

PARADIGM



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Module 1

PARADIGM Strategies to raise environmental
awareness



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Table of contents

The Paradigm Project Introduction to the project		1
The Paradigm e-learning course (MOOC) Introduction to the course		2
The Module Introduction to the module-What to expect		3
What is environmental awareness in teaching? Tips to raise awareness in the classroom, Problem-based Learning and Challenge-based learning methodology		4
Digital Activism How to raise awareness in the classroom by using simple DIY kits		5
		



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1. The Paradigm Project

Which are the needs that aims to fulfil?

- PARADIGM Project is an Erasmus+ KA2 School project, responding to the need of raising environmental awareness in school communities, a well-experienced consortium has developed this program and its innovative project results.
- Bringing awareness to environmental issues through **STEM and STEAM** has attracted a lot of interest lately due to the increased availability of commodity **low-cost open-source hardware and software solutions** as well as due to the increased interest of young students in being engaged in such activities and the emergence at an accelerating pace of communities involved in relevant projects around the world.
- Additionally, latest technological advances in the fields of wireless sensor networks and the so-called **Internet of Things (IoT)** have introduced unprecedented capabilities towards **monitoring and controlling the environment** even at personal level and in every aspect of everyday life. Turning these technological tools into powerful educational tools coupled with their proper societal dimension is the opportunity foreseen by the PARADIGM project.

PARADIGM is a structured pedagogical, scientific and educational project. It contributes to the needs identified above through involving citizens directly and especially the young generation and communities, in action plans that would lead to a more sustainable lifestyle and relationship to the environment.

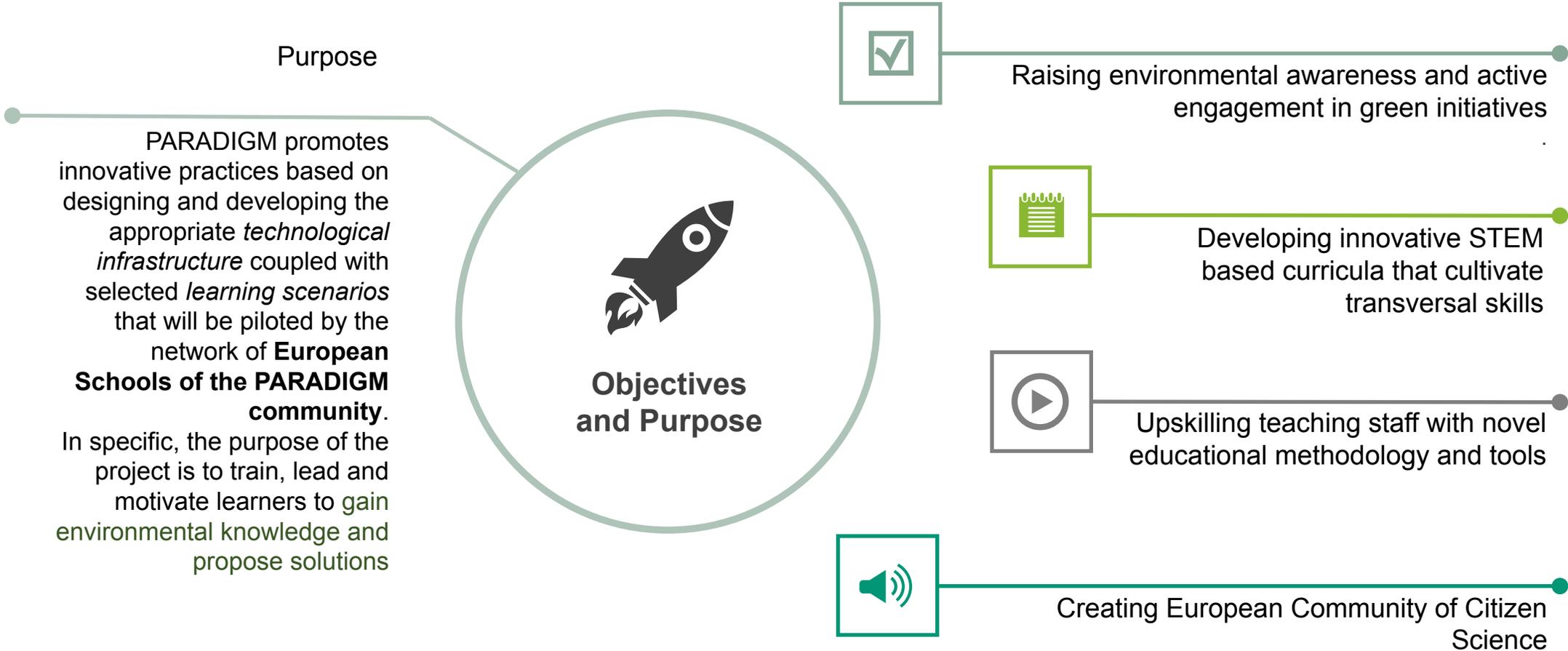
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1. The Paradigm Project



