TEASPILS: Teaching Environmental Awareness with Smart IoT Planters in Learning Spaces

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Smart IoT planters in the classroom

The TEASPILS Erasmus+ European project has developed a technology ecosystem for environmental awareness education

Plants have numerous beneficial effects on mental health, well-being, and indoor air quality. Nonetheless, these effects are not sufficiently well addressed in educational contexts. The increasing availability of sensors, networks, and cloud services can facilitate real-time measurements to perform data analysis on plants and the environment in which they coexist with students and teachers. The Erasmus+ TEASPILS project (https://www.teaspils.eu/) has advanced research focused on combining the use of plants and Internet-of-Things (IoT) technology to educate students (and teachers) on the benefits of using plants in indoor learning contexts (i.e., classrooms, study rooms, offices, libraries).

Final Project Meeting in Barcelona

The project started in September 2020 and is now coming to an end. The TIDE research group at Universitat Pompeu Fabra has hosted the final meeting of the TEASPILS project, on June 19th and 20th, in Barcelona. The consortium includes partners from Austria, Cyprus, Greece and Spain, and is coordinated by the Universidad Politécnica de Madrid.

Davinia Hernández-Leo, head of TIDE at UPF - as a partner in the project, explains, "The project has advances knowledge and technology to facilitate environmental awareness towards plants and greenery, educating young people and their teachers towards ecological learning spaces, in connection with the sustainable development goals (SDGs) of the UN Agenda 2030."

Partners

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TEASPILS ACTIVITIES

The TEASPILS project has developed an open online course for educators and policy makers about how fo foster environmental awareness in schools, smart IoT planters to collect data in learning spaces, a visualisation dashboard to show sensor data in mobile and web-based applications, and a gamification framework utilise digital sensor evidence for pedagogic environmental awareness.

In the words of Bernardo Tabuenca, project coordinator, "TEASPILS has contributed with a theoretical framework for the design learning activities targeting environmental awareness, a digital green competence framework, an IoT system, what we call Spike, specifically designed to monitor plants in learning spaces, accompanied by a dashboard and a set of examples for enabled learning activities. Our pilots show the potential of IoT technology to teach and to promote environmental awareness."

Multiple innovative learning activities using the technology developed in the project can be found in an open repository and teacher community platform at https://ildeplus.upf.edu/teaspils/. The activities have been implemented in real classrooms in three different European countries (Spain, Greece, Austria) across educational sectors, from primary to higher education.

Key publication: *Tabuenca, B., Moreno-Sancho, J. L., Arquero-Gallego, J., Greller, W., & Hernández-Leo, D. (2023). Generating an environmental awareness system for learning using IoT technology. Internet of Things, 22, 100756.*

Learning activities: https://ildeplus.upf.edu/teaspils/
Project website: https://www.teaspils.eu/