**Data handling**

**Lesson 1: What is data?**

**Introduction**

In this first lesson of the unit, students learn about data. They research data on a chosen person and explore ways this data can be grouped. Students also consider the data that organisations might hold on them and the reasons that they have this data. They conclude the lesson by finding out about recent cases where collected data has been misused.

**Time:** @60 minutes

**Learning objectives**

* To understand what data is
* To classify data
* To identify ways that data might be used

**Materials needed:** lesson presentation, printouts of Carroll diagram (slide 8), printouts of *What data can you find?* (slides 16 & 17), printouts of the *Who might have my data?* worksheet and *Examples of data* support sheets, and a web page showing the terms and conditions of an app popular with your class.

**Lesson summary**

1. Introduction: Who am I? (10 minutes)
2. What is data? (20 minutes)
3. How can data be used? (20 minutes)
4. How is data collected? (10 minutes)

**Introduction: Who am I? (10 minutes)**

* Provide students with **printouts of slides 16 and 17**. Explain that the image represents a famous person of their choosing and that they are going to work in pairs to put facts about the person around the image (**slide 3**).
* Invite suggestions as to what information they could record about the person. Examples can be name, age, place of birth, date of birth, height, and favourite colour (see completed example on **slide 18**). Give students time to research information about their selected person online. Remind students it is good practice to check the reliability of information from the internet by checking several sources to see if the same information is given. Display **slide 4**, and give out printed copies, to remind the students of some of the information to add but encourage them to identify additional information.
* After students have collected sufficient information, invite them to share the information with the class and invite others to guess who the person is.

**What is data? (20 minutes)**

* Use **slide 5** to explain to students that when facts like these are stored by computers, they are called data. Establish that data is often made up of two parts: the name (which stays the same) and the value (which can differ). Explain this by identifying a name and values in the information about the famous person (date of birth (name), 23 February 1987 (value)).
* Allow students to consolidate this knowledge by asking questions relating to names and values of data. What value do you have for data with the name place of birth? What could the name of data with the value pizza be? Use table of **slide 6** to record examples of data names and data values.
* Explain that data can be classified into groups. Ask students to look at the data they created and discuss with their partners ways it could be grouped (**slide 7**).
* Invite suggestions, before explaining that it can be sorted into words and numbers, and data that stays the same and data that can change. When discussing each way of grouping, ask students to identify examples (numbers: age, height, number of siblings; words: place of birth, favourite colour, favourite food; stay the same: place of birth, date of birth; can change: age, favourite food, address).
* Use **slide 8** to display a Carroll diagram. Ask students to explain how to use it to sort the types of data. Discuss where some examples of data would be placed (date of birth, age, place of birth, last city visited). Give students a copy of the slide and ask them to work with their partner to place the data on their famous person into the Carroll diagram.

**How can data be used? (20 minutes)**

* Explain to students that the school keeps data on them (**slide 9**). Invite students to think/pair/share what data the school needs before discussing as a class and identifying the types of data kept by the school (e.g. name, address, age, medical information) and why.
* Invite students’ suggestions on who else might have data on them and what that data might be (doctor’s surgery: medical information, prescriptions, operations; sports team: age, address). For each example, identify why this data is needed.
* Ask students if they have store cards for any shops or any online accounts where they purchase or download content (examples may include Game store card, PS4 Plus accounts, Xbox Live accounts, Claire’s Accessories, Superdrug etc.). Invite students’ ideas on the type of data that these stores/websites might hold about them and how these may be used (targeting adverts, reminding them when renewal subscriptions are due - **slide 10**).
* Give students a copy of the ‘who might have my data?’ sheet and the ‘data name’ sheet (**slide 11**). Give students time to work in pairs to complete the sheets, identifying the data that different organisations might have on them and the reasons why the organisation might have this data. Discuss their answers as a class.

**How is data collected? (10 minutes)**

* Establish that the school gets all its data on students by requesting it from their parents/carers while internet-based technologies get this data when we tick the terms and conditions of using their device (**slides 12 and 13**).
* Display a web page showing the terms and conditions for an app or website popular with your class. Highlight to students that when they tick to accept, they are agreeing to every point in the terms and conditions.
* Invite suggestions from students on devices they have in their homes that are connected to the internet. Steer students towards the most recent technologies such as watches, cameras, digital assistants (e.g. Alexa, Google Home, etc.), and central heating systems (e.g. Hive).
* Explain that these devices collect data about us when we use them and discuss how the types of information that we ask Alexa for can be used to target advertising.
* Use the link on **slide 14** to share an example of how a company has collected and misused students’ data. Invite students to share any other examples they may have come across.
* If you wish, use **slide 15** to review the learning outcomes of the lesson.

**Extension ideas**

Students could research and produce posters to display around the school to inform others of their rights relating to their data.

**Differentiation**

**Support**

Provide students with examples of data to sort using the **‘examples of data’**support sheet**.**

**Stretch & challenge**

Students can be challenged to show more sophistication when answering how their data might be used by organisations by identifying a possible positive and negative use of data.

**Opportunities for assessment**

* Informal assessment of students’ understanding of types of data and how it can be grouped through paired activities.
* More formal assessment of students’ worksheets and how their data may be used by others.