PARADIGM
PlAn for Green OppoRtunities: Be A Digital sclentific chanGeMaker

Evaluation Report for the Paradigm Projects

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Introduction

The European Erasmus Project Evaluation Report is a comprehensive assessment of various school projects that participated in the PARADIGM piloting phase. These projects, driven by the active role of citizens and direct involvement, aim to address climate change and promote sustainable behaviors. This report evaluates these projects based on a set of predefined criteria, ensuring a standardized and fair assessment. The ultimate goal is to recognize and reward the efforts of schools in raising environmental awareness and contributing to a green economy and lifestyle.

Background

The active role of citizens, especially the younger generation, is paramount in addressing climate change. By directly involving them in environmental initiatives, we can foster a shift towards sustainable behaviors. Schools, training institutions, and universities play a pivotal role in this transformation. They not only educate but also influence students, parents, and the broader community about the necessary changes for a green transition. The partnership, recognizing the potential of educational institutions, decided to target the school community to raise environmental awareness. Through this initiative, students will not only gain knowledge but also acquire competencies that will make them competitive in the labor market.

Project Aims

PARADIGM's primary objective is to use technological infrastructure to engage citizens actively against climate change. The project's goals include:

- Raising environmental awareness and promoting green initiatives.
- Developing STEM-based curricula that foster transversal skills.
- Upskilling teaching staff with innovative educational tools and methodologies.
- Creating a European Community of Citizen Science.

Specifically, the project aims to train and motivate learners to gain environmental knowledge and propose solutions through a three-dimensional learning approach:

- **Cognitive Dimension:** Acquiring environmental knowledge.
- **Scientific Dimension:** Acting as scientists and adopting the scientific method.
- **Pedagogical Dimension:** Receiving appropriate pedagogical directions based on inclusive education principles.

Q Eligibility

Only schools that have previously participated in the PARADIGM piloting phase are eligible for the contest.

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Contest Period

The contest period was decided and consistent across all participating countries for M18-M21.

Submission Method

Participants applied for the contest through online submissions.

Prize

The winner of the contest, i.e., the application receiving the highest score, will be awarded a 3D printer.

Deliverables

Project Report: A comprehensive report that helps judges understand the project. The report had to be in PDF format, not exceeding 20 pages and 15 MB in size. The content should include a team introduction, project summary, construction presentation, photos, social impact, innovation, and a list of sources. The report should be in the partner's language.

Project Video: A video presentation showcasing the team and their solution to the general public.

Scoring Criteria

The projects will be evaluated based on the following criteria:

- Originality and Creativity
- Content Knowledge and Understanding
- Organization and Presentation
- Collaboration and Teamwork
- Timeliness and Completion

Each criterion has a scoring rubric ranging from **Excellent** (5 points) to **Poor** (0 points).

Evaluation Results

1. Famagusta/Avgorou Regional, Agricultural, Technical and Vocational School of Education and Training

   Topic: Air Pollution

   Description: The project aimed to study the impact of a polluted environment on plant growth with the ultimate goal of protecting it. An automatic watering system was designed based on soil humidity, while monitoring CO2 levels, temperature, watering

frequency, dust, and light intensity. Observing plant growth in conjunction with these parameters allowed for preliminary conclusions.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality in addressing the greenhouse effect on plants.
- Content Knowledge and Understanding: Poor (0 points) - Demonstrates a limited understanding of the content and concepts related to the project
- Organization and Presentation: Good (3 points) - Presents information in a logical and organized manner but lacks some clarity and effectiveness in presentation.
- Collaboration and Teamwork: Poor (0 points) – No data presented
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets most project requirements.

Total Score*:* 09/25

2. Agrupamento de Escolas de Estarreja

Topic: Resource Consumption and Energy Production

Description: The project's objective is to utilize renewable energies, specifically solar and wind, for electricity production. This energy is used for charging mobile electronic devices used by students, teachers, and education assistants.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality and creativity in the approach to the project
- Content Knowledge and Understanding: Good (3 points): Uses accurate and relevant information to support the project, but lacks depth or breadth
- Organization and Presentation: Excellent (5 points) - Clearly and effectively organizes the project content and information.
- Collaboration and Teamwork: Excellent (5 points) - Collaborates effectively with team members to complete the project based on their lesson plan.
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets all project requirements.