1. The Paradigm Project

PARADIGM activities will result in the development of three project results:

- (1) **E-LEARNING COURSE (MOOC) FOR ENVIRONMENTAL AWARENESS:** The online training program for environmental awareness aims to prepare educators for applying pedagogical structured problem-based learning (PBL) projects. Furthermore, it seeks to introduce environmental observatories in classrooms. Finally, the training course will guide learners to adopt and implement inclusive education strategies and take actions based on them.
- (2) **IoT-STEM BASED ENVIRONMENTAL OBSERVATORIES FRAMEWORK:** It includes the development of the PARADIGM Platform, the design and development of the observatories, and DIY Kits' installation. In specific, teachers will be guided to coordinate students to manage and collect data of natural resources via an environmental data monitoring process and develop a set of plausible interactions for a given ecosystem via a scenario planning process.
- (3) **CITIZEN SCIENCE PLATFORM - the PARADIGM Virtual Maker Space and Repository:** It will enable students to participate in fundamental cutting-edge research across environmental issues, increasing its visibility within the European public. In the citizen science platform, learners will also discuss the results of data (findings) and propose practical solutions and finally take part in a collaborative contest among European schools that contributed to delivering the PARADIGM project

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2. Introduction to Paradigm E-learning course (MOOC) for environmental awareness

What is the Paradigm e-learning course (MOOC)?

The *Paradigm e-learning course for environmental awareness* is an online training program for teachers aiming to grow their appropriate digital and pedagogical skills. It is developed according to the learning management system Moodle and it is structured in 5 modules as follows:

Module	Content
1	PARADIGM Strategies to Raise Environmental Awareness
2	The PARADIGM pedagogical methodology
3	The PARADIGM Environmental Challenges
4	The PARADIGM Environmental Observatories
5	Turning Youth to Digital Scientific Changemakers



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2. Introduction to Paradigm E-learning course (MOOC) for environmental awareness

What is the objective of the course?

The objective is to bring awareness in schools to environmental issues through STEM and at the same time to enhance the social engagement skills and methods to leverage digital activism through citizen science projects, in order to actively engage youngsters in environmental monitoring and protection actions

How does it work?

This course trains teachers in STEM projects – mainly using simple DIY platforms – as teachers should construct their cases through *citizen science* and *digital activism* approaches.

It provides:

- Detailed selected **lesson plans** and **educational guidelines** towards achieving the targeted societal objectives
- A detailed **guide** to train teachers to leverage the PARADIGM kits and virtual maker space as main facilitators for developing PBL activities as well as collaborating in the context of an educational ecosystem



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2. Introduction to Paradigm E-learning course (MOOC) for environmental awareness

Innovations of the course

- ✓ The innovation of the specific course is identified in the holistic and experiential learning approach on which it is based. Specifically, the course will be pedagogically structured on **Problem Based Learning (PBL) method**, as the learners have to plan, implement and evaluate their thematic use cases.
- ✓ The educational content is adapted to the needs of a variety of learners, as the teacher gains the opportunity to act proactively based on many factors, such as students' preferences and skills.
- ✓ The learners will be able to produce inspired new knowledge based on the use of appropriate **technological infrastructure** (devices, data platforms and tools) to empower the active engagement of young students to act on *climate change* and for *sustainable development* through better **monitoring and observing the environment and their environmental impacts**.



