Energy education (Energie(k) Onderwijs)

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NETHERLANDS, BELGIUM

The project fulfils a social role and plays an essential role in accelerating the energy transition. There are several similar projects and valuable initiatives in Belgium and the Netherlands, but not all stakeholders are familiar with their details. To avoid duplication of effort, it is very important that all stakeholders can find each other and share relevant information effectively.

Geographical area

The Netherlands and Belgium

More specifically The Southern Netherlands and Flanders.

Period of implementation

Started 1 May 2023 until 30 April 2026

Scope of the practice

Secondary education

Higher education

Post-initial education (upskilling and retraining programs)

Educational level

ISCED level 2-6

Introduction and context

Key stakeholder: civil society

Type stakeholders: educational institutions, the government and the concerned sectors, plant engineering, construction, (chemical) industrial and energy, metal and engineering.

Target group(s):

- - educational institutions in secondary and higher education (Netherlands: mbo, hbo; Flanders: aso, bso, tso / finalities A – D/A - D)
- - pupils/students and teachers within those educational institutions
- - potential lateral entrants
- - companies, employees and branch organisations in the relevant sectors
- - governments (politicians, administrators, policy makers) and education committees
- - EU citizens reached through the press

Funding/budget:

Total EUR 4,240,364.22

European Regional Development Fund (ERDF) € 2,120,182.09

Partners also use additional co-financing options.

To achieve the EU climate targets, competencies around sustainability are essential. Over the past 10 years, the focus of the energy transition has largely been on developing and testing innovative energy technologies. A necessary condition but certainly not the only condition for this major, societal task to succeed.

Skills shortages area bottleneck for realising the energy transition. Various reports show that there is already a significant shortage of skilled personnel, and that this shortage will only increase in the coming years. This shortage is caused not only by increasing and changing labor demand from the sectors involved, but also by the aging of the current workforce. The type of personnel needed as a result of the energy transition will change significantly in the coming years. How exactly, is impossible to say in view of the rapid developments. In any case, there is a need for broadening skills. Technicians must no longer have only substantive technical competencies, but also knowledge and insight into the economic perspective of sustainable technologies. The importance of core or key competencies is therefore increasing. Furthermore, high demands are placed on digital competencies.

It is clear that labour supply from education/training lags behind demand. Also, in view of lateral inflow (e.g. unemployment, inactivity, leaving abroad), there is currently insufficient supply. In addition, the sectors active in the energy transition are competing strongly with other technical sectors.

The challenges we face on both sides of the border are similar. By cooperating across borders, needs can be met more quickly and efficiently, and mutual competition can be countered. The educational institutions involved represent the majority of secondary/medium and higher (vocational) education in their respective sectors. . And the entrepreneurial organisations involved have a good picture of the work sector in the Netherlands and Flanders. Together, the project partners also want to ensure that corresponding skill levels are recognised across borders.

Key activities and outcomes

PARADIGM tools aim to use the appropriate technological infrastructure (devices, data platforms, and tools) to empower the active engagement of citizens in taking action against climate change and for sustainable development through better monitoring and observing the environment and its environmental impacts.

The materials are accompanied by appropriate video tutorials and guides to help teachers introduce IoT-STEM teaching methodologies and guide them through the process of setting up and programming Arduino kits with sensors to take different measurements (air quality, energy consumption, quality of water etc). More specifically, the e-learning course for teachers on environmental awareness consists of the following modules:

1. Strategies to raise environmental awareness;

2. Pedagogical methodology;

3. Environmental challenges (+ 15 developed learning scenarios);

4. Environmental observatories (+ video tutorials and guides);

5. Turning youth to digital scientific changemakers;

All learning materials are accompanied by learning scenarios for teachers with challenges to empower the active citizenship of students.

PARADIGM materials have been tested in several European countries (Spain, Portugal, Greece, and Cyprus) and by over 20 schools, universities, and VET providers. Both teachers and students have learnt how to set up an ESP32 board using Arduino programming with different sensors, and have also learnt how to transfer this data to an open online software of data visualization to measure several environmental impacts. The IoT observatories have also been used to set alarms when a specific measurement is over the estimated parameters. All this has been carried out through challenge-based learning and with different teams of teachers and students.

The feedback has been very positive as students can take real measurements and evaluate real environmental impacts of their everyday activity or day everyday school/VET centre activity, while at the same time acquiring IoT and programming/technical skills which might not feature in their specific fields of study, contributing to better prepared future workers and the upskilling of teachers and trainers.

SOURCES

https://interregvlaned.eu/energiek-onderwijs/over-ons