



Ako I Air Aware Project

**The 3 of us are the main presenters
but the whole class helped**

Observation

Our classroom is in a new modern building with the latest ventilation system. We have sensors on the wall that measure air quality. Sometimes **it turns red** and we used to not know what that meant except that it is not good.

Since we have been involved with the Air Aware project, we are now able to make sense of the data on the sensor. Logan



Hypothesis and question

Our hypothesis is that the more people in the room, the more carbon dioxide will be released, but how many students can be safely in a room?

Our questions were

- **How many students per m² can we have in our classroom before the air quality starts to deteriorate?**
- **What effects does the sensor turning red have on the students in the room? Josh**



What we did

We measured a room and it measured $3.4\text{m} \times 4\text{m} = 13.6\text{ m}^2$

First we measured the carbon dioxide levels without the air conditioning on. Every ten minutes we let another student into the room and then we took a measurement of the carbon dioxide levels.

Then we did the same with air conditioning on.

George

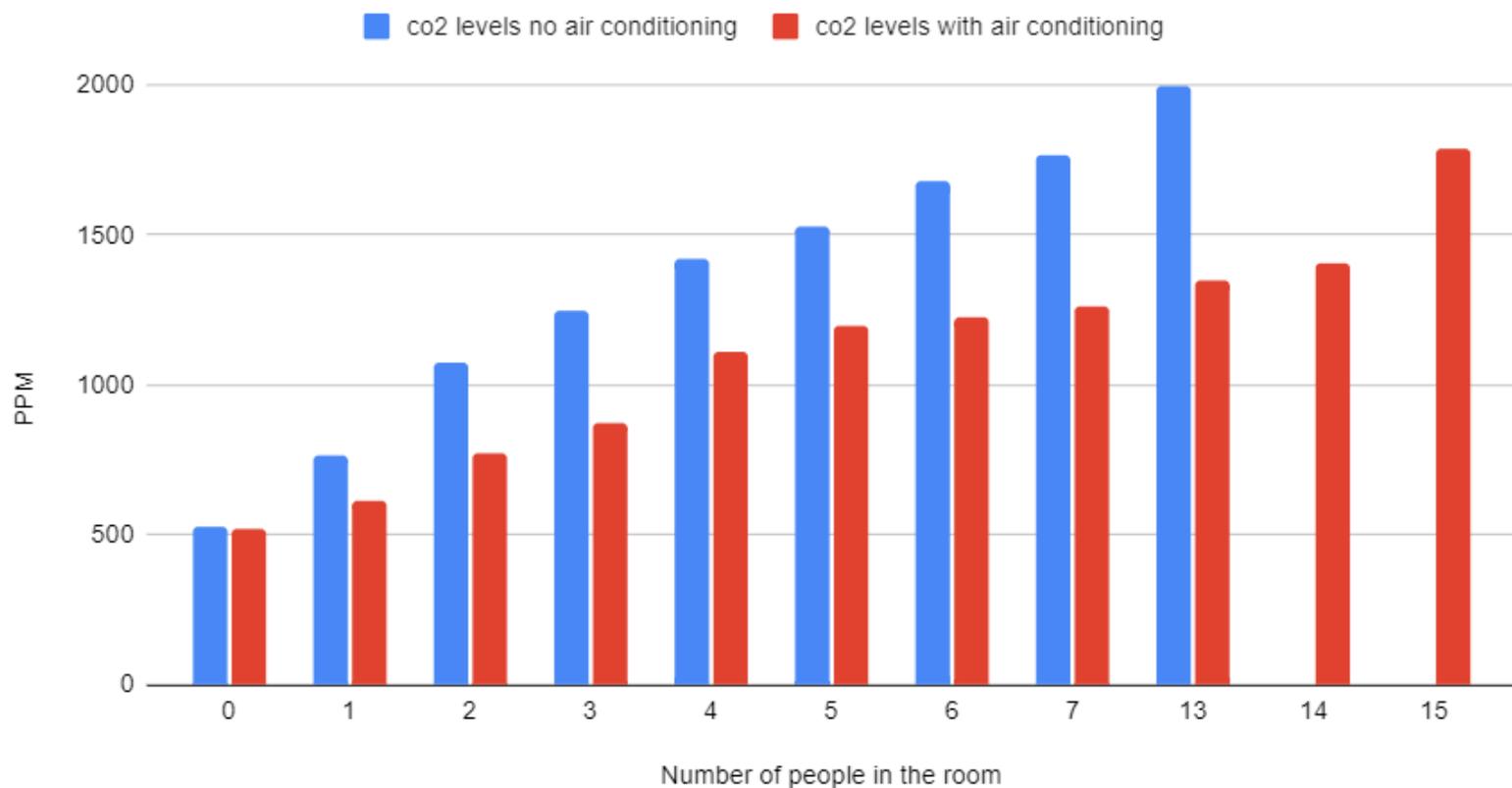


The results



| Number of people | Temp | CO 2 Levels No air conditioning | Temp | CO 2 Levels With air conditioning |
|------------------|------|-------------------------------------|------|--------------------------------------|
| 0 | 17 | 523 PPM | 19 | 520 PPM |
| 1 | 17.5 | 768 PPM | 19 | 610 PPM |
| 2 | 18.5 | 1078 PPM | 19.2 | 770 PPM |
| 3 | 18.9 | 1250 PPM | 19.2 | 876 PPM |
