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LABOR RISK PREVENTION CULTURE ENCOURAGEMENT AMONG STUDENTS FROM BUILDING DEGREE IN THE TECHNICAL UNIVERSITY OF MADRID

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Abstract— **The influence of training in labor risk prevention and the development of the resulting pre-emptive culture are analyzed within this paper. In order to achieve this, a quantitative analysis of the students of Building Degree in the Technic University of Madrid has been developed. This study has been made in all grades, valuating the previous knowledge acquired during compulsory education. It must be kept in mind that the students in 3rd and 4th grade have received general and specific compulsory training in prevention and safety in the building sector.**

***Index Terms*—Pre-emptive culture, integral training, higher education.**

I. INTRODUCTION

The university makes, within the current exigencies of society, the service of higher education through research, teaching and study. Safety and labour health are included within these exigencies as tools for fighting against the accident rate. Because of this, the university integrates these values in the good standards of its activities. In order to do that, in addition to introducing a correct prevention policy and integrating safety and health in the activities developed by their employees, it must transmit these aspects to its students. One of the agreements assumed by the university is the adoption and encouragement of necessary actions to maintain the study and work conditions of all the members of the university community in a safe and healthy environment. It must promote the prevention in every single activity developed within the university: teaching in lecture rooms and laboratories, research, etc., including having a better teaching and research quality and train professionals with a better training and sensitivity in the prevention area as the main objective of this promotion [1].

The university must encourage a proper "pre-emptive culture" which allows us to generate attitudes and behaviours in the future worker which guarantee the responsible fulfilment of the standards and activities related to their professional activity avoiding, if possible, all risks. In order to create this "safety and labour health awareness", the university must spread the information to create awareness. The professors, the administration and services staff and the students must be aware of the commitment and the policy related to prevention. We all must be aware of the risks being part of the work done, and we must also know that they will keep appearing. However, this does not mean that they have to materialize into accidents. The prevention is there to avoid them.

We have to consider that education and training are crucial factors to reinforce the pre-emptive culture. Education related to safety and health does not start at the entrance to labour work but it must be part of the curriculum or a professional training subject by its own right.

Edification graduates are technicians who act during the construction execution in the edification process and, thus, they are often responsible of other workers in pre-emptive subject. They must have a clear knowledge of all the participant agents' obligations within this subject during the edification process. They must also have this accurate knowledge of the current standards of labour risk prevention, both in general and specific level in the building sector. Spain, as a European Union member, applies the directives established within this subject, adapting them to the Spanish right. The standard 31/95 of Labour Risk Prevention [2] is the adaptation of the Framework Directive 89/391/EEC [3], related to the application of measures to promote the safety and health improvement of the workers. In this standard the ensemble of activities of an enterprise is integrated with globalizing character. It is supported with the transposition of other specific directives in different subjects. The application of a wide normative context in pre-emptive subject in the building sector is taught in the

Safety and Prevention I and II subject within the Building Degree.

II. EXPERIMENTAL WORK

Within this context a study of the student's perception of the pre-emptive culture established within the Building Degree in the Technical University of Madrid has been made. In this degree, the curriculum includes as compulsory subjects two Safety and Prevention subjects. They are taught in third and fourth grade, with 6 and 3 ECTs credits respectively. The picked data have been classified into two groups: first and second grade students, who have not received specific training in safety and prevention yet, and third and fourth grade students, who have received at least half of the subjects related to this area.

All students have been given a datasheet for its fulfillment. In this paper, only the results obtained in the last part of the datasheet are going to be analyzed. Its aim is to detect the level of the students' knowledge about the prevention established in the Technical University of Madrid. The datasheet fulfilled by the students is the following (table I):

TABLE I. DATASHEET

In the following questions tick the box you consider the most adequate, taking into account:

N = never ***S = seldom*** ***O = Often*** ***VO = Very often***
NR/DK = no response/do not know

PRE-EMPTIVE CULTURE IN THE COLLEGE: IMPORTANCE, MEANING AND CURRENT SITUATION

Indicate the level of knowledge that, currently, you have about prevention within the Technical University of Madrid	**N**	**S**	**O**	**VO**	**NR/DK**
I have consulted the Technical University of Madrid *Labour health for students manual*					
I have consulted the Technical University of Madrid *Labour risk prevention policy*					
I have consulted the Safety and Prevention section in the School of Building Engineering webpage					
I have consulted information related to the Technical University of Madrid Pre-emptive Organization					
I have consulted the Technical University of Madrid *Labour Risk Prevention Plan*					
I have consulted some *Procedure* from those established by the Technical University of Madrid					
I have participated in some evacuation drill for the School of Building Engineering auto-protection plan implantation					
I have localized and interpreted the School of Building Engineering evacuation maps					
My grade of knowledge of the actuation protocol for an emergency in the School of Building Engineering is					

It has been answered by 58 first and second grade students and 141 third and fourth grade students.

