"Fire alert!: We detect fires, we protect our future."

Introduction

Title

Fire alert!: We detect fires, we protect our future.

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Scenario summary

This project aims to raise awareness among students about the problem of forest fires, their growing environmental, social and economic impact, and to promote civic engagement through the use of data science as an educational tool. Through the study of real data and the critical analysis of information, students address an urgent global situation, with a focus linked to social justice and sustainable development.

During the project, students investigate the causes, consequences and geographical distribution of forest fires, using official databases, maps, graphs and news. Through an active methodology, they work on data collection, interpretation and visualization, developing key scientific and digital skills. As a final product, they design and build a fire detector robot, equipped with light and temperature sensors, which represents a technological response to an environmental emergency. This project not only encourages critical thinking and responsible action, but also strengthens the role of students as active agents in the defense of the environment and social equity.

Age of students

11-12 years old (Educational level: 6th Primary Education)

'Data Science Content in STEAM for Civic Engagement and Social Justice from the Early Years'

Subjects and topics

The scenario has been built as part of a seminar in which students must connect and apply knowledge of different STEAM subjects to understand the problem of forest fires and their

environmental and social impact. Among the areas involved are Social Sciences, Natural Sciences, Mathematics, Spanish Language, Computing and Robotics, Education in Values and Citizenship together with Religious Education. Using technology and addressing all these subjects in a transversal way, students analyse real data, interpret causes and consequences, and design technological solutions that promote civic engagement and environmental justice.

Real-life questions

- Why do you think that in recent years so many fires are happening in different parts of the world?"
- What things are changing on the planet that could be causing this?
- What do you think is happening to our planet and how does it affect us all?
- How can the data that science gives us help us better understand the planet's problems and make decisions that take care of people, animals, and the place where we live?"
- How can we use that information to do something fair and good for everyone?
- Do you think we could use current technology to help solve or reduce these problems? How would you do it?
- What factors could be causing these fires in the most affected areas?
- Think about things like climate, human activity, or deforestation. How do you think these elements contribute to the increase in fires?
- How can we use fire data to help the most vulnerable communities?
- Consider how fire information can be shared with those who need it most. What actions could they take to protect themselves?
- What actions can we take from our community to prevent fires and take care of our environment?
- Think about local activities, environmental education, or collaboration with authorities. How can we contribute to the common welfare?

Objectives of the scenario

- Understand the problem of forest fires from a scientific, social and environmental perspective, analysing their causes, consequences and geographical distribution.
- To introduce students to data science, developing basic skills in the collection, interpretation and visualisation of data related to real phenomena.
- Apply STEAM (Natural Sciences, Mathematics, Technology, Social Sciences, and Values Education) subject content in an integrated way to analyze and address a real-world problem.
- Encourage critical thinking and environmental awareness, promoting reflection on the relationship between human beings, the environment and social inequalities derived from natural disasters.
- Develop technological and basic programming skills, by building a fire detector robot with light and temperature sensors.
- To promote the civic engagement of students, recognising their active role as citizens capable of generating solutions and contributing to the well-being of their community and the planet.
- Promote cooperative work, creativity and communication, favouring the production of final products with social value, such as presentations, exhibitions or functional technological devices.

Skills and competencies

Students will develop skills and competencies related to:● environmental awareness, environmental justice, civic engagement, social responsibility, and concern for the impact of fires on vulnerable communities and ecosystems,● problem-solving, communication, collaboration, creativity, critical thinking, data analysis, and open-mindedness towards technological and social solutions.

Didactic Approaches and Learning Strategies/Theories

The stage has been designed as part of a seminar with different moments:

A) A STEAM methodological approach based on inquiry and problem-based learning, which invites students to explore the phenomenon of forest fires from a scientific, social and technological perspective. In this phase, students identify the problem of fires and their environmental and social impact, reflecting, formulating, debating and answering research questions about their causes, frequency and consequences. They collect and analyze real data using data science tools, develop hypotheses, and perform visualizations to interpret the information. This process encourages critical, creative, and analytical thinking.

B) Based on the conclusions obtained, students move on to project-based learning, in which they design and build a fire detector robot equipped with light and temperature sensors. Working in small groups, they apply knowledge of mathematics, technology and natural sciences to develop a concrete technological solution that responds to a real problem.

