VirtualForests

IO6: Introduction

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IO6: Citizen involvement

Many citizens are critical towards forest management, and want to understand and argue with professional. Some others, in quest for a more meaningful job, are willing to prepare a professional retraining.

This need for a better understanding of forest issues is shared by community elected representatives, who want to play the role of mediators between their population and the forest and wood sector. However, many of them lack appropriate support, training, and tools for achieving such a goal.

Professionals of the wood transformation sector are also feeling increasing social pressure in relation to the impact on the forest of the wood supply required by their activity. They must now report about the provenance of the wood and the sustainability of the forest management that provide this wood.

This increasing need for additional training that affects citizens without a formal background in forestry also concerns graduates from our Higher Education Institutions. Indeed, the forestry domain is multifaceted and incorporate competences from more and more disciplines, thus requiring levelling courses to lead students to a common knowledge basis.

The term MOOC was created in 2008 by Dave Cormier, a Canadian learning specialist (October 2008 – Dave's Educational Blog (davecormier.com)). This acronym means "Massive Online Open Courses". Massive refers to the number of participants allowed through the open access online broadcasting of training materials (courses contents, quizzes, assessment of learners for certification purpose). Another important characteristic of MOOC is the self-regulating learning they offer to learners.

Offering the possibility to propagate knowledge to a non-limited number of motivated attendees, the MOOC is a pertinent tool to address this demand for knowledge about forest and basic skills in forestry.

To further engage the learners into the learning process, one promising approach, even for people without a formal background in the domain, is citizen science. The term citizen science refers to research projects that engage large amounts of individuals, not necessarily trained as scientists, in "collecting, categorizing, transcribing, or analysing scientific data. Citizen Science is considered part of the Open Science initiative of the European Union, one of the pillars of the strategy for "Shaping Europe's digital future". Indeed, the European Union funds the EU-citizen.science portal, a repository of relevant Citizen Science resources and projects around the world. Citizen Science projects may have a significant scientific impact since they can generate scientific data "at scales or resolutions unattainable by individual researchers or research teams". But, in addition, there is a strong interest in Citizen Science as a way of improving science and environmental education. As an example regarding the forest, the CITIQUE project developed in France pushes this ambition to the 4th level ("Extreme Citizen Science") of

the classification proposed by Haklay (2013), involving citizens into collaborative science, including problem definition and data analysis. The CITIQUE project (**https://www.citique.fr/**) aims to better understand the tics ecology and the diseases they propagate.

Indeed, participation in Citizen Science projects seems to improve not only scientific knowledge and the acquisition of scientific skills in general, but it can also play a specific key role in the widespread understanding of conservation issues (see for example: https://biodiversite-foret.fr/les-resultats-par-saison/), or climate change adaptation issues (see for example the "MygardenOf Trees" WSL initiative, **https://www.mygardenoftrees.eu/**).

This is the case of Citizen Science applications and initiatives that address different areas of Forestry: inventories, pest-resistance, prevention and identification of tree damage... Citizen Science can also bring interesting possibilities for learning when integrated with formal curricula (see for example **https://www.touschercheurs.fr/en/homepage/**). However, the potential of Citizen Science as part of the formal training of Forestry professionals at Higher Education is still underexplored.

Different mobile apps have developed across Europe to engage citizens in the forest and natural resources management. VirtualForests will focus on the use of the Silvalert Citizen Science mobile app (**https://silvalert.net/**), developed by our consortium, for illustrating and evaluating this integration between Citizen Science and science education public of the general public or formal training of forestry students.

Silvalert app is designed to facilitate that citizens co-register forest tree damages. The user can be any citizen reporting any kind of damage (discoloration, damages to trunks, fires…). Based on where the damages are collected, they can be forwarded to regional health services and shared with relevant scientists. Students can register and be trained.