Report on the activity in the framework of the European Inventor Network



To be sent to: Marjorie Chopinaud Coordinator of the European Inventor Network <u>mchopinaud@epo.org</u>

Name of the alumnus who implemented the activity

Eng. Ivan Popov, Agricultural Vocational School "Kliment Timiryazev", Sandanski, Bulgaria

Short description of the activity

As part of the initiative, an educational STEM project was implemented in the form of a demonstration and presentation of a concept for an ecological smart home. Students from 9th, 10th, and 11th grades created a model and multimedia presentation showcasing the application of sustainable technologies in a domestic environment. The project combines the use of renewable energy sources, automation, environmentally friendly resource management, and innovations in energy and security systems. The students presented a fully developed smart home concept, including:

Solar panels and an energy storage system;

Wind turbine and miniature pumped-storage hydro system for rainwater reuse;

Geothermal heating, smart lighting, and automated ventilation;

Security systems, video surveillance, and smart locks;

Automated irrigation system and electronically dimmable windows;

Mobile app for full system control.

The project was presented through a professional multimedia presentation and a realistic model built entirely by the students.

Date and place of the activity

- March 28, 2025 Agricultural Vocational School "Kliment Timiryazev", Sandanski (inschool presentation)
- April 18, 2025 Participation in the conference "Facing Climate Change", Blagoevgrad

Audience (number and age of the participants)

Total: 42 participants, including students, teachers, external guests, and representatives from the Regional Education Authority – Blagoevgrad Age group: 14–17 years (students from 8th to 11th grade)

Outcomes and achievement

- A fully functional smart home model with numerous innovative components was created and demonstrated by the students.
- Key skills were developed among the students, such as teamwork, critical and creative thinking, sustainable engineering design, and ecological awareness.
- A large group of students actively participated in the project, forming a strong and successful team where each member contributed their knowledge and passion. The project work inspired and motivated the students to engage in future STEM initiatives.
- The presentation was highly praised at the "Facing Climate Change" conference as an excellent example of applying the STEAM approach in a school environment.
- Students received offers to participate in future initiatives and exchange programs.

"This project is at a world-class level. Entirely built by students but with a strong vision for the future – for the environment, energy, and innovation." – Jury comment from the event.

Recommendations

- Expand the initiative on a national level by organizing school smart home project competitions.
- Provide support from local and international STEM organizations through mentorship and prototyping equipment.
- Develop an online platform for schools to share innovative ecological solutions.
- Encourage the inclusion of green technologies in school curricula through hands-on assignments and collaboration with businesses.

Attachments:

- Photos from the activity and demonstrations.
- Short videos of the model presentation.
- Feedback and testimonials from participants and jury.
- Project concept document and slides from the presentation.