C) Finally, taking up real-life questions and the principles of inquiry-based learning, students reflect on the experience, assessing the social and environmental impact of their work and their role as agents of change.

Relate the national curriculum to the DataScEd4CiEn scenario

The Spanish national curriculum provides a solid basis for the development of the *scenario "Fire Alert: We detect fires, we protect our future"* thanks to its comprehensive and competency-based approach in STEAM areas and in education for citizenship. The inclusion of key competences such as critical thinking, digital literacy, social and civic competence, and environmental awareness makes it easier for students to tackle real problems from an interdisciplinary perspective. In particular, the presence of content related to sustainability, climate change and social responsibility in the fields of Social Sciences, Natural Sciences, Mathematics and Computing and Robotics constitutes a fundamental strength to integrate data science and civic engagement in the classroom.

This scenario also provides opportunities to innovate the national curriculum, by promoting active, contextualized learning focused on real technological projects that respond to current and relevant problems for students. The incorporation of data science applied to environmental phenomena, together with the construction of technological devices such as the fire-detecting robot, enriches the traditional curriculum and favors advanced digital literacy. In addition, the project fosters ethical and social commitment, integrating environmental justice into education, which broadens the focus of the curriculum towards a more critical, responsible and citizen-oriented training.

Educational Scenario Planning

In this section we will describe the Lesson Plan to carry out this scenario.

Lesson Plan

Activity Name	Procedures	Time /Annex
Lesson 1: Presentation "Fireworks"		
STEAM Theme	*This seminar has as an addition to its contextualization, that in recent years the students have experienced different fires in their closest environment, being, for example, the fire of "Las Canteras" the most striking for them.* We start the session by watching a series of **videos about fires** on the planet *(NCA Material)* Fire devastates the Arctic Circle | Euronews We begin by commenting on some aspects of these fatal events. • *The fires of recent years have been devastating. Some say that they are common phenomena on a global scale. But in recent years they have been described as exceptional fires. What do you mean when you talk about common phenomena and exceptional fires? What do you think?* • *In the news, what fires have you heard about? What consequences and effects have these fires had?* • *What would you think if we told you that forest fires can be more polluting than industrial emissions and that, in addition, they produce certain particles and substances that are truly harmful to the health of all living beings?* • *Do any of you know about the Copernicus programme?* + Watch the **video** about ***Copernicus 5min*** *(NCA Material)* EN - The Copernicus Programme - After these first questions, we projected the video of the first link *(NCA material)* ("Fires in Europe will be as devastating as those in the Amazon"), from an interview with an expert in fire management and extinction. Below, we comment on the video: • *What has impacted you the most? What would you emphasize? What ideas do you prefer?*	1 hour Links to videos.
Expected Learning Outcomes	- Understand what wildfires are and why they are increasing around the world and in their immediate environment. - Reflect and give feedback on fire-related news and videos, sharing ideas with respect.	

	- Identify some consequences of fires for the environment, people and animals. - Learn what the Copernicus programme is and how it helps monitor fires from space.	
Lesson 2: We Reflect		
STEAM Theme	In this session we will first reflect in small cooperative groups and then share the reflections in large groups. The questions that will guide your reflection are listed in Annex I.	Annex 1. 1 hour
Expected Learning Outcomes	- Reflect as a group on the causes of fires and changes on the planet, developing environmental awareness. - Understand how science and data help understand real problems, such as fires and their effects. - Propose fair and responsible ideas for caring for people, animals, and the environment using the information obtained. - Value the use of technology as a solution tool, imagining ways to apply it to environmental problems. **Following the initial implementation** of the activity, additional reflective questions (Question 3 in each section) were incorporated to deepen the analysis of the issue from the perspectives of civic engagement and social justice. As a result, two new intended learning outcomes were added to those originally proposed. - Analyse how environmental problems affect different individuals and communities unequally, fostering empathy, civic engagement, and reflection on social justice. - Propose fair and responsible actions to protect people, animals, and the environment by using the information gathered to inform decision-making. These modifications enriched the data science component of the activity by promoting not only the interpretation of information but also ethical and socially responsible decision-making.	
Lesson 3: We work with real data		
STEAM Theme	In these sessions, students will work with real data. To do this, they have a file shared with the teachers (in Google Drive) with all the steps to follow and questions to analyze and answer. This fact sheet can be seen in Annex II.	Annex 2 2 hours
Expected Learning Outcomes	**Following the initial implementation**, the session was reorganised into four progressive blocks (exploration, comprehension, scientific thinking, and decision-making) in order to strengthen the development of data literacy and civic engagement. New questions were introduced to promote the distinction between observations and	