Total Score: 19/25

3. POLITEKNIKA TXORIERRI

Topic: Greenhouse Effect

Description: This collaborative project aims to raise awareness about the consequences of the greenhouse effect on plants. Several greenhouses were

designed, and seeds of different plants were sown. After germination, sensors were introduced to measure temperature and humidity, allowing for controlled plant growth and understanding the heat effect on the studied plants.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality in addressing the greenhouse effect on plants.
- Content Knowledge and Understanding: Good (3 points) - Uses accurate and relevant information to support the project, but lacks depth.
- Organization and Presentation: Good (3 points) - Presents information in a logical and organized manner.
- Collaboration and Teamwork: Good (3 points) - Collaborates with team members to complete the project but lacks some communication or interpersonal skills.
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets most project requirements.

Total Score: 15/25

4. Famagusta/Avgorou Regional, Agricultural, Technical and Vocational School of Education and Training

Topic: Greenhouse Effect

Description: The greenhouse is equipped with various sensors and mechanisms to maintain ideal growth conditions for cultivation. It monitors temperature, humidity, and soil moisture, and uses mechanisms like window control, ventilation, recirculation fans, heaters, humidifiers, lighting, and automatic watering. The system responds dynamically to temperature changes, ensuring optimal conditions for plant growth.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality in creating a responsive greenhouse environment.
- Content Knowledge and Understanding: Good (3 points) - Uses accurate information about greenhouse mechanisms, but lacks depth in some areas.
- Organization and Presentation: Good (3 points) - Presents information in a logical and organized manner, but lacks some clarity and effectiveness in presentation.
- Collaboration and Teamwork: Poor (0 points) – no data has presented.
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets most project requirements.

Total Score: **12/25**

5. Agrupamento de Escolas José Estêvão

Topic: Resource Consumption and Energy Production

Description: The project aims to utilize renewable energies, solar and wind, for electricity production. This energy is used for charging mobile devices used by young students.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality in harnessing renewable energies for school needs.
- Content Knowledge and Understanding: Excellent (5 points) - Demonstrates a clear and comprehensive understanding of the content and concepts related to the project
- Organization and Presentation: Good (3 points) - Presents information in a logical and organized manner.
- Collaboration and Teamwork: Good (3 points) - Collaborates with team members to complete the project.
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets most project requirements.

***Total Score*: 17/25**

6. 1st General High School of Elliniko

Topic: Air Pollution

Description: The school's environmental team implemented an ambient air assessment scenario using the esp-32 microprocessor and sensors. They measured temperature, humidity, ECO2, TVOC, and dust to evaluate ambient air quality. The data collected was used to calculate an air quality index (AQI) to determine air quality. The project aimed to increase students' awareness of environmental issues and the importance of maintaining a clean environment.

Evaluation:

- Originality and Creativity: Good (3 points) - Demonstrates some originality in assessing ambient air quality.
- Content Knowledge and Understanding: Fair (1 points) – Shows evidence of research and analysis related to the project, but contains inaccuracies or inconsistencies
- Organization and Presentation: Fair (1 points) - Presents information in a disorganized manner, with limited use of appropriate formatting elements.
- Collaboration and Teamwork: Fair (3 points) - Collaborates with team members to complete the project.
- Timeliness and Completion: Good (3 points) - Completes the project on time and meets most project requirements.

Total Score: 11/25

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7. 1st Vocational Lyceum of Acharnes

Topic: Greenhouse Effect

Description: During the examination period starting from 12/05/2023, no proposed teaching scenarios were implemented. However, an awareness of the climate crisis was noted among the students, as participation in an eTwinning project on climate change took place that school year. A robotic composting bin was constructed, designed to compost organic waste. The resulting compost is intended for use in the school's greenhouse. Through the energy harnessed from a solar panel, real-time measurements of humidity, temperature, and air quality within the bin's enclosure are transmitted to the Thingsboard platform. This ensures the bin's optimal operation. The project utilized a commercial composting bin, a solar panel, a 6V battery, an esp32 microcontroller, sensors for temperature, humidity, light, and air quality, a servo motor to orient the solar panel towards the sun, a blender for organic waste shredding, a pond pump for water extraction, a fan, and 3D-printed mounting brackets.

Evaluation:

- **Originality and Creativity:** Good (3 points) - Demonstrates some originality in addressing the greenhouse effect on plants.
- **Content Knowledge and Understanding:** Poor (0 point) - Demonstrates a limited understanding of the content and concepts related to the project
- **Organization and Presentation:** Fair (1 point) - Presents information in a disorganized manner, with limited use of appropriate formatting and multimedia elements
- **Collaboration and Teamwork:** Poor (0 points) – No data presented
- **Timeliness and Completion:** Good (3 points) - Completes the project on time and meets most project requirements.

