

# **The importance of integration of safety and health at work into secondary education**

**Marija Djurovic**, Secondary School of Civil Engineering Belgrade, Serbia,  
marija\_dam@yahoo.com

**Tatjana Mamula**, Metropolitan University Belgrade, Serbia,  
tatjana.mamula@metropolitan.ac.rs

## **Abstract**

*The preventive culture of safety and health at work is the culture that enables the right to a safe and healthy work environment at all levels. Integration of safety and health at work into secondary education is an important factor in the development of the prevention culture that can contribute to reducing risks at work. The process of education, aimed at promoting safety and health at work, should be a lifelong, planned development of knowledge on safety and health at work. Its aim is to develop awareness on potential dangers, sources of potential risks, and encourage students to behave in a safe and relevant manner. Educated students will be ready to enter the work environment, aware of the need to mitigate risks, and trained to prevent injuries at work and professional diseases. Socially responsible companies cut down losses resulting from unsafe work of the newly employed; they save time on introductory education and operate with higher efficiency, minimized the occurrence of accidents and temporary work disabilities in the working environment. Healthy company work is one of the economic performance factors whose aim is to empower the employees, and have an impact on the image of the company among its partners, clients, ultimate consumers and the overall social community. On the basis of the surveys conducted in the third grade of the Secondary School of Electrical Engineering, Secondary School of Civil Engineering, Secondary School of Medicine and VI Grammar School in Belgrade, we may conclude that the students' knowledge and awareness on the preventive culture of safety and health at work are at an extremely low level. That implies the need of introducing education on safety and health at work into secondary schools.*

**Keywords:** safety and health at work, education, school education, social responsibility

## **Introduction**

According to the report of the European Agency for Safety and Health at Work, the risk of occurrence of injuries, illnesses, and health impairment throughout Europe is by 50% higher in young people between 18 and 24 years of age than in older employees (Occupational safety and health agency [OSHA], 2014a). When encountering new working environment, young people do not have a high level of awareness on the hazards and risks they may be exposed to. Possible reasons for this may be: insufficient physical and mental maturity, lack of skills and insufficient training, as well as failure to recognize the employers' obligations and their own rights and responsibilities. Thus, training in safety and health at work must not be conducted when young people have already entered the world of labor; it is necessary that development of preventive culture must start long before. From the standpoint of safety and health at work, as conscious and, conditionally, reasonable beings, humans must, from early childhood, think in a manner that will ensure them safe and healthy survival without jeopardizing safety of others in their environment. In order to achieve this, it is necessary to start raising human awareness on safety and health as early as possible (during pre-school and elementary education). Later on,

throughout permanent development of the human being, it is necessary to maintain and promote this awareness, as this is the only way for those who are children today and who will be adults tomorrow to comprehend all implications and consequences of their decisions relating to safety of their health and environment.

European Commission for safety and health at work recommends that training in safety and health at work is integrated in the educational system, where it would be an integral part of curricula and syllabi at schools and universities (OSHA, 2014b). The educational process in the function of safety and health at work is to represent the planned development of knowledge on safety and health throughout life, aimed at developing awareness on potential hazards and their causes, and an incentive for students to embrace safe and relevant behavior. Educated students will be ready to enter working environment, aware of the need to mitigate risks in order to prevent occurrence of injuries at work, professional illnesses, and labor-related impairments. In numerous European countries, the educational system is considerably involved in theoretical and practical education and training of students for safe and healthy life.

In Serbia, safety and health at work has not yet been officially integrated in education (pre-school, elementary, and secondary). Adequate theoretical and practical training in safety and health at work is not even provided for students of vocational secondary schools, who will enter their labor environment and encounter potential risks as soon as they leave school, as it was confirmed by the results of our research, conducted in May 2014. Even though Article 22 of the Law on secondary education reads: “The safety and health at work program encompasses joint activities of schools, parents, and local self-government units, aimed at development of awareness on the implementation and promotion of safety and health at work”, very little has been done in this area (Law on Secondary Education, 2013). The research conducted in secondary schools indicates that the knowledge among students and their awareness on the preventive culture of safety and health at work are at a low level, but also that students themselves expressed the need and willingness to learn and be practically trained in this area. It points to the need for introduction of necessary theoretical and practical education into secondary schools.

### **Research description**

The research was conducted with the aim to determine the level of awareness on the prevention culture of safety and health at work in secondary school students. The surveyed population included students of the third grade of secondary schools, under the assumption that they represented the best sample for this research having in mind that they were already of age. In order to obtain a broader picture, the research was conducted in three vocational secondary schools in Belgrade: Secondary School of Civil Engineering in Zvezdara, Secondary School of Electrical engineering “Nikola Tesla”, and Secondary Medical School in Zvezdara, as well as in the VI Grammar School.

