

a investigação no ensino- -aprendizagem práticas de articulação

Quality in the teaching and learning process in the engineering courses of the University of Aveiro

Teachers' perceptions in the first year of degree

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Abstract

In Portugal, the abandonment and failure in Higher Education are even more critical in the area of engineering and occurs particularly in the first year of degree. There are several causes for abandonment, from those involving the student to the quality of pedagogy practiced in the classroom. However, Bologna advocates a change of educational practices with the passage from the *person-teacher* that teaches to the *student-learner* approach, becoming the center of the teaching-learning process (Ribeiro, 2005, Zabalza, 2008 e Chaves, 2010).

This study is based on a case study methodology, whose main objective is to understand how teachers perceive the quality of the teaching and learning process in their courses, identifying Strengths and Weaknesses Points in a sample of five units of first year of degree. Quantitative data emerge from pedagogical surveys, while qualitative data emerge from the reports of students and teachers, instruments of data collection of the SQG_PEA from University of Aveiro.

The data shows that teachers tend to emphasize their scientific skills, understanding that to be a good researcher is synonymous with being a good teacher.

Keywords: engineering courses, teaching practices, teaching-learning environments, quality and evaluation

To be or not to be a Higher Education teacher: the transforming role

The teacher presence in Higher Education stems, for the most part, from his (excellent) performance as a student, finding himself a teacher in the change of status and role: from student to teacher, imitating his teachers; of their recognized professional competence in a particular area, which is often the result of collaboration with higher education institutions and, finally, as a researcher to the teacher as if a good researcher were synonymous with a good teacher (Melo & Alves, 2012). In fact, the literature points to the area of research as the dimension where the teacher feels more valued and competent not only institutionally but socially, which sometimes translates into a greater investment in the research dimension than in the teaching activity. However, despite the fact that higher education institutions have, over the years, promoted/offered educational training to teachers, the reality is that the investment of teachers in this area is very small or nonexistent. For Martins, Oliveira, Barros, Espírito Santo, Trindade, & Bonito (2011, p. 163) a quality higher education should be "necessarily associated with qualified teachers: *enhancing the link between teaching and learning and research; to be concerned also with the ethical dimension of learning and to relate to the surrounding community. In this way, the valorization and the association of the pedagogical dimensions of research and community are likely to contribute strongly to quality in higher education*".

Methodology and research questions

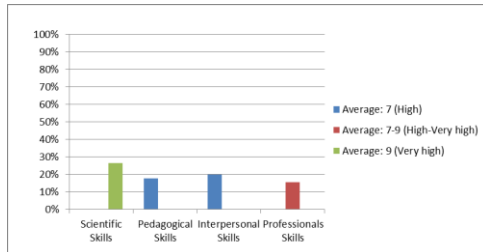
This study presents some results that emanated from an ongoing research project under the Education PhD, which intends to evaluate the quality of teaching and learning process in engineering courses of the University of Aveiro. This study aims to answer the following research questions:

- How do teachers perceive quality in the teaching and learning process in their engineering courses?
- What are the 'Strengths Points' and 'Weaknesses Points' identified by teachers?

Procedures

Quantitative study: In the quantitative analysis we considered the totality of pedagogical surveys (n = 347) totaled in the 5 curricular units. The statistical analysis was made using the *Software IBM SPSS Statistics 21*.

Qualitative study: In the qualitative study, it was used the content analysis of the data collection instruments of the SubGo_UC, the students reports and



Graph 1 - Subcategories identified by teachers as 'Strengths Points'

teachers reports that make up each of the curricular units and in the academic years (2009/2010, 2010/2011 and 2011/2012). In this way, 71 reports of teachers and students were analyzed. The content analysis was performed using the *Software NVivo 9 (QSR-2010)*.

Results

Quantitative study

Based on what was requested in the survey questions, it was sought to identify the emerging categories of the qualitative study in the questions, thus recognizing 9 categories and 14 subcategories, divided by the 'Strengths Points' and 'Weaknesses Points' dimensions. Teachers identify as 'Strengths Points', the 'Teachers' category, where 'Scientific Skills', 'Professional Skills', 'Interpersonal Skills' and 'Pedagogical Skills' are more relevant (Graph 1).

Qualitative study

In content analysis it was considered as dimension and category to be explored, being the most referenced by the teachers, the 'Strengths Points' dimension and the 'Teaching, learning and evaluation' category.

In the qualitative analysis of the data, as 'Strengths Points' it is verified that the categories and subcategories most referenced and in descending order are 'Teaching, learning and evaluation' [subcategory: 'Evaluation' (N: 11) learning and evaluation' [subcategory: 'Alignment' (N: 7)].

Conclusions

Teachers refer to their scientific skills as their best quality in teaching activity, and interpersonal relationships are understood in a didactic availability format and not in the relational domain. This study also draws attention to the difference between the representations that are verbalized and the practical reality, despite the fact that pedagogical skills are also articulated as

a strong bridge, the difficulties listed are exactly related to the pedagogical practice: how to motivate/capture students attention, how to promote student-learning centered, how to use better strategies.

On the other hand, studies based on reports of teacher self-evaluation reveal that the emphasis is placed on the quality of teaching and less on learning, not revealing the correlation between both. In fact, the idea that teachers' conceptions influence activities, teaching strategies, expectations regarding students, as well as their attitude towards professional development seems to be consensual.

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