

NEWSLETTER

April 2026/vol. 005

DATA SCIENCE EDUCATION IN STEAM FOR CIVIC ENGAGEMENT AND SOCIAL JUSTICE FROM THE EARLY YEARS

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Welcome to the fifth edition of the DataScEd4CiEn newsletter!

STEAM Scenarios and Student Work Across Europe

In this edition of the DataScEd4CiEn newsletter, we are proud to present the innovative STEAM educational scenarios developed and implemented by the project partners across participating countries.

The scenarios featured in this issue demonstrate how Data Science can be meaningfully integrated into STEAM education to support inquiry-based learning, critical thinking, civic engagement, and social justice. Through authentic datasets and real-world contexts, students explored important societal issues while developing data literacy and problem-solving skills.

This edition also highlights examples of student work produced during the classroom implementations. The showcased activities and student outputs reflect creativity, collaboration, and active participation, illustrating the impact of data-driven learning experiences in contemporary classrooms.

By sharing these scenarios and classroom examples, the project aims to inspire educators to adopt innovative approaches that connect Data Science, STEAM education, and active citizenship in meaningful and engaging ways.

We hope you enjoy exploring the inspiring work carried out by teachers and students throughout the DataScEd4CiEn project.

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The Journey of Our Food: From Farm to Bin (Ireland)

Implemented in Ireland with 5th–6th class pupils, The Journey of Our Food: From Farm to Bin engaged students in exploring food waste as a social, environmental, and civic issue through an interdisciplinary STEAM approach. Using real-world datasets from Ireland and across Europe, pupils investigated food systems, analysed food waste data using CODAP, and reflected on how food choices and waste impact communities and the environment.

The scenario combined data science, geography, science, literacy, drama, and the arts to support inquiry-based learning and critical thinking. Students created creative prototypes, performances, visual artworks, persuasive messages, and storyboards to communicate evidence-based ideas for reducing food waste within their school community, demonstrating how data-driven learning can promote active citizenship and social responsibility.

Reducing Food Waste: Learning to Act with Data (Greece)

Implemented in Greece with students aged 12–14, Reducing Food Waste: Learning to Act with Data engaged learners in investigating food waste through interdisciplinary STEAM and data science approaches. Using authentic datasets from Eurostat, FAO, and other international sources, students explored the social, environmental, and economic dimensions of food waste while developing skills in data interpretation, modeling, and evidence-based reasoning.

Throughout the scenario, students formulated investigable questions, analysed visualisations and datasets using CODAP, and critically reflected on the reliability and limitations of data. The learning experience combined mathematics, data science, citizenship education, digital creativity, and sustainability, encouraging students to connect statistical evidence with responsible civic action.

As part of the implementation, students created awareness campaigns, digital comics, posters, and interactive educational games using tools such as Canva and Roblox Studio. Through these creative outputs, students translated data into meaningful civic messages, demonstrating how Data Science and STEAM education can foster critical thinking, collaboration, and active citizenship in the classroom.



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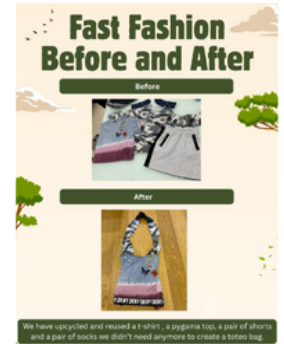
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What Is the True Cost of My Clothes? (Cyprus)

Developed at The English School in Nicosia, Cyprus, What Is the True Cost of My Clothes? is an interdisciplinary STEAM scenario that explores the social justice and environmental impact of the fast fashion industry through data science, inquiry, and ethical reflection. The scenario encourages students to investigate their own shopping habits while analysing authentic datasets related to textile waste, labour conditions, globalization, and environmental damage caused by fast fashion.

Using CODAP and data-driven inquiry, students explored patterns and statistics connected to fashion consumption, interpreted real-world data, and reflected critically on the human and environmental consequences of consumer behaviour. The scenario combined mathematics, science, geography, ICT, English, art, design and technology, and PSHCE through collaborative and project-based learning approaches.

As part of the learning experience, students engaged in empathy-based activities exploring the lives of garment workers and developed sustainable fashion ideas through design thinking. In Art, students created bookmarks using old garments and fabric materials that would otherwise have been discarded, while in Design and Technology they upcycled clothing to create new and reusable products. In Computer Science, students designed posters and produced awareness videos to promote more sustainable and ethical consumer choices. Through these creative and interdisciplinary activities, students connected Data Science, STEAM education, sustainability, and social justice while developing greater awareness of their role as responsible global citizens.



Every Bite Counts: Tackling Food Waste Together (Cyprus)

Every Bite Counts: Tackling Food Waste Together is an interdisciplinary STEAM scenario that explores food waste, sustainability, and responsible consumption through data science and inquiry-based learning. The scenario encouraged students to investigate their own food waste habits at home by tracking discarded food and calculating how much money, energy, and potential meals were being wasted through everyday consumption practices.

