

## ASBTRACT

In the present work, a series of collaborative service-learning (SL) experiences carried out in the Universitat Jaume I de Castelló and University of the Basque Country will be presented. These experiences have been developed within undergraduate courses, bachelor thesis and master thesis.

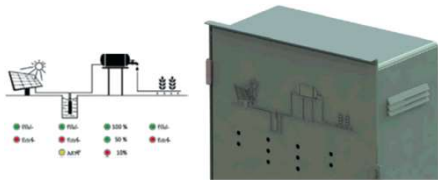
The work points out how these experiences can serve as a tool for teaching coordination at various levels: horizontal coordination within a year in one degree, coordination between different degrees or inter-university coordination.

The potential of these experiences makes them a very powerful methodological tool that can help not, only the students and the extracurricular agents involved, but also the teaching itself.

## THE EXPERIENCES

### EasyMouse: An Experience of Internship and Bachelor Thesis of Product Design Engineering at a Centre for People With Disabilities

This was a SL experience in which a student of product design engineering has conducted her curricular internship in a centre specialized in people with severe disabilities (mainly cerebral palsy). The student studied the product needs that the user of the centre may have from the engineering perspective and trying to solve some of them with a simple approach. Afterwards, the student identified a product to design from an inclusive and open approach, being this development her bachelor Thesis. The result of the service-learning experience has been most positive for all the parts. From an educative point of view, this experience has enable to work the specific and professional skills of her degree, as well as the social responsible skills.

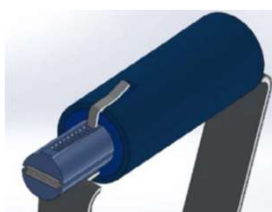


### PV Pumping Equipment Control-Box for Irrigation in Ethiopia Adapted to Final Users

This was a SL experience in the field of development co-operation, carried out collaboratively by three students of the last year of the degree in Engineering in Industrial Design and Product Development. It was developed in the framework of a project of Development Co-operation between the Universitat Jaume I and Bahir Dar University of Ethiopia. The objective was the design of a photovoltaic drip irrigation system for a rural community in Amhara (Ethiopia). This project was carried out in a coordinated way between three students of different engineering degrees. They designed the enclosure of the installation controller, adapted to the nature of the end-user.

### Pointers and Cutlery-handle for people with cerebral palsy and Walking stick with gadgets for different functionalities

These SL experiences were carried out in the second year of the Degree in Industrial Design and Product Development of the Universitat Jaume I. The experiences consisted in project based learning activities coordinated between two subjects of the same year, in which the students developed a project for an extra-academic institution throughout the whole year. In different years, students designed and manufactured three products; a head adapted pointer to improve functionalities for cerebral palsy people; cutlery-handle adapted to the hands for people with the same disability to improve their self-feeding autonomy and self esteem and a walking stick with gadgets that improved functionality. The projects were transversal to two courses in second year, Conceptual Design, where the students carried out a thorough study of the products and the end-users, and Materials II, where students selected the most suitable materials for the manufacture of their designs, and eventually have produced a functional prototype. In a closing workshop, the students delivered their functional prototypes to the promoter and users, along with documentation of the manufacture, use and maintenance of the products.



## CONCLUSIONS

SL tool is proving to be an excellent vector for the integration of Sustainability and Social Responsibility competencies in engineering courses, since it can be applied in a relatively simple way to engineering problems and projects, thus allowing its integration in the curricula. In this sense, as the service in question is directly related to the content of the courses, it permits to work on its academic content and has been assessed that competencies acquired this way remain longer. These experiences also provide a framework in which the student can learn about complex social problems and their role as engineers in them. From the students point of view, SL were highly gratifying and they state their interest in repeating.

## ACKNOWLEDGEMENTS

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## REFERENCES

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