrong in my hypothesis about which place will give kids the most germs on their hands. It wasn't the park. It was indoor play place, then came the school, and lastly with the least gems came the park. I was wrong about which age group will have the most count of germs on their hands as well, the Pre-k age group didn't have the most germs on their hands, and the high school age group didn't have the least. Instead the High-School age group had the most count of germs on their hands, then came the Pre-K age group, then came the Middle-School age group, and lastly with the least number of germs on their hands came the Elementary age group. The last part of my hypothesis was right, kids had more germs on their hands in the colder weather than in the warmer weather. The count of germs on kids' hands was the most in November (the coldest month) then came October last came September (the warmest month).

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A brief explanation of your project. Enables judges to receive a base understanding of your project and work.

Items to Include:

- **Introduction:** Why did you do this project and why is it important? How will this effect people and why is it needed. Inspire the reader to continue learning more about your research and read your report.
- **Problem Statement and Engineering Goal / Hypothesis:** What is the problem you were solving and what was your engineering goal or hypothesis.
- **Procedures:** How did you solve the problem and or test your hypothesis. Don't go into details, provide a broad, conceptual view of what you did. For engineering, what was your design criteria.
- **Results:** What was the outcome? Use your data and numbers to describe your result.
- **Conclusion:** Was your hypothesis supported or the engineering goal met?