3. Introduction to the Module

The main purpose of this module is to introduce the learner to concepts like *environmental awareness*, *problem-based learning* and *challenge-based learning methodology* as well as familiarize him/her with *digital tools* that will prove useful to the completion of the course.



Next:



Environmental Awareness in Teaching-What is it?



Digital Activism-What is it? How can we raise awareness in classrooms through digital activism and using technological infrastructure?



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4. Environmental awareness in teaching

What is environmental awareness?

Being conscious of the environment is what **environmental awareness** is all about. This encompasses all marine and wildlife as well as all plants and animals. Environmental concerns like climate change, deforestation, droughts, floods, global warming, scarce water supplies, and pollution are on the rise, making environmental awareness crucial.

Environmental awareness is all about being aware of these problems and **modifying one's lifestyle** to help the environment. The environmental problems we face should be made as clear to children as possible.

All schools should include environmental awareness in their curricula because they must lead the conversation. This can assist communities in becoming more ecologically conscious and will encourage young people to get involved in protecting their environment.



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4. Environmental awareness in teaching

How can schools help spread the word?

People tend to be remembered more **for their actions** than for their words. Although educating kids about environmental awareness is crucial, it will have a **longer-lasting effect if teachers set a good example**. Parents should be encouraged by schools to educate their children about environmental issues at home. Allowing the kids to practice **small tasks at home**, such as picking up their trash and throwing it away, or teaching them to turn off the faucet while brushing their teeth or washing their hands with soap so that water doesn't run down, or turning off the lights after they've finished using them, would be a good idea. They'll learn more about environmental challenges as a result of this.

The idea of environmental education was inspired by the **requirement for schools and other educational institutions to get involved** in promoting environmental awareness.



Source: <https://www.ecomena.org/>

4. Environmental awareness in teaching

What is environmental education?

Through the **process of environmental education**, people can learn about environmental problems, solve them, and take steps to protect the environment. People have a deeper grasp of environmental issues as a result, and they are more equipped to make wise choices.

The following are elements of environmental education:

- **sensitivity** to environmental issues and environmental awareness
- **knowledge** of the environment, including environmental challenges
- concern for the environment and a desire to **maintain or improve** environmental quality
- abilities to **recognize and address** environmental issues
- taking part in **actions** that help to solve environmental problems



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4. Environmental awareness in teaching

Environmental education does not promote one idea or strategy over another. Instead, **environmental education improves people's ability to solve problems and make decisions by teaching them how to critically consider all sides of a situation.**

Environmental Education vs Environmental Information	
Increases public awareness and knowledge of environmental issues	Provides facts or opinions about environmental issues
Does teach individuals critical-thinking	Does not necessarily teach individuals critical-thinking
Does enhance individuals' problem-solving and decision-making skills	Does not necessarily enhance individuals' problem-solving and decision-making skills
Does not advocate a particular viewpoint	May advocate a particular viewpoint

Source: <https://www.epa.gov/>



5. Digital Activism: How to raise awareness in the classroom by using simple DIY kits

What is Digital Activism?

Digital activism is the use of **digital tools for political action, mobilization, and change-making**, including the internet, social media, email, and mobile phones. Since it is so quick and simple to reach people on a worldwide scale, it is probably one of the first forms of activism that come to mind nowadays. We now have new means for sharing, gathering, and analysing massive amounts of data thanks to the digital revolution. These include the ease of access to mobile technologies (such specialized applications and smart devices) and big data analytics, as well as the pervasiveness of (broadband) internet.

How do you teach students activism?

Encourage conversations on current events in the classroom and at home. What worries the students in their own communities? Let them try to explore the problem and to explain why they think change is required. Assist them in comprehending and acquiring a sense of their own agency.

How is digital activism effective?

When combined with offline activities or as an introduction to get people interested in offline activities, digital activism frequently has the greatest degree of success.