	interpretations, the recognition of scientific uncertainty, the identification of information required to support conclusions, and justified decision-making based on equity and social justice criteria. These modifications reinforced the project's data science approach, enabling students not only to analyse and interpret information but also to use it in a critical, ethical, and socially responsible manner to understand complex problems and propose well-founded responses. Accordingly, the intended learning outcomes for this session are: - Locate and interpret information from interactive maps and graphs on wildfires, identifying spatial and temporal patterns in Spain and other regions of the world. - Analyse and compare real data on fire alerts and forest loss, applying basic mathematical procedures to calculate quantities and averages in order to understand trends and variations. - Formulate explanations and hypotheses about observed phenomena, distinguishing between data-driven evidence and personal interpretations, and recognising uncertainty and the need for additional information to support conclusions. - Develop a critical perspective on data, valuing both its usefulness and its limitations in understanding complex environmental issues. - Use available evidence to argue and make justified decisions regarding resource allocation and prevention measures, incorporating criteria of equity, vulnerability, and social justice. - Work collaboratively using digital tools to explore, record, analyse, and communicate information in a clear, respectful, and evidence-based manner (Google Docs, maps, graphs).	
Lesson 4: Technology + Civic Engagement		
STEAM Theme	The following question is posed to reflect on first in cooperative groups. 🤖 **5. What current technologies could help us detect fires quickly and alert people?** 🔧 *Think about tools such as sensors, mobile apps, or communication systems. How could these technologies save lives?* Once they have left time for reflection, they will have to put their answer in the Padlet link, which appears in	Annex 3 1 hour

	Annex III After having let all the groups contribute in Padlet, we will comment on the answers in a large group.	
Expected Learning Outcomes	- Identify current technologies useful for detecting fires (such as sensors, apps or warning systems). - Reflect as a group on how these tools can protect people, animals, and nature. - Express their ideas clearly and creatively in a collaborative digital environment (Padlet). - Listen to and value the ideas of other colleagues, recognizing different ways of using technology for the common good.	
Lesson 5: Design, build, and program the robot		
STEAM Theme	The use of Annexes 3 and 4 is required for this lesson. Throughout this lesson, the teachers will be attentively observing the work process of the students. The students, divided into pairs and/or trios, will begin by following the instructions that appear in the second section of Annex 3. To do this, they also need to simultaneously access Annex 4, where they will have to fill in the sections referring to the design of their robot. Once this first phase is complete, the small groups will move on to manipulative work with the Wonder Maker kits (Micro:bit). Once they have assembled the robot, they will go on to program it, using their previous knowledge (worked on in previous Wonder Maker workshops) and with the help of Wonder documentation from our sector (La Salle) regarding light and temperature sensors. Once they program, they must test the robot's functionality. After checking it, they must record and take photos of their robot (functions, design, etc.) and share them in the appropriate folder of Google Drive.	4 hours Documentation WONDER MAKER - *NCA Material* (All in students' Google Drive folders) Kits WONDER Micro:bit Micro:bit programming website - Microsoft MakeCode for micro:bit Annex 4
Expected Learning Outcomes	- Design and build a functional robot capable of detecting light or temperature, applying basic knowledge of robotics and sensors. - Program the robot as a team, following instructions and solving technical problems cooperatively. - Explain the operation of the robot through the design sheet and a video, clearly communicating the purpose, sensors and operation. - Organize and share digital material in collaborative folders, developing responsibility in the use of digital tools (Google Drive).	
Lesson 6: Dissemination of the work		

