bacteria in classroom

aim

We have been given the task of researching a biomedical topic of our choosing, and we have decided to focus on bacteria to determine how much bacteria accumulates around our school. Testing the amount of bacteria in a general area, where multiple people sit and work or eat is a vital way to check if we are suitably cleaning surfaces that multiple people touch. In a time of disease, it is important to find out if we clean to a high standard. Conducting this test is a way to show how we as a school are protecting our students and faculties health. This area has been researched around the world, through ours we will focus on key parts of our school and apply this to our college.

hypothesis

If the table swapped is dirty then the amount of bacteria will vary to another because of the classrooms conditions.

variables

Independent variable - The testing of different tables around the college.
Dependent variable - The amount of bacteria accumulated on agar plates.
Controlled variables - The same type of agar plates, swiping techniques when obtaining bacteria and the same time is given for bacteria to evolve in agar plates before assessment.

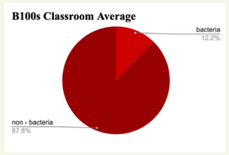
equipment

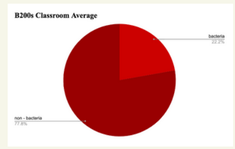
1 x incubator
10 x agar plates
20 x cotton swabs
5 x tables from differing classrooms
1 x tape dispenser
1 x pen
10 x grid paper

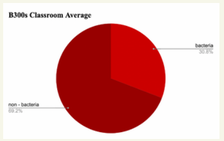
method

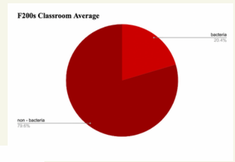
1. Gathered all items needed
2. Prepared agar plates by taking them out of the fridge to let them come to room temperature before taking samples
3. Taped a piece of OHT grid paper onto the agar plate for when collecting the results of each sample
4. Labeled the plate with what room and what sample. Eg (Science Room B103 Sample 1/4)
5. Made an impression on the plate by using the cotton swab to take a sample
6. Completed this three more times for each classroom eg. B block science room
7. Covered the agar plate with a lid and sealed each dish so the source of bacteria is contained
8. Steps 3, 4, 5, and 6 are repeated as required for the number of blocks being swabbed. (B and F block)
9. Allow for bacteria to develop in an undisturbed warm environment (incubator) and growth will be seen within a couple of days.
10. After the time of growth is up, make observations and record results in the results table in percentage of each dish.

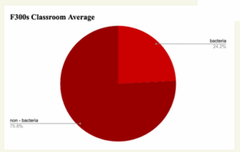
results





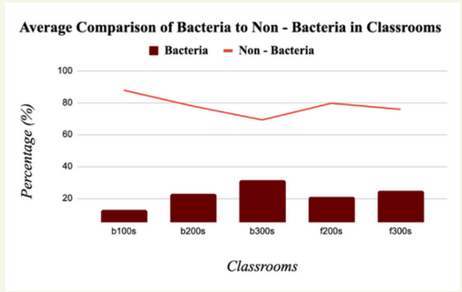


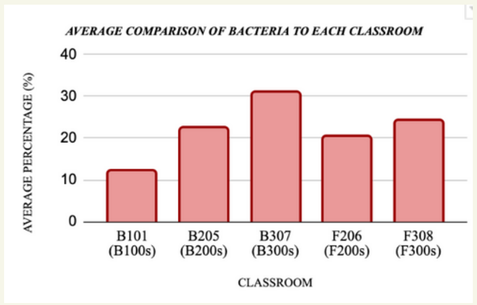




results

Tables around school (Blocks / Levels)	Amount of bacteria (percentage %)				
	Trial 1	Trial 2	Trial 3	Trial 4	Average
B (B101)	10.9	15.9	18.9	3	12.2
B200s (B205)	17.9	19.9	25.9	24.9	22.2
B300s (B307)	39.8	29.8	17.9	35.8	30.8
F200s (F206)	21.9	18.9	18.9	22	20.4
F300s (f308)	24.9	22.9	34.1	14.9	24.2





future testing

In future experiments, we may test areas outside of high schools. Such as primary schools, preschools and possibly universtites. By testing these areas we would be able to gain an understanding of a broader and larger area of how bacteria could affect tables in these areas. Testing if preschool classrooms vary larger than college classrooms. This variable could change the way we view the cleaning process across NSW schools. Also we may test public high schools as our testing was undertaken in a private school, we could test and see the contrast in facities and determine what types of schools are cleaner and how they stay clean.

trends

The graphs depicted that the room in the 300s had the best conditions for bacteria to thrive than the room in the b100s. this is due to the room in b300s having minimal ventilation causing the room to allow more bacteria to thrive in the classroom. We can see this in the various graphs provided from the conditions that were in B307, the room had the perfect conditions for bacteria to accumulate which we sampled and grew. The other room had similar conditions but not to the extreme of B307. From our results we see that rooms such as the science room that consistently cleaned and have high ventilation cause bacteria to grow in very low rates. Whilst rooms with minimal ventilation and a area to prepare food can highly alter the way bacteria grows in the room, in high quantities.

validity

The test can be deemed as valid as from our results we measured the area of the agar plate and determined which portions were covered in bacteria and which were not to conclude which rooms did in fact accumulate the most bacteria.

reliability

The test can be deemed as reliable as the test was done over four trials on the same table in five different classrooms. This allowed us to both get various results as well as determine if the method was replicable.