

DIRECTORS

Digital data-dRiven EduCaTion FOR kids



Who are we and what is the project about?

Delft University of Technology and the University of Zagreb have joined forces in the Erasmus+ project **DIRECTORS (Digital data-Riven EduCaTion for kidS)** (www.kidsdirectors.eu).

We aim **to promote data literacy in primary education** through new teaching methods and materials to support updating current curricula on data education. This will improve the **digital and data skills** of both **teachers and pupils**.



What do we want to do?

We aim to organize *three workshops* in 2024 and 2025 in Zagreb and Delft for primary school teachers and pupils aged 8 to 10 years old. Each workshop would entail *2 sessions*, each ca *90 minutes*.

During these workshops, pupils will better understand the **real world of data** and **improve their competencies**. Teachers will get the teaching tools to teach data literacy and knowledge to teach it. Our new teaching approach and developed learning tools will be tested in the workshops and discussed with the teachers involved. The lessons learned from the implementation of the workshops will be used as input to the teaching guidelines for the national bodies as a step towards the inclusion of data literacy in the current curricula of primary schools.



young children
ISCED level 1



DATA COLLECTION
by children from the
real-world environment



DATA PROCESSING
"children-readable form",
checked for possible errors,
and cleaned if necessary

DATA ANALYSIS
ask questions,
extract insights
from data



CRITICAL THINKING
draw **CONCLUSIONS**
from the data and
about the data



DATA VISUALISATION
depict data in a clear manner,
encourage spatial thinking



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Workshop 1

The first workshop will introduce the pupils to the **world of real-life data**, from data collection to processing and critically evaluating results. Pupils will explore real-world data by looking at their own use of mobile devices – for example, their favourite games or video channels, the amount of time spent on a particular app, and so on. *During the first session*, they will estimate their use of mobile devices and create data cards with their estimates and favourite apps. They will then learn how to group, categorize, and clean data and how to visualize it in a word cloud. *In the second session*, pupils will learn how to collect, adapt, and enter actual mobile phone data into a dataset. They will investigate similarities and differences between the entire class's data and their own data and compare their estimates to the data they've collected. They will also learn how to visualize real-world data, why it's important for data to be entered accurately, and how to preserve privacy when adding personal information to a shared dataset.

Workshop 2

The second workshop will introduce the pupils to the **world of geoinformation and geospatial data mapping**. *In the first session*, they will become familiar with the basics of Geographic Information Systems (GIS) by creating map layers on transparent sheets, mapping the school's surroundings. Each sheet will represent a single layer of information – such as buildings, trees, roads, or playgrounds. When these sheets are placed on top of each other, all the layers combine into a complete map, serving as a simple visual analogy for GIS. In the same way the sheets show different layers, GIS systems digitally organize and analyse data in layers, allowing for the viewing and exploration of various spatial elements. *In the second session*, pupils will apply their newly acquired knowledge in a digital environment by participating in a detective-themed treasure hunt. Step by step, they will solve puzzles using GIS layers and data in digital form. The detective game will conclude outside the school, following the geographic coordinates obtained while solving the puzzles.

Workshop 3

The third workshop will introduce the pupils to **more advanced data skills**: how to gather data from various real-world sources, assess data quality, and critically analyse the results obtained. This will be illustrated through the example of counting steps and measuring distance in different ways. The data sources used will include manual counting, counting with mobile apps, counting with smartwatches / sports bands, measuring distance with Google Maps, and measuring distance using mobile phones with built-in GPS while recording GPX tracks. *In the first session*, pupils will explore the differences in step counting within the classroom using various methods and sensors. *In the second session*, we will move to the school playground, where pupils will measure a longer distance in multiple ways, including with satellite assistance. While walking, they will also record GPX tracks showing their walking route. Returning to the classroom, they will compare the results from all measurement methods and conclude that while technological solutions are important, we should not blindly trust technology and collected data without verification and further investigation.

Things to consider:

- The proposed schedule and workshop duration **is flexible** and can be modified according to school possibilities.
- Our estimation is that these three workshops would cover altogether **40 pupils**. This can be arranged in various ways, depending on the availability of pupils and teachers. The presence of the teacher during the workshop is implied.
- For successful workshop implementation, (most of) the children would need temporary access to their mobile phones and internet connection during the sessions. In the case that is not possible, the workshop would be adapted to full offline mode, but this would entail a smaller number of learning outcomes to be achieved.
- For successful Workshop 2 and Workshop 3 implementation, it is envisaged to go out with the pupils in the environment near the school. During the sessions, this will be limited to the schoolyard. For the "homework", pupils can use their normal route between home and school.

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