STEAM Theme	In this lesson, students will begin to prepare their presentation. The exhibition is carried out at all levels of the primary, assigning a class to 2-3 small groups, so that everyone has shown their robots to the rest of their classmates from lower levels. To prepare the presentation, it is necessary to access Annex 5, where a series of indications appear to address the main ideas. The option to prepare a supporting digital presentation has been added. *(OBSERVATIONS: In the implementation during the 24/25 academic year: 95% of the teams prepared digital presentation)*	2 hours Annex 5 Final product of each group Digital presentation by groups
Expected Learning Outcomes	- Reflect as a group on what you learned during the project, expressing key ideas about fires, science, technology and social commitment. - Prepare a clear and organized oral presentation, explaining how the robot works and the teamwork process. - Create a message or slogan with social impact, which motivates other people to take care of the environment and act responsibly. - Organizes and presents multimedia materials (videos, photos, presentations) in common digital spaces, demonstrating communication and digital skills	
Lesson 7: Closure + Evaluation		
STEAM Theme	In this session we are going to share the global vision that we take away from this scenario. To do this, students will go back to our workspace in Google Drive, where they will find the file, corresponding to Annex IV. With this worksheet they reflect in small groups and then we share the ideas in a large group. After sharing the global vision of each cooperative group, they carry out a final questionnaire (in Google Forms), where they assess the entire development of the seminar.	2 hours Annex 6 Link to the final Google Forms questionnaire: Primary-DataScEd4CiEn. Get ready to share your experiences and reflections!
Expected learning outcomes.	- Reflect on the causes of fires and how they affect communities, understanding the relationship between climate, human activity, and the environment. - It proposes actions to prevent fires and help those who need it most, using the information and data learned. - Evaluates their learning and participation in the project, recognizing their role in caring for the environment and social commitment.	

Timing

Preparation time: 1 hour of each session. *Some lessons use multiple sessions.*
Expected teaching time for each of the STEAM subjects
STEAM Social Sciences: 2 sessions of 60 minutes each.
STEAM Natural Sciences: 1 session of 60 minutes.
STEAM Education in Values and Citizenship + ERE : 1 session of 45 minutes
STEAM Computing and Robotics: 4 sessions, 1 session of 45 minutes and 3 sessions of 60 minutes each.
STEAM Spanish Language: 1 session of 60 minutes.
STEAM Mathematics: 2 sessions of 60 minutes each.
In an interdisciplinary way, Artistic work is done, since the students have to design not only the robot but also the digital presentations that they have used to make oral presentations to students in the lower levels of the Primary stage.
Evaluation time: Different options are given to evaluate depending on the availability of time. There is the option of having a rubric (Annex 7) for each of the lessons, or a global rubric (Annex 8) in which the different lessons are evaluated.

Teaching resources (technological materials and tools)

Materials

Computers/Tablets.
Wonder Kits (Micro:bit)
Internet connection.

Online Tools

Workspace / Google Drive App and Google Docs.
Wifi connection and internet.
Websites with real data *(inserted in each of the annexes prepared for each lesson)*

Evaluation

Initial assessment

Lesson 1 will help teachers to obtain information about the students' previous knowledge and ideas on the topic to be worked on.

Assessment Tools

To evaluate the development and results of the scenario, two evaluation modalities have been designed based on rubrics, which allow both the process and the products obtained by the students to be assessed. Both options provide a structured and objective tool to ensure the quality of learning and promote continuous improvement.

The first option consists of a specific rubric for each of the lessons taken. Each rubric includes several items related to the specific activities of that session, evaluated on a four-point scale (from 1 to 4), where the value 4 represents the highest level of achievement. This modality favors a detailed and formative assessment, allowing a punctual monitoring of the competencies and skills that are developed in each phase of the project.

The second option proposes a global rubric that integrates a single evaluation criterion for each activity carried out within the scenario. This rubric also uses a four-point scale, facilitating a more synthetic evaluation focused on the overall result of each task. This option allows a global view of the students' progress to be obtained and simplifies the assessment process, being especially useful for assessing transversal competences and the ability to apply knowledge in an integrated way.

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ANNEX 1: We reflect

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Session 1: DataScEd4CiEn.

Instructions

1. Make a copy of this document
1. Upload it to the "Session 1: Alumn@s" subfolder
2. Read the questions aloud with your co-op group
3. Reflect with your classmates on the questions posed
4. Fill in the table in your copy of the document
5. Name the document "Session 1: Group Number"
   (e.g.: Session 1 - Group 1)

GROUP MEMBERS

Answer the following questions:

🔥 **1. "Why do you think in recent years there are so many fires happening in different parts of the world?"**
🌿 *What things are changing on the planet that could be causing this?*
🧩 *What do you think is happening to our planet and how does it affect us all?*
💬 *Do you think wildfires affect all people equally? Who might face greater difficulties in protecting themselves or recovering after a wildfire?*

📊 ***2. "How can the data that science gives us help us better understand the planet's problems and make decisions that take care of people, animals and the place where we live?"***

💬 *How can we use that information to do something fair and good for everyone?*
🤖 *Do you think we could use current technology to help solve or reduce these problems? How would you do it?*
🔍 *Do you think all available data are sufficient to fully understand a problem? What information might be missing in order to completely understand the impact of wildfires?*

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ANNEX 2: We work with real data.