III. RESULTS AND ANALYSIS

The results are shown through graphics where the data are written in percentages, dividing the students in the two groups mentioned above.

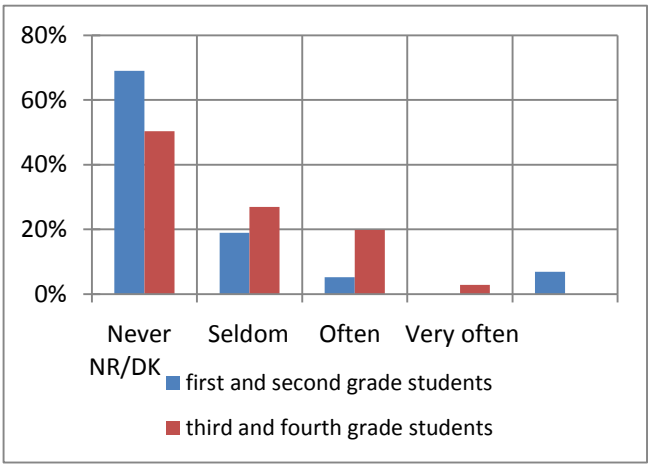

Fig. 1. I have consulted the Technical University of Madrid *Labour health for students manual*

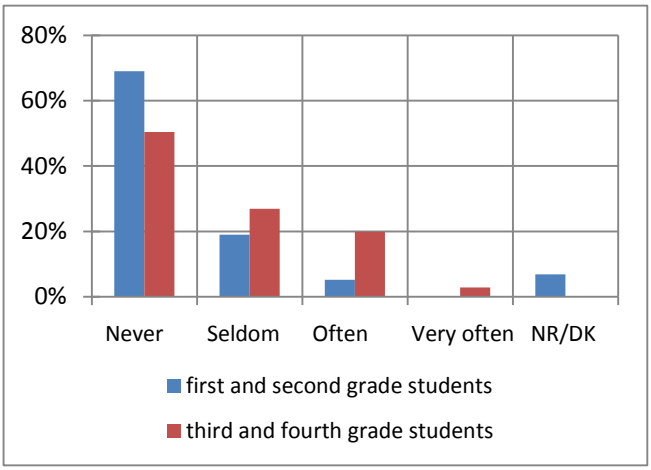

Fig. 2. I have consulted the Technical University of Madrid *Labour risk prevention policy*

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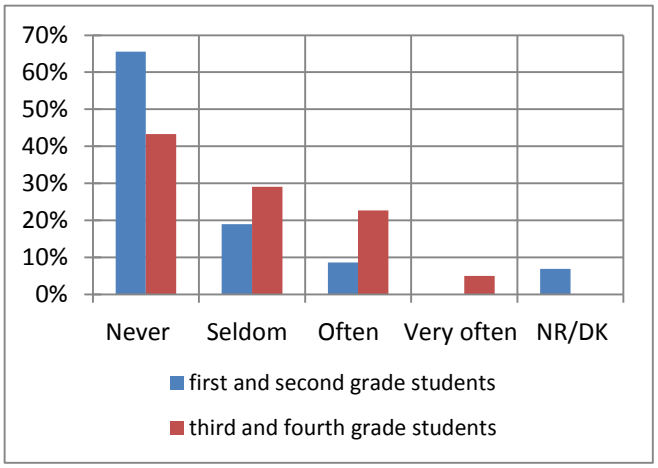

Fig. 3. I have consulted the Safety and Prevention section in the School of Building Engineering webpage

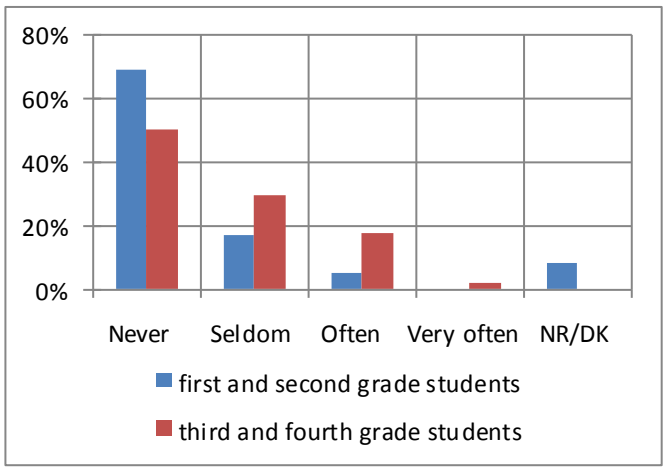

Fig. 4. I have consulted information related to the Technical University of Madrid Pre-emptive Organization

