

Year 4

Data and Information: Data logging

Prior learning (Y3): Learners develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases.

Future learning (Y5): Learners look at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.

Current learning (Y4): Learners will consider how and why data is collected over time, the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.

Key vocabulary: Input device, Sensor, Data logger, Logging, Data point, Interval, Analyse, Data set, Import, Export, Logged, Collection, Review, Conclusion

Overview

Data Logging

- Data is raw numbers and figures. Information is what we can understand from analysing data.
- There are lots of different ways that we can collect, log and interpret data, including by using data loggers.
- Data loggers and logging software can be used to automatically capture data. We can then draw conclusions in answer to our research questions.

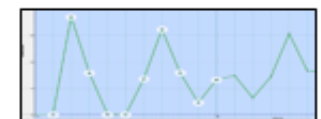


Arduino
Science
Journal App



Data Recording

- One way for us to record data is by writing it down. Some data loggers can also record data themselves, which we can download later. Computers can also help us to record data, e.g. by connecting our data loggers to computers and opening data logging software.
- An advantage of this is that computers can record data automatically, meaning that someone does not need to sit waiting for a long period of time. Data loggers can be set to measure at different intervals (points in time).
- Data logger software can also be used to show different charts and graphs. This can save the user a lot of time!



Data Collection

Asking Questions: Data gathered over time can be used to answer important questions.

For example, the class register can be used to answer questions about children's attendance. Before collecting data, we need to carefully consider which questions we are trying to answer.

	25/02/18	01/03/18	08/03/18
Seb	✓	✓	✓
Amelia	✓	✓	✓
Bella	✓	✓	✓
Patrick	✓	✓	✓
Renee	✓	✓	✓
Oliver H	✓	✓	✓
Oliver	✓	✓	✓
Other D	✓	✓	✓

-Sensors: Our senses (sight, hearing, smell, taste, touch) detect things in our environment. Computers have input device sensors which help them to sense things.

Some examples are:

- Microphones (sound)
- Camera (light)
- Touchscreen (touch)



- Data Loggers: Data loggers have sensors built into them. They can be used to detect and record data.

Data loggers often contain:

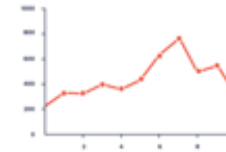
- A heat sensor (to record the temperature)
- A light sensor (to record brightness)
- A sound sensor (to record the noise).



Analysing Data

-When scientists collect data, they usually store it so that it can be analysed at any time. The data can also be shared so that other scientists can use it.

-Tables and graphs can be used to present the data in a useful way for reading and understanding it. It is important to be able to see trends as clearly as possible.



Answering Questions

-Remember that data should be collected for a reason: to answer questions.

-It is very important to ensure that the testing that you do is fair and reliable, otherwise the data that you get back may not give you the accurate answers that you need.

-It is important to interpret your data carefully. You can then write a report detailing what your conclusions are.