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Session 2: DataScEd4CiEn.

Instructions

1. Visit the page and investigate *https://www.globalforestwatch.org/dashboards/country/ESP/?category=fires&map=eyJjYW5Cb3VuZCI6dHJ1ZX0%3D*
2. Make a copy of this document
- Upload it to the "Session 2: Alumn@s" subfolder
3. Read the questions aloud with your co-op group
4. Reflect with your classmates on the questions posed
5. Fill in the table in your copy of the document
6. Name the document "Session 2: Group Number"
   (e.g.: Session 2 - Group 1)

GROUP MEMBERS

Answer the following questions:

SECTION A: EXPLORING THE DATA

🔥 **1. Where are the most fires happening in the world according to the map?** 🗺️ *Look at the interactive map and point out the regions with the highest concentration of red dots.*

2 In which month of 2025 were the highest number of wildfire alerts recorded in Spain? Specifically, in which week? How many were recorded?

3. How many wildfire alerts have been recorded up to today (or the closest available date to today's session)?

4. Apart from 2022, in which year was the highest forest loss due to wildfires recorded in Spain? How many kha were lost?

5. Explore the timeline in the "history of fires in Spain" graph. Select a time interval and identify the exact dates on which the highest number of wildfire alerts occurred during that period.

SECTION B: UNDERSTANDING THE DATA

6. **During which season are wildfire alerts most frequent in Spain? Considering the highest values from those months in 2024, what would be the average number of alerts for that season?**

7. Examine the graph of wildfire alerts in Spain between 2024 and 2026. Which month stands out to you? Why do you think this happens?

SECTION C: COMPARING AND THINKING LIKE SCIENTISTS

8.Compare the affected areas in Australia using the map for November 2019 and November 2024, and for March 2020 and March 2025. *8.1.What differences do you observe between the images? Describe what you see. .*
8.2.Why do you think these differences exist?
8.3.Are you completely sure about your answer?

☐ *Yes*
☐ *No*
What other information would help you be more certain?

SECTION D: MAKING DECISIONS. CIVIC ENGAGEMENT AND SOCIAL JUSTICE

9. Imagine that two areas have the same number of wildfires: one is near a large city and the other is a rural area with an ageing population. Would they require the same level of assistance? Why?

10. You only have resources to install three new wildfire detection systems. Where would you place them? Explain your decision using the data observed.
💡 You may consider:

- number of people affected
- difficulty in evacuating or requesting help
- access to emergency services
- age of the population
- available resources in the area

11. What important information is not included on this website that could help us better understand wildfires?
🔥 Consider:

- where wildfires occur most frequently
- which areas are at highest risk
- where more people live
- which places have higher ecological or environmental value

CLARIFICATIONS	**1Kha = 1 km2 = 1,000,000 m2* ** VIIRS fire alerts: the VIIRS (Visible Infrared Imager Radiometer Suite) satellite platform has detected fire outbreaks in a given area. This indicates that the satellite has detected radiant energy that is considered indicative of fire, such as a forest fire or agricultural burn*

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ANNEX 3: Technology + Civic Engagement.

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Session 3: DataScEd4CiEn.

GROUP MEMBERS

Instructions

1. Open the Padlet link for the discussion.
2. Read the questions posed and reflect on them.
3. Add a publication agreed upon with your work team. *Write the group number at the end of your contribution.*

Taking into account all the information you have worked with:
It develops a robot that can detect fires using light and/or temperature sensors.