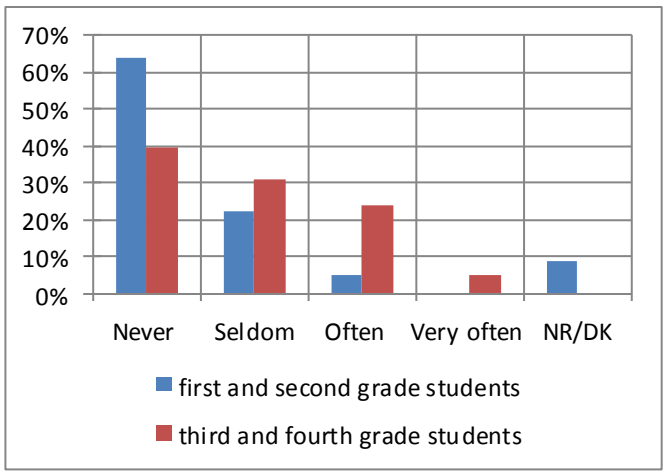

Fig. 5. I have consulted the Technical University of Madrid *Labour Risk Prevention Plan*

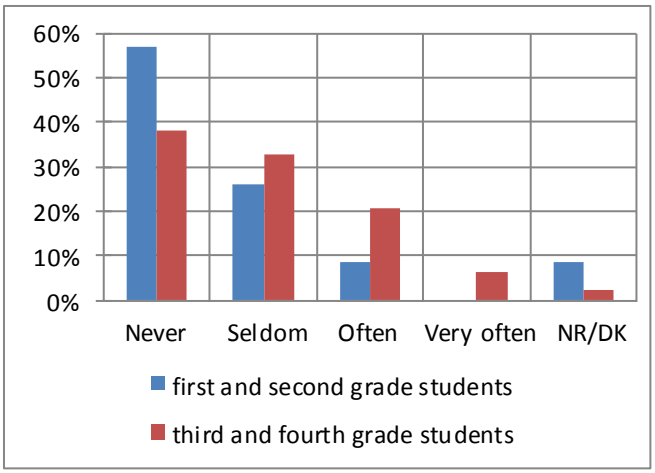

Fig. 6. I have consulted some *Procedure* from those established by the Technical University of Madrid

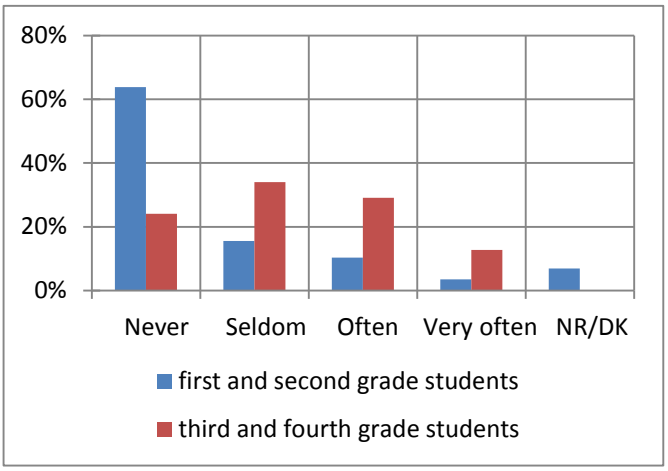

Fig. 7. I have participated in some evacuation drill for the School of Building Engineering auto-protection plan implantation

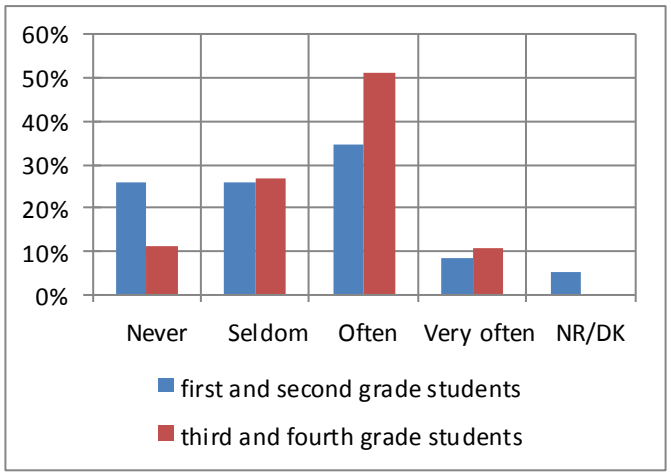

Fig. 8. I have localized and interpreted the School of Building Engineering evacuation maps

