

## Investigating a real-world problem

40 minutes

Strand 2: Let's get connected

Outcome 2.10

### WHAT THIS LESSON DOES

Choose a local real-world challenge, collect data from Irish sources like sport fixtures and weather, chart the patterns, and frame the problem with its ethical issues as something a program could solve.

### CURRICULUM OUTCOMES

| Outcome | What the specification asks for                                        |
|---------|------------------------------------------------------------------------|
| 2.10    | identify a topic or a challenge in computer science that inspires them |

### WHAT STUDENTS SHOULD BE ABLE TO DO

- Identify a topic or challenge in computer science worth solving, and gather relevant data about it (LO 2.10)
- Note one ethical or legal issue around the chosen topic, and sketch what a program or website could do to help (first pass on LO 2.11; fuller pass in the pitch)

### BEFORE THE BELL

- Prepare one sample Irish data source to project, along with the short worked path you will model: one real reading, what the pattern might mean, what a small program could do. Choose readings students can gather inside one period (several stations, clubs or places).
- Decide and write the save destination (school drive, shared folder, or notebook) on the board.
- Have the exact allowed pages or links ready to share, or plan to run entirely from one projected source.
- Prepare a one-screen page stub with four empty slots (title, stat A, stat B, button label) to project or hand out for the sketch step.
- Prepare a 30-second ethics and legal flash for the board, plus two or three banked issue stems for students who need a starter.
- Optional: put the words ethical and legal on a starter slide so the issue line is recall rather than a cold start.
- Decide which Irish data sources the class can reach today (GAA fixtures, met.ie, Dublin Bikes), pre-open or project at least one, and write the class save method on the board
- Open one sample Irish data source on the board and rehearse the mini-path with an in-session pattern line (several stations, clubs, or places right now); keep ethics/legal worked lines for a 30-second board flash before step 4
- Exact source links or one projected source ready; optional one-line how-to per source on the board
- Student devices with browser access to the data-recorder
- Put the four-box frame on the board with the stems; leave the worked mini-example visible
- Write the real save destination on the board
- Prepare a simple one-screen stub template (title, two stat boxes, button label) on screen or paper

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### HOW THE LESSON RUNS

|       |          |                                          |
|-------|----------|------------------------------------------|
| 4 min | content  | Start                                    |
| 4 min | content  | What makes a problem worth solving       |
| 2 min | content  | Choose your source and angle             |
| 9 min | activity | Hands-on: record your readings           |
| 4 min | content  | Chart it and read the pattern            |
| 6 min | content  | Write your problem sentence and evidence |
| 3 min | content  | Name one ethical or legal issue          |
| 2 min | content  | Say what a solution would do, and save   |
| 2 min | content  | Tiny page sketch                         |
| 2 min | content  | Make sense                               |
| 1 min | content  | Reflect                                  |
| 1 min | content  | What you covered                         |

### TEACHING MOVES

- Model the whole short path on the board before students open any source, so they can see a finished example of what nine minutes of recording is meant to produce.
- Keep the second step brief, and hold the ethics and legal worked lines for the board flash just before the issue step, where students need them.
- Treat the projected source as the default plan on shared or slow networks rather than as an emergency fallback.
- Require at least four real rows of the same kind of measure before anyone charts, because a chart of one reading or of mixed measures cannot show a pattern.
- Circulate during the recording activity to check tables for invented numbers and mixed metrics, and ask: what would a second reading change, and who is affected if this pattern is real?
- Check the problem sentence and two evidence numbers are written before anyone moves past the framing step, since the issue line and the job word both hang off them.
- The four job words are on the students' screen at the solution step; keep them on the board too, and stay with warn, schedule, display and match rather than adding others, so the sketch has a single clear button label.
- Redirect students who begin designing solutions early; today's outcome is a justified problem, not a product.
- End the save step by naming the real destination aloud, not just pointing at the board.
- Run the page sketch as filling the slots only, then take a short share of numbers and job words.
- A fuller look at the ethical, legal and technical questions sits in the pitch lesson. Today students note one ethical or legal point and sketch a solution job.

### WHAT TO WATCH FOR

- Using invented numbers: redirect students to the actual data source or the board projection.
- Recording only one row of data: ask for at least four readings to show a pattern.
- Mixing different measures in one table so the chart cannot compare like with like: reset to one measure across rows.
- Writing ethics or legal points as empty labels: push for whose privacy, or who owns the data, or offer a banked stem.
- Designing a program instead of framing the problem: refocus on the four boxes, then the stub slots only.
- Mismatched measure and value in the table: keep What I measured and Value on the same metric.

### DIFFERENTIATION

- Support: model one example row on the board, and keep the mini-example, the four-box frame, the job words and the issue stems visible throughout.
- Support: allow paired work for interpreting chart patterns.
- Extension: invite students to propose an additional Irish data source, or a second ethical or legal point to carry into the pitch.