PAPER REF: 4454

HEALTH AND SAFETY TEACHING IN THE CIVIL ENGINEERING MASTER: A CASE STUDY

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ABSTRACT

High rates of fatal and serious accidents in construction workplaces are reported annually. The recognized lack of awareness of health and safety issues, in the undergraduate and postgraduate curricula of civil engineering, revealed some years ago the need for specific regulation of the construction sector. The introduction of these issues in the Civil Engineering curricula led to a study of civil engineering students' health and safety education and occupational risk management attitudes. This paper shows the methods that have been used to introduce occupational risk prevention integrated in the construction management lessons and in specifically designed courses. Surveys were completed by the students to evaluate their level of construction risk management knowledge and the evolution of their knowledge and attitudes toward health and safety risk management. The results are reported in this paper.

Keywords: health and safety, risk management, civil engineering education and training.

INTRODUCTION

The Temporary or Mobile Construction Sites Directive (Directive 92/57/EEC) created great challenges in health and safety risk management education and training, because it established new functions in occupational hazards prevention for all the participants in the construction sector and demanded the intervention of health and safety coordinators, from the initial project preparation stage. The Directive's contents will only be applied efficiently, with full achievement of its objectives, if specific education and training be provided to construction technicians. In this way they are able to achieve the skills and knowledge that enable them to implement the functions that are required by health and safety coordinators such as: coordinating the activities of all the participants during the design and the execution phase with the aim of integrating health and safety prevention principles. From the early design phase this will influence the execution of the construction schedule, the quality of the work, the construction, use, maintenance, repair, rehabilitation and demolition performance of the construction projects (Rodrigues and Maranhão, 2007).

Civil engineering has long been the most recognised technical degree for working in any construction area in Portugal. The previous civil engineering education in Portugal offered a broad five-year undergraduate program, covering a variety of areas such as structures, foundations, hydraulics, construction materials, construction technology, roads and town planning. Accordingly, a considerable part of project design (including structural, foundation and most installation design), as well as project management, quantity surveying and quality management duties, is currently carried out by civil engineers in Portugal. All of the above duties must be conducted in accordance with health and safety regulations, therefore imposing specific training in this area on civil engineers. Otherwise, safety issues may be considered

either through specific courses or included in current course syllabi (Rodrigues & Teixeira, 2003).

The problem is how to provide health and safety knowledge to construction professionals. Obviously, health and safety coordination should be the object of specific training designed for a variety of professionals with different backgrounds. Specific training must also be envisaged for people performing other functions in the construction activity, namely civil engineers. This could possibly be achieved in two ways or in a combination of both: either considering specific courses or including relevant topics on various subjects in current courses (Rodrigues and Maranhão, 2007).

Surveys were carried out to determining the changes and evolution of the students' attitude and knowledge of health and safety risk management after educating them. The surveys' results show the positive impacts of this action in the students' attitudes and knowledge.

RESULTS AND CONCLUSIONS

The Civil Engineering Department of the University of Aveiro has created a range of four units with general and specific subjects focusing on occupational health and safety, construction health and safety risk management, design and site construction health and safety coordination. Through the results of surveys carried on through the students, it can be concluded that the methods and syllabus implemented embed a positive health and safety risk management culture within the student body. The attitudes of students towards health and safety risk management improved during their attendance of these units. The majority of the students that have only attended the two compulsory units claimed to have an average attitude towards health and safety risk management. On the other hand the majority of students that have also attended one or two of the optional units claimed to have a good or very good attitude towards these matters. Similarly the students perceived that their knowledge of health and safety risk management had improved: 100% of the optional unit surveyed claimed to have a good or very good understanding of health and safety risk management against 71.4% of the compulsory unit students. The students that have undertaken the four units are also prepared to exercise construction health and safety coordination in spite of their education needing to be complemented with in site and design experience.

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