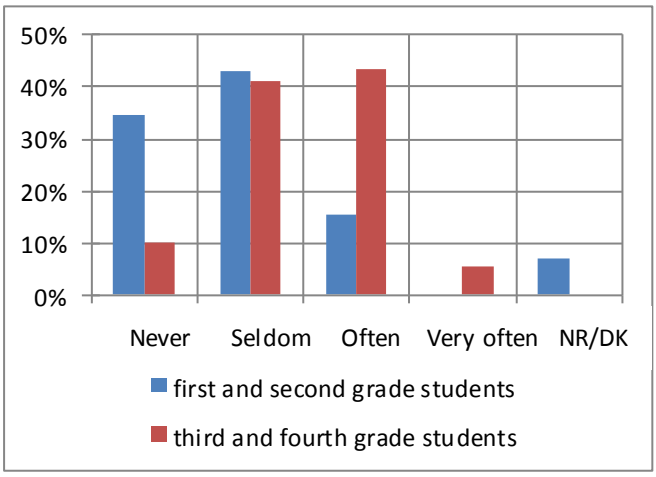

Fig. 9. My grade of knowledge of the actuation protocol for an emergency in the School of Building Engineering is

The joint analysis of all graphics shows that when a student is asked if he has consulted any type of document related to safety and prevention (figures 1 to 6), most of them response never or seldom. All these documents have been uploaded to the Technical University of Madrid or the School of Building Engineering webpage. This shows that, despite the effort made by the Technical University of Madrid to create documents related to safety and prevention, the students' level of knowledge is quite low. This shows the necessity of spreading this knowledge through another means or doing a more active spreading. It could be done, for example, including the documentation via CD or paper in the annual enrolment envelope. If the results shown in these six graphics are studied taking into account the type of students, it can be seen that the students who have been taught safety and prevention subjects (third and fourth grade) have reached a higher level of enquiries than the students without specific training (first and second grade). They also show that they have at least certain knowledge about what they are being asked, excepting a minor percentage in relation to the established procedures (fig. 6).

The students who have received specific training reveal they have consulted more often the *Labour Risk Prevention Plan* of the Technical University of Madrid (fig. 5) and the School of Building Engineering webpage.

The annual fulfilment of an evacuation drill for the implantation of the School of Building Engineering auto-protection plan causes the response to this question to be more favorable than the previous ones. Logically, the students of third and fourth grade, who have been in the School for a longer period of time, have participated in more occasions (fig. 7). These drills are programmed only during one of the teaching shifts (morning or afternoon). Thus, it could be possible that a high number of students have not participated in any drill. This number increases as the grade gets lower.

Regarding the localization of the evacuation maps existing in the School of Building Engineering (fig. 8), the response is much more positive than that of the previous questions. The 62% of the third and fourth grade students have localized and interpreted them. This percentage decreases to the 43% among the students from first and second grade. It seems paradoxical that, even though they are students aged 18 to 23, who have been born during the informatics age; they have consulted more the graphic documentation hung on the building walls than the webpage documentation.

The grade of knowledge of the actuation protocol for an emergency within the School of Building Engineering is widely related to the drill development. The 76% of the third and fourth grade students and the 49% of the first and second grade students admit having participated in at least one drill (fig. 7). However, only the 49% of the third and fourth grade students and the 16% of the first and second grade students say they have consulted often or very often the actuation protocol for an emergency (fig. 9). These data show the necessity to intensify the number of drills so that, at least, all students participated in it once a year.

IV. CONCLUSIONS

- This shows that, despite the effort made by the Technical University of Madrid in order to create documents related to safety and prevention, the students' level of knowledge is quite low. The students who have received training in safety and prevention (third and fourth grade) have reached a higher level of inquiries than the students without specific training (first and second grade).
- The students who have received specific training reveal they have consulted more often the *Labour Risk Prevention Plan* of the Technical University of Madrid and the School of Building Engineering webpage.
- The 62% of the third and fourth grade students have localized and interpreted the evacuation maps existing in the School of Building Engineering. This percentage

decreases to the 43% among the students from first and second grade.

- The 76% of the third and fourth grade students and the 49% of the first and second grade students admit having participated in at least one drill. However, only the 49% of the third and fourth grade students and the 16% of the first and second grade students say they have consulted often or very often the actuation protocol for an emergency.

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REFERENCES

[1] Grupo de Trabajo de la CRUE (Conferencia de Rectores de las Unversidades Españolas) Calidad ambiental y desarrollo sostenible. Reunión de Servicios de Prevención de las Universidades Españolas. Seminario Permanente de Ambientalización. 3ª Jornada. Universidad de Valladolid, April 14, 2005.

[2] Act 31 of 8th November 1995 on Prevention of Occupational Risk. Published in the Official State Gazette (BOE) on Friday 10th November 1995. BOE Number 269.

[3] Official Journal of the European Communities. Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (89/391/EEC). Published in the Official Journal of the European Communities on 29th June 1989. No L 183/1.