

Applying "Design Thinking" to address Food Waste in University Campus

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Abstract

Food waste is a persistent wicked problem in the global agenda linked to both ethical and environmental issues. Around one-third of all food produced globally is lost or wasted across the food system [1], from farm to fork, much of which is avoidable. This poses an ethical and moral dilemma as, in one hand, access to nutritious and quality food is not widely available for many vulnerable groups [2]. On the other hand, food waste is not only related to the food per se, but it also includes all embedded resources required to produce it (water, land-use, human labor, etc.) which are usually forgotten [3]. Promoting sustainable and responsible consumption is key for higher education institutions as these incentivize better practices among future professionals [4] who will further their impact outside of the academic scope. Moreover, higher education institutions and their canteens are directly concerned with food waste issues as these educational centers (and public administrations) must set an example of good practices in the matter. Under these considerations, the Industrial Engineering School (ETSII), one of the sixteen Engineering Schools at Universidad Politécnica de Madrid (UPM) in Spain, and in collaboration with the European Engineering Learning Innovation and Science Alliance (EELISA), under the umbrella of the EELISA community Circular and Regenerative Campus (CRC) has proposed a Food Waste Challenge (FWC) aiming to generate ideas to reduce food waste in the canteens. This challenge is bravely undertaken by first year engineering students in groups of 3 to 4 students, during a period of a semester and, as part of a class under a supervision of two main instructors. The FWC follows "Design Thinking" methodology which consists of generating innovative solutions considering the needs of the users. The students must perform a set of steps to understand the problem (discovering and definition), ideate different technical solutions and receiving the feedback of their classmates and instructors to choose one of them, use a hands-on approach to design a prototype, iterate after reviewing the feasibility with the instructors, and present their final proposed solutions. The students have total freedom deciding which part of the problem, and how, they intend to tackle. This means, that two groups could decide to review the same problem (e.g., unconsumed bread) from completely different points of view and develop different technical solutions (e.g., composting & animal feed). The

results show that students become more aware of the issue when they experience it first hand and become more engaged in identifying and proposing possible technical solutions. These solutions cover a wide scope, ranging from availability of take-away packaging (reusable), providing different sizes and prices for the different food, downcycling cardboard plates to use it as recycled paper for different projects, to complex systems which use solar panels to heat ovens to create “healthy snacks” with vegetables. The FWC has taken place at UPM and EELISA community for the last two years, increasing its impact from 50 students working in seven canteens during the first round, to 50 students working in nine canteens from different engineering schools during the second round.

Keywords: regenerative economy, zero waste, higher education institutions

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