

Editorial: innovative approaches to learning in environmental science

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Editorial on the Research Topic

Innovative Approaches to Learning in Environmental Science

Over the last two decades, the context in which educational programs in environmental science are offered to students, at all levels, has changed tremendously. The advent of internet has made readily available to educators and students a wealth of information that until then had been far more difficult to obtain. At the same time, pervasive environmental change has made it increasingly likely that graduates of environmental science programs will change jobs, or at least reorient their activities, several times during the 40 or so years that their careers will probably last. This periodic re-careering, along with the fact that the knowledge students are imparted with during their training will likely become outdated, if not entirely obsolete, far quicker than used to be the case, make it mandatory for individuals in the field to be able to constantly update their knowledge base and skills.

This rapidly changing context of environmental education challenges teachers in profound ways. Long gone are the days when it made sense to require students to try to memorize massive amounts of information covered in formal lectures. It is far more meaningful for students to learn how to discriminate, among all the information that is accessible to them within seconds on internet, the bits that are both sufficiently reliable and ultimately useful to them. Since the ability to learn new material and acquire new skills, most often via self-directed learning, will in all likelihood be the key to success in years to come, we need to actively prepare students for these activities, instead of asking them to regurgitate passively-assimilated content.

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This imperative to basically rethink entirely how environmental education is conceived is a tremendous challenge to educators all over the world. Some of them have come up in recent years with very innovative ways to foster student learning. One of the best known methods, generally referred to as problem-based learning, puts students in the driver's seat, as it were, and requires them, in teams, to analyse a concrete problem and trace their way backward to the fundamental principles needed to understand and resolve it. Other innovative approaches encompass, e. g., discovery-based learning, case-based learning, tutorials to promote self-directed learning, and the development of dynamic learning portfolios where individuals document the status of their knowledge and skills in real time.

In this context, the objective behind this Research Topic (RT) shared by *Frontiers in Environmental Science*, *Frontiers in Communication*, and *Frontiers in Education*, was to give a chance to instructors who in recent years have tried to innovate in their teaching, to share experiences in successful implementations but also exploratory trials. As a result, the articles collected within this RT explore innovation in environmental education (EE) from a broad range of perspectives.

Dulaurent, A.-M., and Houben, D. (2020). Sensibiliser les jeunes au sol à l'aide de la démarche scientifique: retour d'expérience d'un atelier conduit dans le cadre de la Fête de la Science. *Étude Gestion Sols* 27, 9-22.

Richer-de-Forges, A. C., Courtemanche, P., Bertel, O., Ortega, C., Arrouays, D., Bispo, A., et al. (2019). Une boîte de sensation tactile des sols à huit

compartiments pour une découverte par le grand public et les enfants. *Étude Gestion Sols* 26, 133-142.