**The structure and format of data**

This planning document is intended to support teachers who are delivering the NPA/PDA Data Science or for students who are learning independently. It also aligns with the Data Skills for Work framework.

**The lesson has been designed for learners using Microsoft Excel.** Most of the information in the lesson will work for other spreadsheets tools. However, if another tool is being used by the learners (such as Google Sheets) the step-by-step instructions will need to be checked.

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# Lesson Description

|  |  |
| --- | --- |
| **Lesson Overview** | Different structures for holding data. Difference between stored and display formats |
| **Topic** | Working with Data |
| **Book Chapter(s)** | “4. Working with Data, Data types, formats and structure” |

|  |  |
| --- | --- |
| **NPA level** | 4, 5, 6 |
| **PDA level** | 7, 8 |
| **Data skills for work level** | Core, Analysis |

# Learning Intentions

We will be learning about the structure of data, specifically to,

* understand the difference between **structured** and **unstructured** data
* understand how computers have different **display formats** for data
* understand there are different **file formats** for storing and sharing information

# Success Criteria

I can *describe* the difference between structured and unstructured data

I can *describe* common display formats

I can *recognise* different file formats

# Knowledge Prerequisites

Learners should know:

* data can be used to solve problems and find answers to questions
* data can be categorised as quantitative or qualitative

# Lesson Requirements

|  |  |  |  |
| --- | --- | --- | --- |
|  | **PDA** | **NPA** | **Data Skills for work** |
| **Qualification** | Yes | Yes | Yes |
| **Outcome ID(s)** | WD7.1c, WD8.2c | DS4.2a, DS4.2b, DS5.2a, DS6.2a | C2.1, A1.1 |
| **Outcome description(s)** | WD7.1c Common data formats  WD8.2c Data formats    *N.B. out of scope of this lesson, “WD7.1c Extract data from different sources”*  *“WD8.2c Extract data from a variety of sources.”* | DS4.2a Describe common data types and data formats  DS4.2b Describe structured and unstructured data  DS5.2a Describe common data types and data formats.  DS6.2a Describe common data types and data formats including structured and unstructured data. | C2.1 Vocabulary used in data science and analytics  A1.1 Data types, quantitative and qualitative |
| **Level** | 7, 8 | 4, 5, 6 | Core, Analysis |
| **Software language** | N/A | N/A | N/A |
| **Required equipment /software for student** | Lesson: PowerPoint,  Worksheet: Excel or pdf/printed | Lesson: PowerPoint,  Worksheet: Excel or pdf/printed | Lesson: PowerPoint,  Worksheet: Excel or pdf/printed |

# Task-types

In the worksheet for this lesson, there are up to 6 task-types that become increasingly challenging to support the students learning. Based on the student’s previous knowledge it is possible to select the task-types that are relevant to their stage.

|  |  |
| --- | --- |
| **Task-type** | **Description** |
| **1. Recall** | To be able to recognise definitions or procedures. |
| **2. Define** | To be able to define definitions or procedures. |
| **3. Rephrase** | To be able to use their own words to describe definitions or procedures. |
| **4. Apply** | To be able to apply definitions or procedures to problem-solving activities. |
| **5. Create** | To be able to apply definitions or procedures and create their own solutions to a defined problem. |
| **6. Active** | Using knowledge from the lesson which they apply to scenarios they have researched/designed themselves. |

# Worksheet

The worksheet associated with this lesson is available either in Excel or as a PDF that can be printed. The answer worksheet is available in both formats too.

|  |  |  |  |
| --- | --- | --- | --- |
| **Worksheet section ID** | **Description** | **Task-type** | **Number of questions** |
| 1.1 | Structure of data | Recall | 1 |
| 1.2 | Structure of data | Define | 4 |
| 1.3 | Structure of data | Rephrase | 1 |
| 2.1 | Display formats | Recall | 1 |
| 2.2 | Display formats | Define | 1 |
| 2.3 | Display formats | Rephase | 2 |
| 3.1 | File formats | Recall | 1 |
| 3.2 | File formats | Define | 1 |
| 3.3 | File formats | Rephase | 2 |
| **Total** | | | **14** |

# How you can use this lesson

This lesson has been created by Effini in partnership with Data Education in Schools, The Data Lab and Data Skills for Work, with funding from the Scottish Government.

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