



How to engage undergraduate students in Soil Science: some strategies to enhance their motivation

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Teaching soil science can be a challenge in those degrees where students are not familiar with the soil system and do not understand the importance of soil science for their future career. This is the case of students of Biology, Agronomy or Environmental Science, who normally consider soil as a mere substrate for vegetation development, with no interest about how soil determines productivity and quality of terrestrial ecosystems. Thus, students lack of initial motivation to study Soil Science, and just attend lectures and practical lessons as mandatory procedure to get the degree. To engage undergraduate students from Biology, Agronomy and Environmental Sciences in Soil Science, we developed a strategy to enhance their motivation by means of making them participants of the selection of the soils and analyses used for their training. By means of dichotomous keys, students, grouped in pairs, first select the main purpose of their study from different options (land productivity, soil biodiversity, soil fertility, effectiveness of restoration, effect of land use, effect of management, etc). Once objective is decided, we give them some information about sampling strategies, so that they select how soil sampling is going to be performed, and the number of samples to be taken. In terms of the initial objective, they also decide from a given list the properties they should measure. In a practical basis, from the list of selected properties to be measured, professors decide the ones they can really develop in terms of timing, resources and space demand. After that, they are aware about the fact that they have an experimental design developed by them to achieve the goal they meant. Under this perspective, their motivation is enhanced since students are the ones deciding what to study in terms of their personal and professional interests, so that learning is more effective. The negative aspect of this strategy is that it involves many hours of tutorials for the professor, and the use of virtual platforms such as Moodle is highly encouraged to be really effective and achieve the expected results.