Main goal: to see if the classroom temperature would be affected by the presence of students.
Will the temperature increase?
What variables affect the temperature of a room? Does our classroom have the ideal temperature?

Process:

1. Place a thermometer inside the classroom
2. Pick 2-3 days, on each day after lunch we start the analysis (the days we test should not have drastic differences in the weather outside)
3. Every time the class is empty and full we check, then log in our notebook the temperature.
4. We put in specific time slots
5. After the information is gathered, we average everything out. We then subtract the change in temp. With the default temp.
6. We then login and analyze the change to see if it was noticeable by us
   Variables we are testing
   1. If students are present

Considerable Thermometer:
https://www.amazon.ca/DOQAUS-Thermometer-Hygrometer-Temperature-Greenhouse/dp/B07ZVVFLFK/ref=sr_1_2_sspa?dib=eyJ2IjoiMSJ9.mDEKlvzW67eKJc0jS9JUZ8p1yvWPTGiNwAr16FkFx4N7X1B8-fjOc5mhImpMas08jr22STJN1Kla4fALHCZzrzln4-9GOYs6ZgCCYxXER0mG6IWVwivTfg1KEI7_YRD9SrTycVL1MovZ6gCoKcIUvYg8NjWTZspOZEi6YS_g1MtdrLhEIvGUEEmwTNKAzjdpvaPePCkt5j9w4BeduGIdkr90HuVFL8ww6s-QkgKDH88NsKOWslwyFIHHy2ha3pKLrMT_sI4hFimheVUaJ42UYyU_6jA1buffNlsXWKMJp20.bMHTEnsvac7-DmxXYLgcagDnaV6Cxmu48WIxU2XKpUM&dib_tag=se&keywords=room%2Bthermometer&gid=1736546526&sr=8-2-spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGY&th=1
DOQAUS Digital Hygrometer Indoor Thermometer, Humidity Meters, Room Thermometer and Humidity Gauge with Accurate Temperature Humidity Monitor for Home, Greenhouse, Baby Room, Mini Weather Station Gift : Amazon.ca

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Saturday january 11th 2025

Hypothesis
Malak: We are testing a couple of variables in this experiment. The first being if the amount of students in a classroom changes the room temperature. I think that the more students in a classroom makes the room temperature higher considering the fact that the more people in an area the more humid it is which adds to the room temperature. If the classroom is empty the room would be less humid and the room temperature would be lower.

Fatima:
I believe that the temperature will change when humans are present in the classroom because logically the classroom generally gets hot when more people are in the room or a group of people come back from gym. This hypothesis is based on my observations last year in our class where the air conditioning or the heater would never work, when there were more people in the room the room would be much warmer.

Introduction
Have you ever wondered if being in the classroom makes it warmer? In this experiment we are going to find out if the temperature increases if the students are present. In this experiment we will be analyzing the difference in temperature when students are in and out of the classroom. Something notable to keep in mind during this experiment is that on average an ideal temperature for most people is 20 to 22 Celsius. Although these ideal temperatures can change if there are children or elderly in the room, the ideal temperature for this group of people goes up to 22 to 23 Celsius.

Temperatures
According to physicsforums.com we know that the human body is capable of producing heat to keep our body temperature at a healthy or normal amount. But little do we know that human bodies actually emit heat as well. Meaning that we can get an answer from the

web, but what scientists have studied were tested in different environments, but we would like to know what would be the temperature and how it changes in our environment and with our age. In order for humans to maintain a comfortable body temperature they need to lose heat to a colder environment. But that changes when the room is crowded, everyone's body emits more heat *due to the amount of people in the room* which results in the room temperature increasing. This goes with what the first law of thermodynamics states. Energy can only change form which means that it will be passed around the room.

