

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Secondary Space Education (2)

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GIS4SCHOOLS - IMPROVING STEAM EDUCATION IN SECONDARY SCHOOLS THROUGH THE
DEVELOPMENT AND CO-CREATION OF NEW METHODOLOGIES FOR TEACHING TO AND
EXPLOITATION BY PUPILS OF GIS PRODUCTS RELATED TO CLIMATE IMPACT ON THE
ENVIRONMENT

Abstract

As stated in the European Green Deal: “to tackle climate and environmental-related challenges is this generation-defining task.” Young generations represent a juncture between understanding the potential hazardous impact of climate change on society and local communities. In this frame, STEAM education in school proved its ability to nurture students’ curiosity and cognitive resources, provide them with the right tools to understand the world’s complexity and face the challenges that the current times are posing, like climate change, among many others. However, STEAM subjects are not always part of educational curricula: according to the OECD Programme for International Student Assessment (PISA) report 2018, more than 20

The improvement of STEAM education in secondary schools is the core objective of the Erasmus+ funded project “GIS4Schools”, which aims at promoting a new innovative approach to foster the teaching of STEAM subjects in secondary schools across four different European countries: Italy, Portugal, Romania, and Spain. The project intends to introduce the education of GIS and satellite technologies for Earth Observation- rarely adopted in secondary schools- and applying them to the thematic area of Climate Change. GIS4Schools will combine Inquiry-Based Science Education (IBSE) with Problem Based Learning (PBL) approaches to an interdisciplinary contextualisation of the science topic. Pupils will actively contribute to the co-creation of new knowledge by assessing with GIS tools the impacts of specific climate challenges affecting their local community thanks to Copernicus products, Sentinels’ satellite-derived information, and other ancillary data.

The paper will illustrate the genesis of the project, and more specifically, the process leading to the development of training packages for secondary schools’ teachers and pupils. Furthermore, the paper will explore which methodology and pedagogic approach have to be adopted to transfer new knowledge from

teachers to pupils. The paper will also describe how the teaching of GIS and satellite technologies for Earth observation in secondary school can impact pupils' perception of STEAM subjects and how this can impact their future academic careers. Specific attention will also be dedicated to the description of the innovative tools developed and applied for monitoring and evaluation.

Finally, the paper will briefly outline how to replicate the GIS4Schools material for a developing Country.