Using CODAP and authentic datasets on food waste across Europe, with a particular focus on Cyprus, students analysed patterns and statistics related to food sustainability while developing skills in data interpretation, critical thinking, and evidence-based reasoning. In Science, students explored composting and environmental sustainability, while in Design and Technology they designed and produced recyclable food packaging linked to their own creative cooking projects. Each package included a QR code connected to videos and recipes created by the students using leftover ingredients from home.

As part of the awareness campaign developed throughout the project, students also created posters and videos in Computer Science to promote more sustainable food practices within their communities.



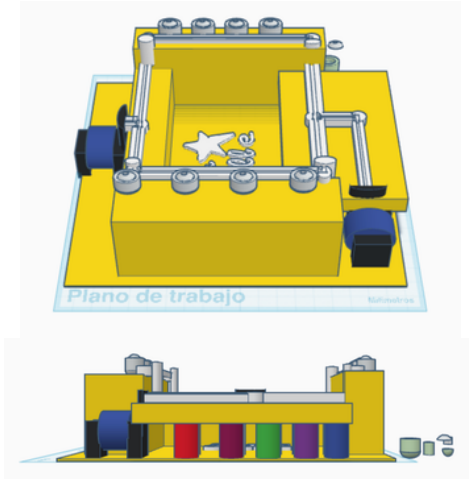
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Design Thinking. Droughts! no? (Spain)

In this interdisciplinary STEAM scenario, secondary school students explored the issue of droughts and water scarcity in their local community through Data Science and design thinking approaches. Students investigated climate and precipitation data, analysed causes and consequences of droughts, and used digital tools such as CODAP to collect, visualise, model, and interpret authentic datasets.

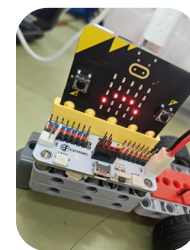
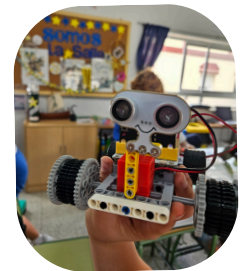
The scenario encouraged students to engage critically with environmental and social challenges while developing 21st-century skills such as collaboration, communication, creativity, and critical thinking. As part of the project, students designed and prototyped a rainwater cistern using Tinkercad, proposing practical solutions to support sustainable water management in their school community.



Fire Alert!: We Detect Fires, We Protect Our Future (Spain)

This interdisciplinary STEAM scenario engaged primary school students in exploring the environmental, social, and economic impact of forest fires through Data Science, technology, and civic engagement. Working with real datasets, interactive maps, graphs, and scientific information, students investigated the causes and consequences of fires while developing skills in data analysis, critical thinking, collaboration, and environmental awareness.

As part of the project, students designed, built, and programmed a fire detector robot using light and temperature sensors, applying knowledge from Natural Sciences, Mathematics, Robotics, and Technology to address a real-world environmental challenge. The scenario promoted active citizenship and social responsibility, encouraging students to reflect on how technology and data can support communities and contribute to environmental protection and social justice



Civically Engaged to Ensure that an Earthquake is Not a Social Issue (Spain)

This STEAM scenario introduces secondary school students to the science and data science of earthquakes through an interdisciplinary approach combining biology, geology, geography, mathematics, statistics, and language education. Across 15 sessions, students investigate how earthquakes occur, how seismic waves travel, how earthquake magnitude is measured, and how scientists use historical and real-time seismic data to monitor and predict seismic activity. Students work with authentic earthquake datasets from sources such as the Spanish National Geographic Institute (IGN), CODAP, and GeoGebra to analyse patterns, build graphs, explore conditional probability, and even construct simple machine-learning decision-tree models related to earthquake occurrence. The project encourages learners to critically evaluate seismic risks in their own community, Puerto Real, while developing data literacy, scientific reasoning, and ethical awareness about communicating natural disaster information.

The learning process culminates in a final journalistic article titled "Are you afraid of an earthquake in Puerto Real, yes or no?", where students use evidence, visualisations, and data-driven arguments to communicate informed conclusions to a wider audience. Through inquiry-based learning, collaboration, and real-world problem solving, the scenario promotes civic engagement, critical thinking, responsible use of data, and community preparedness in relation to natural hazards.

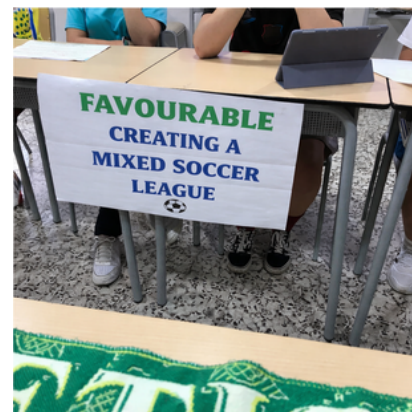
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Is a Mixed Professional Football League Viable? (Spain)

In this STEAM scenario, secondary school students explored whether a mixed professional football league could be socially, economically, and competitively viable. Using real datasets from men's and women's football leagues, students analysed player performance, market values, public interest, and gender differences through statistics, mathematical modelling, and data visualisation tools such as CODAP, GeoGebra, and ChatGPT.