To do this, we are going to work in trios/pairs:

1. Open the PDF document *"Wonder- Sensors and actuators" (in this document).* Read the light and temperature sensor sections. *(You can also use this document to recall concepts we've already worked on in robotics.)*
2. Think about the design of your robot.
3. Open the document **"Robot Design Tab",** make a copy of the document, upload it to the subfolder "Session 3: Alumn@s" and fill it out with your work team. *As a title you must put "Session 3: Name of the group" *(ex: Session 3- The cools)*
4. Start designing your robot. Once you have it set up, program it.
   **I leave you with help to program the light sensor and the temperature sensor.*
5. Once you have finished your robot, put it to the test and record a video in which you explain the basic characteristics of your robot *(the questions in the robot design sheet are used)* and do a small demonstration.
6. The videos and images you make are uploaded to the "*DataScEd4CiEn Robots*" folder. You must create a subfolder with the title of the number of your work group *(e.g. Group 1)* and there you can dump all the multimedia material.

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ANNEX 4: ROBOT DESIGN SHEET

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📝 Robot Design Sheet

(DataScEd4CiEn)

Team Name:
Members:
Date:

1. 🔧 Robot Design Draft

(Draw your robot here or paste it if you have done it in another app)

2. 🤖 What does your robot do?

(Explain in a simple way what your robot is for)

3. 🔍 What does your robot detect? *(Colors the box)*

☐ Light Temperature ☐

Why did you choose this type of sensor?

4. 💡 How do you detect fires? 📢 How do you warn people if you detect fire or danger?

(Describes how the robot communicates danger: music, light, message, movement, etc.))

5. 🛠️ Why did you design the robot like this?

(Explains the choice of shape, size, colors, materials, etc.)

6. 🌍 Where do you imagine this robot could help?

(Describes possible usage scenarios: houses, forests, schools, etc.)

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ANNEX 5: Dissemination of the work

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Session 4: DataScEd4CiEn.

Instructions

1. Make a copy of this document *(Important to fill in "Group Members")*
2. Upload it to the "Session 4:: Alumn@s" subfolder
3. Read the questions aloud with your co-op group
4. Reflect with your classmates on the questions posed
5. Fill in the table in your copy of the document
6. Name the document "Session 4: Group Name"
   (ex: Session 4 - The cools)

GROUP MEMBERS

1. **Carry out a global reflection on the topic we have worked on.**

2. **Prepare the demonstration and explanation of your robot. You can use this section as a draft of ideas, script preparation, main ideas that must appear in the presentation, etc.**

3. **Demonstration: This section (photos/videos) will be uploaded to the DataScEd4CiEn Robots subfolder.**
4. **Make a slogan or phrase that encourages the listeners of the exhibition to make civic commitments related to social justice on the topic at hand.**

***In addition to this document, you can create a presentation or any type of visual support for your presentation.**

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ANNEX 6: Closure + Evaluation

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Closing: DataScEd4CiEn.

Instructions

1. Make a copy of this document
1. Upload it to the "Closure: Alumn@s" subfolder
2. Read the questions aloud with your co-op group
3. Reflect with your classmates on the questions posed
4. Fill in the table in your copy of the document
5. Name the document "Closing: Group Number"
   (e.g.: Closing- Group 1)

GROUP MEMBERS

Answer the following questions:

🧭 **1. What factors could be causing these fires in the most affected areas?**
🌍 *Think about things like climate, human activity, or deforestation. How do you think these elements contribute to the increase in fires?*

📊 **2. How can we use fire data to help the most vulnerable communities?**
💡 *Consider how information about fires can be shared with those who need it most. What actions could they take to protect themselves?*

🌱 **3. What actions can we take from our community to prevent fires and take care of our environment?**
🌿 *Think about local activities, environmental education or collaboration with authorities. How can we contribute to the common welfare?*

ANNEX 7 : HEADINGS - MODEL 1.

EVALUATION RUBRIC – "DataScEd4CiEn" (6th Primary)24_25

Block 1: Worksheets (Research and Development)

Item	1 - Low	2- Acceptable	3 - Remarkable	4 - Excellent
Content	Very little or irrelevant information	Sufficient but underdeveloped information.	Adequate and relevant information	In-depth, well-researched, and contextualized information
Clarity	Confusing and incoherent wording	Understandable wording with some errors.	Clear, organized and understandable writing.	Impeccable writing, very clear and coherent.
Originality	Copy and reproduce ideas without their own contribution.	It provides few ideas.	Integrate personal ideas with creativity.	Bring original and innovative ideas.
Completeness	Incomplete or poorly presented file.	Partially complete.	Complete, mostly well-structured.	Fully developed, cared for and well presented.

