

4565: Computing Foundations for a Digital Age

Unit 4

Day 2 Lesson Plan: Data Escape Room

Objective

Students will use metadata to make meaning from data and identify problems in flawed datasets.

Word Bytes

- **Metadata** – Information about data, like the time a photo was taken or file size.
- **Attributes** – Details or fields that describe a data item, like name, ID, or date.
- **Data Cleaning** – The process of fixing errors, removing duplicates, and making data consistent.

Activities

Hook: Mysterious Metadata

- Display a photo with hidden metadata (timestamp, location, device). Ask: *What can this tell us that isn't visible at first glance?*

Guided Discussion: What Is Metadata and Why Does Clean Data Matter?

- Lead a whole-class discussion connecting the concepts of metadata and data quality:

What is metadata?

- Metadata is hidden information about data—when something was created, who created it, where it was made, and more.

Examples:

- A photo shows Chicago's skyline. Metadata confirms it was taken in March 2023 at 4:02 PM near Navy Pier.
- A Google Doc shows the last edit was made by "Student A" at 9:27 AM today.

Why does metadata matter?

- It helps track when and where things happened.
- It can be used as digital evidence.
- It tells systems (and people) how to organize or interpret files.

What happens if metadata or data is incorrect, missing, or messy?

- **Medical data** with the wrong patient info could cause harm.
- **Scientific data** with missing timestamps could invalidate an experiment.
- **Grading systems** with inconsistent dates could show late work when it wasn't.
- **Business data** with duplicated entries could lead to poor decisions or financial loss.

Why is clean data critical in real life?

- Clean data supports **accurate analysis**, **fair decisions**, and **effective communication**.
- It prevents confusion, mistakes, and mistrust.

Who relies on clean data?

- Doctors, scientists, teachers, law enforcement, engineers, journalists, software developers.

End the discussion by asking: *If the truth lives in the data, how do we protect it?*

Station 1: [Metadata Match](#)

- Students examine metadata (e.g., date, time, location) from various files or images and match each to the correct journal entry or event description.

Station 2: [Spreadsheet Sleuths](#)

- Students review a messy dataset containing:
 - **Escape Challenge:** [Final Puzzle](#)
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Word Bytes Dictionary Update

Students add today's Word Bytes with examples:

- Metadata – The date and time a picture was taken.
- Attributes – A person's name, age, and school in a survey.
- Data Cleaning – Fixing spelling errors or combining duplicates in a contact list.