The project encouraged critical thinking, data literacy, and civic engagement by challenging students to reflect on stereotypes, biases, gender equality, and the reliability of AI-generated information. The learning process culminated in a structured debate in which students defended their positions using evidence-based arguments and authentic data analysis



Accepting Foreigners in a Globalised World Where Distance is 'Relative' (Spain)

In this interdisciplinary STEAM scenario, students explored migration, globalisation, and human rights through the combined perspectives of history, mathematics, language, ethics, and technology. Using real migration data, historical case studies, and digital tools such as CODAP and Google Earth, students investigated the distances travelled by migrants and refugees to Spain while reflecting on empathy, inclusion, and cultural diversity.

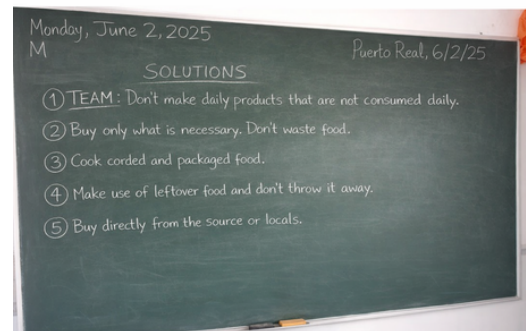
The project connected Data Science with civic engagement and social justice, encouraging students to critically analyse migration processes, challenge stereotypes, and develop ethical and evidence-based perspectives on global citizenship in today's interconnected world



Economy and Justice: Poverty (Spain)

This STEAM scenario engaged primary school students in exploring poverty, fairness, and social justice through Data Science, mathematics, arts, and social sciences. Students investigated global poverty using World Bank data, maps, graphs, and machine learning activities, while reflecting on inequalities in access to food, resources, and opportunities.

Through hands-on activities such as analysing poverty data, training AI models to recognise living conditions, and creating a Fair Trade market, students developed critical thinking, empathy, and civic awareness. The scenario encouraged learners to understand the importance of equity, solidarity, and fair trade in building a more just and sustainable world.



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Mission Waste: Investigating and Improving Our School Waste (Germany)

Developed by pre-service teachers at Münster University, Mission Waste: Investigating and Improving Our School Waste is a STEAM educational scenario designed for primary school students to explore waste production, recycling, and environmental sustainability through data science and inquiry-based learning. The scenario encourages students to investigate the amount and types of waste produced in their own school environment by collecting, measuring, organising, and analysing authentic data related to everyday waste production.

Through collaborative activities, students worked with tables, diagrams, and data visualisations to interpret findings and develop evidence-based solutions for reducing waste within their school community. The scenario combines mathematics, science, environmental education, technology, and the arts, while also fostering critical thinking, problem-solving, teamwork, and civic responsibility. By connecting data literacy with real-world environmental challenges, the scenario demonstrates how STEAM education can empower young learners to engage actively in sustainable and responsible action.

Numbers Tell More Than Words: What Can We Do About Food Waste in Everyday School Life? (Germany)

Developed by pre-service teachers at Münster University, Numbers Tell More Than Words: What Can We Do About Food Waste in Everyday School Life? is an interdisciplinary STEAM scenario designed for primary school students to explore the issue of food waste through data science, sustainability education, and civic engagement. Using authentic datasets and the CODAP platform, students investigated where food waste occurs most frequently, analysed and interpreted data from different sectors and countries, and discovered that private households contribute significantly to food waste production.

Building on these findings, students reflected on their own consumption habits and explored the concept of food sharing as a practical and socially responsible response to food waste. Through collaborative and inquiry-based activities, they developed ideas for creating a school Foodsharing shelf, including rules, organisation, informational materials, and visual designs to support its use within the school community.

The scenario combines mathematics, environmental education, technology, and creative design while fostering critical thinking, teamwork, communication, and responsible citizenship. By connecting data literacy with real-world sustainability challenges, the scenario demonstrates how STEAM education can empower young learners to take meaningful action within their everyday lives and communities.

Our Class in Motion: How Active Are We During the School Day? (Germany)

Developed by pre-service teachers at Münster University, Our Class in Motion: How Active Are We During the School Day? is an interdisciplinary STEAM scenario designed for primary school students to investigate physical activity, healthy lifestyles, and wellbeing through data science and inquiry-based learning. The scenario encourages students to collect, measure, and analyse their own movement data during the school day, helping them reflect critically on their physical activity levels and explore ways to integrate more movement into everyday classroom life.

Using stopwatches, tables, and diagrams, students gathered authentic data about their movement patterns, compared estimated and actual activity levels, and visualised their findings through charts and collaborative discussions. The scenario combines mathematics, sports education, health education, technology, and creative activities to support data literacy, critical thinking, communication, and responsible decision-making related to health and wellbeing.

In addition to analysing movement data, students explored healthy nutrition, discussed the importance of balanced lifestyles, and collaboratively designed movement breaks and classroom posters promoting healthy habits. By connecting Data Science with health education and active participation, the scenario demonstrates how STEAM education can support students in developing healthier and more reflective everyday practices.