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Educational innovation project in the field of Industrial Informatics

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Abstract

The objective of this paper is to describe an ongoing work that we are carrying out in the frame of an educational innovation project supported by the Education Advisory Service of the Vicerectorship for Teaching Quality and Innovation (University of the Basque Country, Spain). The project is driven by means of the subject of Industrial Informatics of the degree of Industrial Electronic Engineering and Automatics (University College of Engineering of Vitoria, Basque Country University, Spain). The design of the project is based on the development of a collaborative work distributed among all the students of the subject, grouped in several teams or working groups. The work developed by each of those groups is complementary, and when all these parts of work are finished, all of them will fit together. The conclusion reached until this moment through the continuous tracking of the students is that there is an increased and more active attendance. Besides, the results reached by the students in different evaluations have improved those reached by means of the traditional paradigm of learning.

Introduction

   Active learning is built based on the responsibility and the involvement of the learners in its learning (Bonwell, C. & Eison, J., 1991) and (Felder, R.M. & Brent, R., 2009). On the other hand, cooperative learning is a paradigm in

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which the learning activities are planned looking for positive interdependence of the learners (Felder, R.M. & Brent, R., 1994) and (Felder, R.M. & Brent, R., 2001). In this paper authors describe an educational innovative project in the field of Industrial Informatics based on both active and cooperative learning. This formal project is motivated by a previous informal innovative project in which very good results were reached, and due to that circumstance, we decided to continue those educational innovative experiences formalizing them through the subject named Industrial Informatics of the degree of Industrial Electronic Engineering and Automatics (University College of Engineering of Vitoria). The objectives of the project are quite simple, but have shown to be infeasible using traditional learning approaches: to get a higher attendance of the students and to obtain better results in the evaluation tests at the end of the term.

The structure of the paper is as follows. The second section describes the global context in which the educational innovation project is developed. The third section introduces the educational innovation project itself, while the fourth section discusses the results achieved along it. Finally, the last section exposes our conclusions.

1. Global context

The educational innovation project is developed in a global context that is going to be explained in this section. It has been carried out in the Basque Country University UPV/EHU (Spain), supported by a grant of Teaching Innovation Projects 2011-13 of the Education Advisory Service, Vicerectorship for Teaching Quality and Innovation. This Vicerectorship is structured in four main areas:

- Quality Cathedra: Contributes to the knowledge, implementation and improvement of quality management in all areas of the organization of the university, helping to achieve the highest standards of excellence.
- Institutional Evaluation Service: A service of the university which aims to guide and promote the process of evaluation, verification and accreditation as well as those related to improving the quality of higher education. It also works with reference quality agencies in developing their programs in the university.
- Faculty Evaluation Service: A service dedicated to promote, design, develop, advise, facilitate and train faculty evaluation process with the desire to contribute to the improvement of teaching quality.
- Educational Counselling Service: A service which manages courses and training according to the needs of the faculty.

All these areas converge towards a methodology named IKD-Ikasketa Kooperatibo eta Dinamikoa in Basque (Dynamic and Cooperative Teaching-Learning in English), characterized by the following principles:

- Active Education: IKD invites students to become the architects of their own learning and an active element in the governance of the university. To get this, it encourages learning through active methodologies, ensures continuous and formative evaluation, articulates the acknowledgement of its previous experience (academic, professional, vital and cultural), and promotes mobility programs (Erasmus, SENECA) and cooperation.
- Territorial and social development: The IKD model development requires an ongoing process through which the university is committed to its social environment and community, with public vocation and economic and social sustainability criteria, promoting values of equality and inclusion. It also takes into consideration peculiar characteristics of each of the three provinces where sits our university, to contribute to their empowerment and to extract from them their formative potential. A curricula development responsible with the social environment is done through internships, collaboration with social initiatives, social networks, the relationship with companies and mobility programs that promote international experience and cooperation of our students.
- Institutional Development: IKD curricula development drives institutional policies that promote cooperation between the agents involved in teaching, in an environment of confidence and dynamism. It promotes programs that encourage institutional structuring through the figures of the course or module coordinator, quality commissions and promoting teaching teams, which are key elements in this new teaching culture.
- Professional development: First, the continuous training of the people involved in teaching activities (faculty and support staff to teaching), in order to promote adequate professional development. Training programs (ERAGIN, BEHATU, FOPU), projects to support educational innovation (PIE) and assessment tools for teaching (DOCENTIAZ), among others, are actions that support the construction of IKD.

As stated before, in 2.011 the Education Advisory Service of the Vicerectorship for Teaching Quality and