| 4 | 19.2 | 1420 PPM | 19.7 | 1108 PPM |
| 5 | 19.5 | 1528 PPM stuffy, hot | 19.8 | 1194 PPM |
| 6 | 20 | 1677 PPM | 20 | 1226 PPM |
| 7 | 20.2 | 1769 PPM | 20.2 | 1260 PPM |
| 13 | 21.4 | 2000 PPM beginning to get headaches | 21 | 1350 PPM |
| 14 | | | 21.5 | 1405 PPM |
| 15 | | | 22 | 1786 PPM very hot and uncomfortable |

co2 levels no air conditioning and co2 levels with air conditioning in a room measuring 13.6 m2



Josh

Analysis and Results - examining the data

What do the results tell us?

After a period of ten minutes in a room 13.6m²

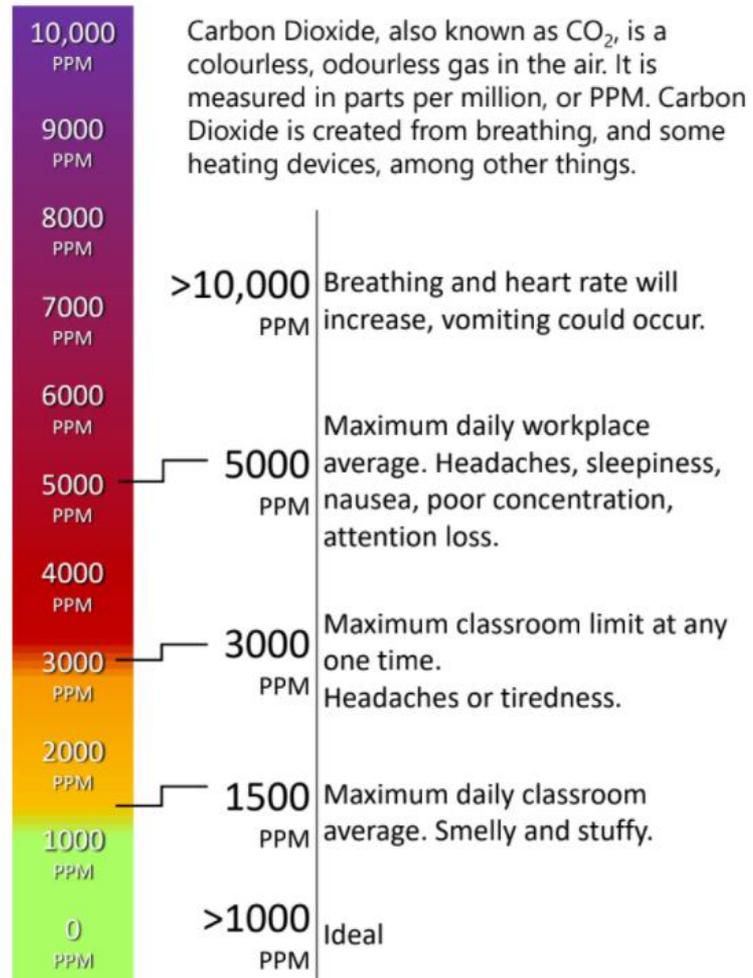
- When there is no air conditioning, 4 is the ideal amount of people in a room this size **Logan**
- When there is air conditioning up to 14 people is good to have in a room this size Logan
- With air conditioning we can have approximately one person per meter squared George
- With no air conditioning on you can have 1 person for every 3.4 meters squared George

Other things to consider?

Another experiment to carry on from this one would be

- We only measured for 10 minutes at a time, we could try a longer time like an hour because we would be in our class normally for at least an hour at a time we think the levels might be higher then, and then we can pass that information onto the people who build classrooms.

Carbon Dioxide



How is carbon dioxide measured ?

Carbon Dioxide, also known as CO_2 , is a colourless, odourless gas in the air. It is measured in parts per million, or PPM. Carbon Dioxide is created from breathing, and some heating devices, among other things.