Total Score: **07/25**

8. Model General High school in Mytilene (Greece)

Topic: Smart Awning System

Description:

The project involves the creation of a smart awning system powered by photovoltaic panels charging 12V batteries. The system is controlled by an ESP32 controller, which processes input from various environmental sensors to automate the awning's movement. The awning adjusts based on sunlight intensity, humidity, temperature, and dust levels in the air. The system also includes a web server for remote monitoring and control.

Evaluation:

- **Originality and Creativity:** Excellent (5 points)-The project demonstrates unique and innovative ideas by integrating environmental sensors with a smart awning system, which is not a common application seen in typical projects.

- **Content Knowledge and Understanding:** Good (3 points) - Uses accurate information to create a cohesive and functional system but lacks depth in some areas.
- **Organization and Presentation:** Fair (1 point) - Presents information in a disorganized manner, with limited use of appropriate formatting and multimedia elements
- **Collaboration and Teamwork:** Poor (0 points) – No data presented
- **Timeliness and Completion:** Good (3 points) - Completes the project on time and meets most project requirements.

Total Score: 12/25

Notification of Winners

Upon the conclusion of the evaluation process, winners will be notified of their achievement. The primary method of notification will be via email, ensuring a direct and personal communication channel. Additionally, an announcement will be made on the official project website, providing broader visibility and acknowledgment of the winners' accomplishments.

Publicity

Winners of the contest grant the project consortium the right to use their name, image, project details, and/or likeness for publicity purposes without any additional compensation. This may include, but is not limited to, featuring the winners in press releases, articles, and promotional materials related to the contest and the broader objectives of the PARADIGM project. By participating in the contest, entrants agree to this publicity clause, ensuring the project consortium can promote and celebrate the achievements of the contest winners**.**

Dispute Resolution

In the event of any disputes arising from the contest, the following process will be adhered to:

Initial Resolution: Participants are encouraged to reach out to the contest organizers with any concerns or disputes. The organizers will review the matter and provide a response within a specified timeframe, typically 14 working days.

Mediation: If the dispute cannot be resolved through direct communication with the organizers, a neutral third-party mediator may be appointed to facilitate a resolution between the parties involved.

Final Decision: Should mediation fail to resolve the dispute, the decision of the project consortium will be considered final and binding on all parties.

Participants are encouraged to approach the dispute resolution process in good faith, aiming for an amicable and fair resolution.

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Appendix

Criteria	Excellent (5 points)	Good (3 points)	Fair (1 point)	Poor (0 points)
Originality and Creativity	Uses unique and innovative ideas to address the project requirements	Demonstrates some originality and creativity in the approach to the project	Shows little originality and creativity in the approach to the project	Lacks originality and creativity
Content Knowledge and Understanding	Demonstrates a clear and comprehensive understanding of the content and concepts related to the project	Uses accurate and relevant information to support the project, but may lack depth or breadth	Shows evidence of research and analysis related to the project, but may contain inaccuracies or inconsistencies	Demonstrates a limited understanding of the content and concepts related to the project
Organization and Presentation	Clearly and effectively organizes the project content and information, uses appropriate formatting, graphics, and multimedia elements to enhance the project, and presents information in a clear and concise manner	Presents information in a logical and organized manner, but may lack some clarity and effectiveness in presentation	Presents information in a disorganized or confusing manner, with limited use of appropriate formatting or multimedia elements	Presents information in an unclear and unorganized manner
Collaboration and Teamwork	Collaborates effectively with team members to complete the project, demonstrates effective communication and interpersonal skills, and actively contributes to the success of the project	Collaborates with team members to complete the project, but may lack some communication or interpersonal skills	Has difficulty collaborating with team members, resulting in delays or incomplete work	Fails to collaborate effectively with team members
Timeliness and Completion	Completes the project on time and meets all project requirements, demonstrates a commitment to the project and puts forth effort to achieve success, and submits a high-quality project that meets or exceeds expectations	Completes the project on time and meets most project requirements, but may lack some commitment or effort, or may not meet all expectations for quality	Completes the project late or does not meet some project requirements, demonstrates a lack of commitment or effort, or submits a project of limited quality	Fails to complete the project on time or meet project requirements, demonstrates a lack of commitment or effort, or submits a low-quality project

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