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# Invest in Datalogging 4

## Measuring $CO_2$ using the Phywe Carbon Dioxide Sensor

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**Difficulty Level**

*Easy*

**Group Size**

*2*

**Preparation Time**

*5 minutes*

**Completion Time**

*10 minutes*

**Inspire young scientists and get them excited about their next discovery.**

# Introduction

## What is Datalogging?

**Datalogging is the process of collecting and storing data over time, looking at data sets, data points and logging intervals. This seamless collaboration between science, technology and data analysis is becoming a vital tool in education, for teachers and students alike.**

## What are the educational benefits of datalogging?

- **Develops higher-order thinking skills**
- **Encourages scientific reasoning skills**
- **Supports inquiry-based learning**
- **Improves and develops numeracy skills**
- **Works very well with EAL students**
- **Links the computing and science curriculum**

## National Curriculum

✓ **Key Stage 3 Biology, Cellular Respiration**
**aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life.**

# Datalogging Worksheet 4

## Experiment:

**Measuring $CO_2$ levels in a confined space using the Phywe Carbon Dioxide Sensor.**


**The Phywe $CO_2$ sensor can be used to accurately measure the changes in carbon dioxide levels that happen during respiration in a confined space, such as a classroom.**

**By allowing airflow through it can then be used to record the subsequent decrease in carbon dioxide levels.**

# Equipment

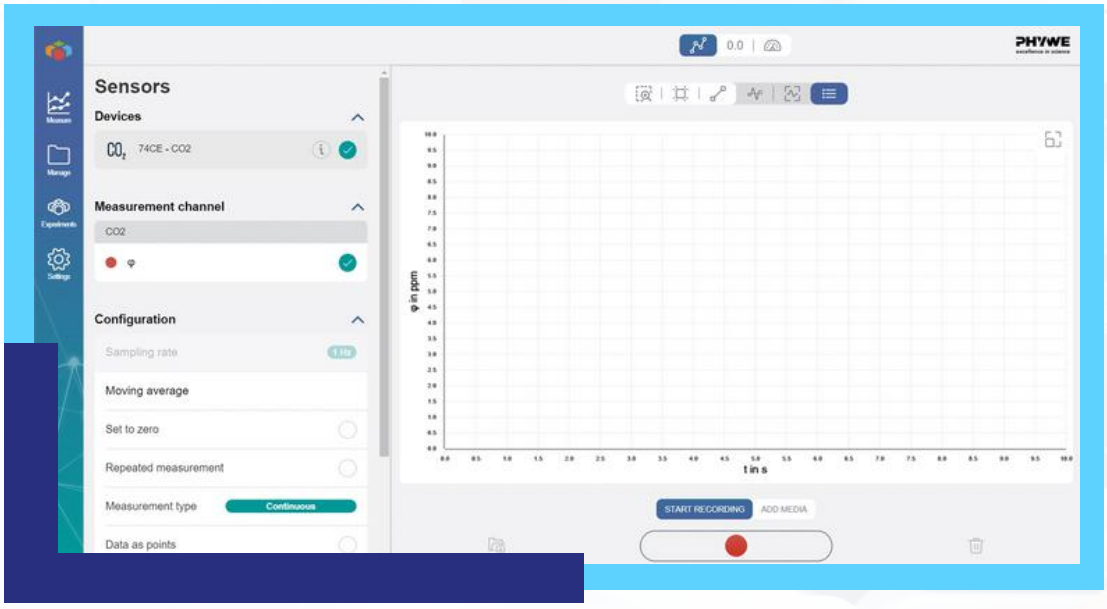
## What you need to get started:

- 1 x Phywe $CO_2$ sensor (DA220100)
- 1 x pneumatic trough
- 1 x length of silicone tubing

# Setting Up

## Set up the $CO_2$ sensor with the MeasureApp:

1. **Open the MeasureApp on your chosen device.**
2. **Connect the sensor to the MeasureApp: simply press the centre button for 3 seconds and the Bluetooth light will flash red, once connected to the MeasureApp, the light will turn green.**
3. **On the software the sensor will appear in devices, click on this, and it's ready to go.**



# Method

## What you need to do:

1. Place the $CO_2$ sensor and one end of the silicone tubing underneath the upturned pneumatic trough.
2. Press 'Start recording'.
3. Take a long breath out into the silicone tubing. You will see the $CO_2$ reading on the graph increase.
4. Once you have breathed out, slowly lift one side of the trough, this will allow the $CO_2$ out and fresh air in. You will see the $CO_2$ reading on the graph decrease and go back to the starting level.
5. Press 'Stop recording'.

# Notes

## Other information:

**This experiment is a great way to show how a classroom that's empty has a low $CO_2$ level. When people come into the classroom, the $CO_2$ level rises and, because of this, after time they could begin to feel fatigued.**

**If you then open the windows oxygen is allowed back in and the $CO_2$ level falls so the students feel refreshed again.**

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***To get more information on datalogging, our range of Phywe Bluetooth sensors, and for more useful resources, visit our website.***

***Free software is provided with our range of sensors. Compatible with the majority of devices, datalogging is simple to understand and cost-effective.***

Explore the range...

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