Jan.15.2025

Many factors have a direct affect on the general temperature of a room. One of them being the outside temperature. According to my research, warmer air is always trying to locate and find cooler air. In the summer, when the temperature inside a room is colder than the temperature outside, the warm air tries to enter the room through windows and roofs etc.. The opposite is also true. When the air outside is colder than the air inside, the warm air inside the room tries to escape to the air outside the room. Although many people assume that the only use for the insulators in a building is to provide heat, that isn't its only purpose. It also prevents the warm air outside from coming into the building. This makes the room temperature lower than the temperature outside during the summer and higher temperatures in the winter. As humans the H_2O we breathe out produces or adds more humidity to the room. According to Uswitch, the lower the air humidity is in a room, the more likely it is to feel colder. Water evaporation can also be a source of humidity, but this does not apply to our experiment.

Table for Tuesday
Jan 14

Time	Temperature	Explanation/context
Lunch (people in) (12:15)	24 Celsius	The door was open at the time that this measurement occurred, this did affect the experiment and the outcome.
Recess (people out) (12:35)	22-22.9 Celsius	When this measurement occurred it was around 12:50 and people started to

		enter the room, this however barely will affect the measurements. The temperature dropped by 22-2.9 Celsius.
Islamic (g) Gym (b) (people in) (1:00)	23-24 Celsius	The classroom was enclosed and the measurement was ranging from 23 to 24 Celsius. The classroom felt hot.
Prayer (people out) (1:40)	19-21 Celsius (people out)	The classroom felt significantly cooler than at 1:00. No one was in the classroom.
art (people in) (2:00)A	24-24.7	The Class was missing a group of people. The boys came back from the gym. We can see that the classroom got an increase in temperature from the last time that people came inside.(3-4 Degrees). Though the temperature felt neutral.

Temperature may be incorrect, the experiment conducted was not designed to be exactly accurate Outdoor temperature was 1 Celsuis*

 Table for wednesday
Jan 15

Time	Temperature	Explanation/context
Lunch (people in) (12:15)	24.3-25 Celsuis	Feels extremely hot, the door is also closed

Recess (people out) (12:35)	21–21 Celsius	Still does feel hot, however this is because during our time outside the heater on the roof was turned on.
Social (people in) (1:00)	23–24 Celsius	Feels hot and the classroom was enclosed as well.
Prayer(people out) (1:40)	22.8 Celsius	feels cooler than before
Math (people in) (2:00)	N/A	Thermometer was not available

What's the hottest point in the classroom? (9:45) *side experiment*

Excluding

- Humans (Their bodies are already the hottest point in the class)
- Electronic (produces heat)

furniture does count

Corner beside the door

At the beginning of the experiment we find that the lower we measure the lower the temperature, that is because hot air rises, so far the hottest at this point of the experiment is the corner which is 23 celsius.

Near the bookshelf (opposite long corner)

The temperature in the area near the bookshelves on the opposite side of the door is 22 degrees celsius. This is most likely because the area near the door has more people around it while the other corner of the room is basically empty. The highest temperature so far is still 23.

Wall behind teacher desk

We tested the wall behind the teacher's desk, it turned out to be the coldest corner of the classroom. The temperature was 21.4 degrees celsius.

Wall behind smart board.

According to the measurement of the temperature, the area where the smart board is located, we found the highest was 24.5 degrees Celsuis being the highest so far in the experiment meaning that the presence of technology/electricity affected the surface temperature of the wall.

The corner on the right side of the door

On this wall we found the temperature to be 22.5 Celsius.

So, in conclusion, the wall behind the smartboard is the winner! With a high of 24.5 degrees celsius and the area near the bookshelf lost with a low of 22 degrees celsius. This means students sitting close to the smart board actually might even experience slightly higher temperatures.

References

1. https://thehvacservice.ca/what-is-the-healthiest-or-ideal-room-https://thehvacservice.ca/what-is-the-healthiest-or-ideal-room-
2. https://www.uswitch.com/gas-electricity/guides/what-is-the-ideal-room-temperature-for-your-home/#:~:text=Insulation%3A%20the%20insulation%20in%20your,all%20affects%20a%20room's%20temperature.
3. The thermometer used

Jan. 17 ,2025

Analysis

After our experiment was complete our analysis includes the following.