5. Digital Activism: How to raise awareness in the classroom by using simple DIY kits

The topic of student activism is currently quite popular. Here are some suggestions to encourage students to take activist action:

1. **Link the action to a cause that they care about** - Children and teenagers have a highly developed love of the environment and their surroundings.
2. **Be a support person rather than a guru on stage** - Giving students control over a project significantly boosts their levels of involvement and investment in it, especially if they get to use cutting-edge technology like the PARADIGM kits.
3. **Encourage participation from families** - Students are always excited about the process of including families and telling parents about their accomplishments, which keeps them committed to the cause.
4. **Early and frequent discussion of your actions**
5. **Utilize resources** - Make every effort to maximize the effectiveness of the tools at your disposal and to capitalize on their advantages.
6. Ask students to **Problem Solve and lead** - Change can be sparked by young people. Encourage them to raise important issues and questions. They will be able to create changes in their communities and develop into fully conscious adults if they are a part of a powerful activist group.

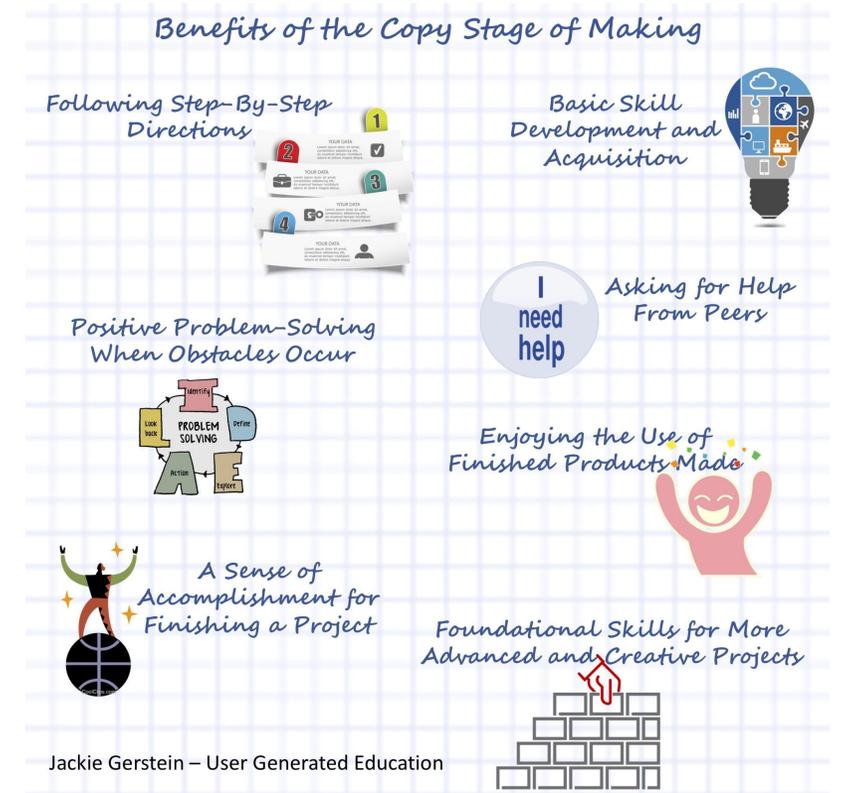


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5. Digital Activism: How to raise awareness in the classroom by using simple DIY kits

Benefits of using DIY kits for environmental awareness

1. **Introducing students to STEM subjects** - Through hands-on experiments and presentations, these kits can aid students in understanding scientific theories and concepts. In addition, schools can select from a wide range of kits that are inexpensive, accessible, and easy to use.
2. **Boost Originality** - Once their experimentation is successful, students will continue to experiment and produce.
3. **Strengthen Problem - Solving Techniques**
4. **Improved Social and Emotional Development** - The majority of the kits that are accessible to students call for group collaboration.
5. **The relationship between theory and practice** - Last but not least, kits offer the connection between theory and action, encouraging a real-life and real-time approach to the problem. This is possibly the most significant of the advantages described above.



Source: <https://usergeneratededucation.wordpress.com>



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5. Digital Activism: How to raise awareness in the classroom by using simple DIY kits

• Here you can watch some interesting Youtube videos about DIY kits:

- [On solar-powered water pump kit](#)
- [On salt-powered robot kit](#)



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