## Learning engineering without avoiding the “what for” question

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In our engineering schools, students mostly learn the inner side of technology, that is, they learn to “know how” technical problems can be solved. The question about the meaning, the “what for”, of technologies scarcely appears in teaching activities, and when it does, it usually is in the framework of economy. However, engineering students are first of all human beings and citizens; and technology (technoscience) is intrinsically related to society and culture. Therefore, the development of an engineering education should be done within a broader context, which includes socio-human disciplines and applied ethics.

All the co-authors of this contribution have some experience about that kind of broad-context teaching at different universities, mainly through specific courses, either optional or not for students. As the “what for” question is a matter of opinion, the course tasks are designed to foster a strong student participation and interrelationship. A case-study, team-working, and role-playing methodology is used, allowing students to dialog and also to debate with confronted views; even some classroom tasks are led by the students themselves. In this way, they are also able to practice and further develop their argumentation capacity and their communication skills.

In our view, the involvement, both cognitive and emotional, of the students in the course activities plays a key role in enhancing their awareness and sense of responsibility regarding the social and environmental implications of technology, and hopefully in their development of other related attitudes and values. We have learnt, both from class observation and polls, how that is favored by the case-study method, either through stories or movies. In conclusion, we think that both the presence of fully dedicated courses in the curricula and the realization of learning activities in technical courses are useful for dealing with the “what for” of technology in engineering studies.



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