Block 2: Contribution in Padlet – Reflection on fires

Item	1 - Low	2-Acceptable	3 - Remarkable	4-Excellent
Group reflection	Poor or confused reflection of the group.	Basic reflection, little argued.	The group reflects in a structured and clear way.	Deep, critical and well-argued group reflection.
Connection with reality	There is no connection to the real context.	Mention reality in a basic way.	It relates appropriately to the current situation.	It clearly connects with social and environmental issues.
Civic participation	There are no proposals or involvement.	They show interest, but without clear actions.	They propose small realistic actions as a group.	They propose and commit to concrete and viable actions as a collective.

Block 3: Robot Design Sheet

Item	1 - Low	2-Acceptable	3-Remarkable	4 - Excellent
Design Developme nt	Incomplete or very basic.	Poorly developed ideas.	Clear design, with functional ideas.	Complete, well thought out and detailed design.
Use of sensors	Does not include sensors or incorrect use.	It includes sensors with little justification.	Correct use of sensors with clear explanation .	Appropriate and precisely justified sensor selection.
Design creativity	Copied or without creative elements.	Not very original.	Original and functional.	Very original, functional and with careful aesthetics.

Block 4: Final Product – Physical Robot

Item	1 - Low	2 - Acceptable	3 - Remarkable	4 - Excellent
Technical construction	Poorly assembled, it doesn't work.	It works partially, with errors.	It works properly.	Works perfectly, with careful finishes.
Functionality	It does not meet the objective of the project.	It partially fulfills its function.	It fulfills its function effectively.	It works optimally, detects simulated fires.
Innovation	Little innovative or direct copy.	With some elements of its own.	Integrate novel ideas.	Very creative and proposes new solutions.

Block 5: Final presentation and social message

Item	1 - Low	2 - Acceptable	3 - Remarkable	4 - Excellent
Clarity of exposure	Difficult to understand.	It is understandable, but with a lack of structure.	Clear and well organized.	Very clear, structured and convincing.
Global reflection	There is no reflection or it is very vague.	A simple and unelaborated reflection.	Interesting and well-expressed reflection.	Deep, coherent and critical reflection.
Technical Demo	There is no demonstration of the robot.	Incomplete or buggy demonstration.	Clear and functional demonstration.	Excellent demonstration, with mastery and detailed explanation.

Slogan / Civic Message	Absent or meaningless.	Weak or generic message.	Clear and meaningful message.	Powerful, inspiring and well-crafted message.

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ANNEX 8 : GLOBAL HEADING - MODEL 2.

DataScEd4CiEn CCSS	LOW (1)	ACCEPTABLE (2)	NOTABLE (3)	EXCELLENT (4)
TOKENS.1: CONTENTS	Very Informative scarce or irrelevant.	Information Enough but little developed.	Information adequate and relevant.	Deep information, well researched and contextualized.
SHEETS.2: COMPLETENESS	Incomplete or poorly presented file.	Complete partially.	Complete in its majority, well structured.	Completely developed, cared for and well presented.
INVOLVEMENT/ PARTICIPATION	He hardly got involved in group work. He avoided active participation and rarely took on specific responsibilities.	He only collaborated when insisted; sought to avoid frequent tasks or distractions. His involvement was not constant.	He generally worked with the group, although at times he was less involved or avoided specific tasks.	He was actively involved throughout the project, took responsibility, helped his colleagues and was a true member of the team.
ROBOT DESIGN: INNOVATION	The file has not been uploaded to Drive. Not very innovative or direct copy.	Incomplete/Basic Filled Drive Tab. It does not have a folder with images/photos. With some Elements own.	Complete Drive tab + images/videos in the Drive folder. Integrate ideas novel.	Complete file, photos/images, very creative design and proposes new solutions.
EXHIBIT 1: TECHNICAL DEMONSTRATION	There is no Demo of the robot.	Demo incomplete or with errors.	Demo clear and functional.	Demo excellent, with domain and Explanation detailed.
EXHIBIT 2: GLOBAL REFLECTION	There is no reflection or is very vague.	Simple reflection and little elaborated.	Reflection interesting and well expressed.	Deep reflection, coherent and with critical sense.
EXHIBITION SLOGAN	Absent or without meaning.	Weak message or generic.	Clear message and with meaning.	Powerful message, inspiring and well elaborated.