

Helping engineering students to discover the transversal skill of environmental sensitivity through the evaluation of their daily eating habits

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Abstract

Chemical engineers play an important role in improving social welfare and in meeting the major challenges facing society in the context of Sustainable Development Goals (SDGs). They have to provide their technical skills and knowledge, but they also need to optimize economic and environmental performance, solving ethical dilemmas that may arise [1]. Therefore, environmental sensitivity is a relevant skill, which should be integrated into the competency-based educational model of Chemical Engineering Degree. In particular, this transversal competence is included in the content of the module “Environmental Management” of the syllabus of the compulsory third-year subject of Environmental Engineering in the Chemical Engineering degree program in the Universidade de Santiago de Compostela.

Considering the impact of the food sector in the environmental loads associated with anthropogenic activities and the importance of nutrition to lead a healthy lifestyle, an activity was proposed to the students with the aim of projecting their social and environmental responsibility. During the first week of classes, students had to collect on a piece of paper their daily intake per food item. The objective of the task was to quantify the greenhouse gas (GHG) emissions in terms of carbon dioxide equivalent (carbon footprint-CF) and the amount of direct and indirect water (water footprint-WF) associated to their daily diet. The task was repeated at the end of the semester. This learning activity allowed students to gain awareness of environmental issues derived from day-to-day routine, as well as, to establish the link between diet and SDG6 (clean water and sanitation), 12 (Responsible Consumption and Production) and 13 (Climate change).

Results showed that once students were conscious that food systems are responsible for more than one-third of GHG emissions, most of all coming from livestock products, and that agriculture is the main pressure on freshwater resources, they were willing to change their eating habits towards more sustainable options (**Fig. 1**)

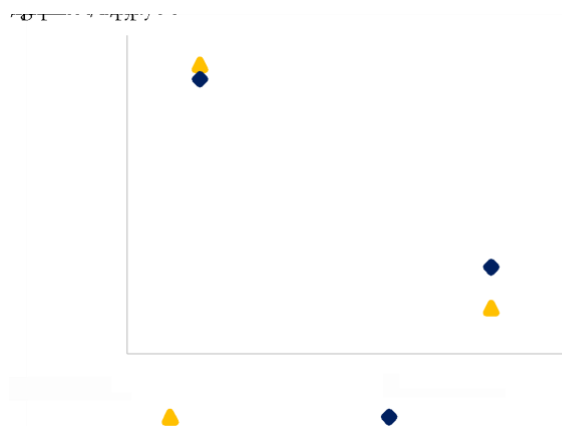


Figure 1. Evolution of the carbon footprint and water footprint corresponding to the diet of an average student.

To sum up, this activity led to the acquisition of an important transversal skill for engineers (the environmental sensitivity), while providing broad familiarization with essential environmental management tools through practical experience. Moreover, it allowed students to ponder and understand how our daily eating affects not only to our lifestyle and personal health, but also to the global transition to a sustainable future.

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References

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