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Active learning innovative for the study of climatic variations in Sicily (Italy) and micro-climates in confined environments. Digitized construction of agro-meteorological laboratory and entrepreneurial development of methodical home automation systems applied to monitoring and control of micro-climates

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In education to issues of environmental sustainability and the use of renewable energy resources, there are the existing laboratory teaching methodologies in Superior School "A. Volta" in Palermo (Italy) for acquisition, processing and control network of agro-meteorological data on the local area.
This station was planned to allow students practical multidisciplinary learning experiences in the field of agro-meteorological applications.
The School started a few months ago a project of MIUR (Italian Ministry of Education) that updates the lab through the most innovative digital technologies in the field of mechatronics, domotic and sustainable energy, that are supported by the latest needs of scientific-educational multimedia.
It is an educational training that intends to implement a data collection center agro-meteorological on "digital platforms," informational purposes and applications, on current issues of climate changes and their consequences in Sicily (Italy).
This active learning will interconnect the data collected from the station weather and climate of the school with those locally and regionally, with “weather-climatic patterns” correlations that are implemented in the Mediterranean area (International Program “GAW-Global Atmosphere Watch”).
For this reason were enabled synergies with two major public scientific research and acquisition services-data disclosure (ENEA and SIAS-Agrometeorological Information Service, Sicily Region), both to energy efficiency of the School Station, both to support data and digital applications in GIS, with agro-meteorological services to companies operating in the agricultural and environmental sustainability, high consideration themes in European Programming.
A branch of this training course is the entrepreneurship education, carried out by a few years in School with the development of "experimental models” for the creation of "innovation clusters" to make entrepreneurial experience since school, creating/managing mini-companies. In the European educational program (Erasmus + KA3) called "Innovation Cluster for Entrepreneurship Education (ICEE)", aimed at enhancing the students’ creativity and entrepreneurship, one of the mini-companies, created by students at the Institute, has developed and produced with innovative software a prototype automated system, a mini-greenhouse powered by solar energy, capable of recreating the habitat suitable for house plants, through the automated control of numerous agricultural micro-climatic parameters.
Creating multimedia systems such as web platforms, advanced software and app/QR-code for mobile devices, defines the most innovative tools in computer science outreach phases.
This experimental approach incorporates the teaching methods that are defined by the curriculum of the “Liceo delle Scienze Applicate” that exists in the School, with the proposition of experimental models that besides being "learning models" can switch into "knowledge models" correlated with scientific and technical-scientific models that exist in the world of research.

La Natura non distrugge, che per creare, e non crea, che per distruggere
(Storia dell’Astronomia, 1813 - Giacomo Leopardi)