- Before we share our analysis with you, we would like to say that we had expected significant changes in temperature, but our experiment has proven our hypothesis to be slightly false. Though there are many things that affected the results meaning that there was a potential higher change in temperature *more on that in next section*

- Tuesday
  - On this day the temperature was around 1 to 0 celsius
    1. Starting at 12:15 (lunch) the temperature was 24 Celsuis ,although the temperature could have been slightly higher due to the door not being closed
    2. At 12:50 (recess) we experienced our first drop in temperature being 22-22.9 Celsius. We notice that this temperature drop is approximately

2-2.9 degrees celsius. This proves to us that the temperature did change when students were absent inside the classroom.

3. Approximately at 1:00 Pm (islamic (g) gym (b)) the classroom was 23-24 degrees celsius. The classroom was enclosed and the room felt warm/hot, this was an increase of approximately 2-2.9 degrees celsius and the class was returning to its average temperature when students were present.

4. 1:40 (prayer), The classroom temperature was ranging from 19-21 degrees celsius. The area was significantly cooler than the last reading we did. The drop ranged from 2-5 degrees celsius showing that it got noticeably cooler

5. 2:00 (art) The classroom temperature was 24-24.7 degrees celsius. Despite a group of people missing from the classroom, the classroom still retained its average temperature of 24 Celsuis

Wednesday

- Based on the measurements we took on the fourteenth of January, when students were present inside the classroom at 12:15 the temperature was higher compared to the temperature on the fifteenth when the students were not inside the classroom.

- After the experiment was conducted we noticed that there was a change in temperature from lunch time where the students were inside the classroom compared to recess time when the students were not. At lunchtime the temperature was 24 degrees and it dropped by to degrees resulting in a temperature of 22 degrees celsius.

- The temperature then increased yet again during social class when the students came back into the classroom at one o'clock, however, it was not as warm as in the morning. This was because the outside weather got colder which impacted the weather inside the classroom.

- Again the temperature dropped but for the same reason not as much as before due to the outside weather.

- We were unable to measure the weather during the math block because the thermometer was unavailable. But my assumption would be that it was approximately 23 degrees celsius.

Things that could have affected our experiment

- Because we were unable to stop the ventilation system during the time of our experiment, we were unable to get the most accurate results and measurements. According to our research ventilation helps the room temperature remain stable and not drop or increase rapidly due to changes in outside weather. Our experiment could have had different results if we had the authority to stop the ventilation system in our classroom.

- We would have seen more significant changes in room temperature had we measured the classroom immediately after gym class. We would have seen more significant changes because as a body works out it becomes hotter and with multiple students it would have had a major effect on room temperature. But that also wouldn't have worked because the class does not have a gym at the same time, instead half the classroom at one and the other half at another.
- We could have measured immediately after recess but due to the outside weather people would not have been as motivated to run around and play and so their bodies would not have been as hot and would not have affected the temperature of the room.
- The size compared to the amount of students can affect the temperature in the room. The smaller the room and the more students the air cannot escape meaning that the room will be hotter. The more students in a room the more heat emitted and if the room is smaller there is more hot air

Jan 18
Conclusion\ results.
Based on our experiment and research we conclude that our hypothesis was correct. The experiment we conducted has proven that– just as we hypothesized– the more people inside a room the higher the room temperature. But unlike we assumed, the temperature does not change significantly. It only increases or decreases by one or two degrees (or more). We also concluded that the amount of people in a room is not the only thing that affects room temperature, so does the outside weather or if the room is enclosed.In other words,the outside weather did not affect the amount of change rather the weather before the change. Also, based on our research, the reason why the temperature drops is because of the lack of people in a room because the presence of people in a room adds to the humidity. In simpler terms the more people in a room the more humid it is.This because humans breathe out carbon dioxide which is one of the causes of humidity.

All in all, our hypothesis was proven to be accurate. Although it would have solidified our experiment to measure the temperature of more than just two days.