

Hands-on: New Approach to Complement Traditional Classes in a School of Engineering

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Abstract - Department of Informatics Engineering (DEI) of ISEP, has implemented several methodologies to promote the soft skills and success of their students. In this article we intend to present the Hands-on sessions and their results. The Hands-on sessions aim is to complement traditional classes, but in a more iterative, practical and multidisciplinary way.

Keywords – Complementary training, hands-on, innovation, success,

INTRODUCTION

Nowadays, educational institutions face challenges resulting from new movements that regulate developed societies, namely knowledge and information technology with the intensive use of Information Communication, globalization and accelerated competition. The school of engineering of Polytechnic of Porto (ISEP) has expressing interest in making traditional educational processes more flexible, clearly assuming a position of innovation and acceptance of process reconversion education.

The mission and objectives of a Higher Education Engineering Institution are to transmit, expand and apply the knowledge that constitutes the strategic basis of the Engineers; respond to the needs of the Country in the training and updating of Engineers; services to the national business community (Martins, 2003).

What is clear, for the Department of Informatics Engineering (DEI) of ISEP, is that all the issues raised by the Bologna Declaration imply profound changes in the mentalities, philosophies and models of Teaching and Learning. For us, teaching should be student-centered and training-oriented, with a shift from juxtaposition of knowledge to the development of extended curricular areas.

These assumptions point to several paradigms in education, one of the most important being the inevitable change in the way of teaching and in the way of learning. Moreover, a much

better understanding of soft skills and innovation will be necessary to promote student success.

In this sense, the Department of Informatics Engineering (DEI) of ISEP, implemented the initiative Hands-on.

METHODOLOGY

The hands-on are sessions, which run 4 to 5 times by semester and take place on Saturdays or Wednesdays, with a theoretical component and a practical component, made by Companies, agents and people considered relevant in a particular area of Computer Engineering or other related.

Each session, with a maximum duration of 3 hours, consists of: a theoretical presentation, component made by a representative of an invited company, and a practical component that involves the use of the knowledge learned in the implementation of a mini multidisciplinary project.

The sessions aim is to complement traditional classes, but in a more iterative, practical and multidisciplinary way. The students are not required to attend the sessions. Participation in the Hands-on sessions is voluntary, however, there is a necessary pre-enrolment of the student in the DEI helpdesk (helpdesk.dei.isep.ipp.pt).

In order to complement the subjects addressed in the courses of the different programs, professors are asked to suggest relevant matters of interest to be covered by the Hands-on sessions. Additionally, the Hands-on sessions focus mainly in new tools and technologies that are not addressed in the several programs but are more attractive for the students.

Some rules have been established for the operation of these activities. It should be noted that there are a maximum number of students enrolled per session, and that sessions cannot take place at times when students are admitted to curricular assessments. That is, next to times of delivery and presentation of practical works or reports, the sessions are

interrupted. Similarly, during the last fifteen days of the semester there were also no Hands-on sessions.

With the objective to prevent a more active set of students from occupying all sessions of a certain type, and ensuring a greater equity of participation, students could only enrol in a session of each type. For each session, students are given the opportunity to obtain a certificate of attendance at the session.

At the end of the Hands-on sessions, all students were asked to fill out an anonymous questionnaire where they rate the session they attended from various points of view and suggest improvements or matters to be addressed in future sessions they would like to attend.

Some of the sessions that were held last year can be seen in <http://www.dei.isep.ipp.pt/>.

FINDINGS AND CONCLUSIONS

In CASHE (Conference: Academic Success in Higher Education) we will focus our presentation on the results obtained with the Hands-on sessions. The data collected shows that this kind of initiative is well received. However, a negative aspect has been mentioned, the duration of each event is considered too short.

The Hands-on approach and methodology to train soft skills and to establish the connection University-Companies demonstrates that students develop soft skills in a much more rapid way using iterative and collaborative learning methodologies.

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