The survey was conducted by implementation of an appropriate (random) sample, on the total of 400 respondents (100 respondents in each school). The survey was anonymous and adapted to the specificities of vocational schools. The first part of the questionnaire was of closed type, with the 17 questions. Based on this part it was possible to determine knowledge in the area of safety

and health at work. The second part of the questionnaire was of open type, to provide information on student needs, wishes, and reactions, as well as their willingness to react in given circumstances.

## **Analysis of the research results**

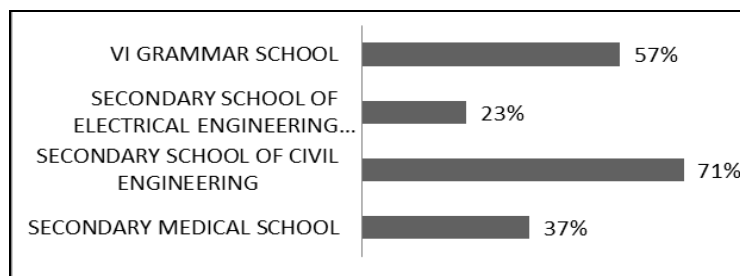
### **Familiarity with the area of safety and health at work**

In the first part of the questionnaire, the students were to answer to 17 questions of closed type. Out of the sample of 400 secondary school students who participated in the survey:

- 24.5% had the score of up to 9 correct answers, including those who had no correct answers at all,
- 22.5% had the score of 9 or 10 correct answers,
- 8.25 % had the score of more than 14 correct answers,
- 0.25%, or just one student, had 17 correct answers.

It may be said that the students who had up to 10 correct answers (or who do not have one single correct answer), who account for almost 50% of the respondents, entirely fail to recognize the matter or recognize only some terms relating to the area of safety and health at work. As many as 8.25% students had the score of more than 14 correct answers, which indicates to the medium level of knowledge in this area. The only one student who had 17 correct answers can be said to have a high level of knowledge in the area of safety and health at work. The real situation might even be worse than as indicated by the results, because the impact of guessing the correct answer among the several ones offered is possible.

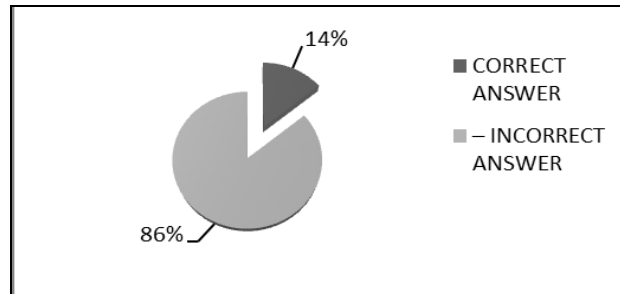
By a comparative analysis of the number of correct answers of all four schools it may be noted that as many as 71% of students of the Secondary School for Civil Engineering fall into the group of students who entirely fail to recognize the matter or recognize only certain terms relating to the area of safety and health at work. We should have in mind that these are students of the third grade of vocational secondary school, who are at the very verge of encountering their job positions (most frequently a construction site), and potential related risks. We would like to point to the necessity of reaction on the part of competent institutions and providing students of vocational secondary schools with education in the area of safety and health at work.



Graph 1. Number of students with fewest correct answers, by school

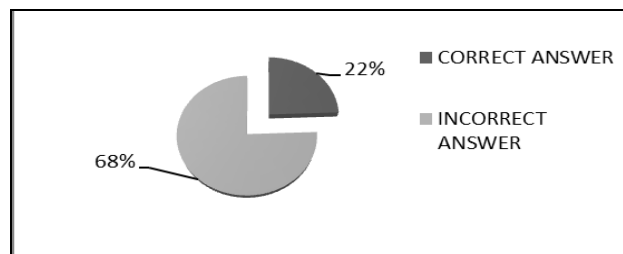
By a comparative analysis of correct answers per question in students from all schools, we may observe that the number of correct answers to certain questions was very low, which indicates the most critical points in their familiarity with the area of safety and health at work.

The students gave the fewest correct answers to the question “How old do you need to be to start working?” Out of the three offered replies only one was correct and only 14% of the students knew the answer to the question.



Graph 2. How old do you need to be to start working

A low percentage of correct answers was recorded in relation to recognition of signs relating to safety and health at work. Out of the total number of respondents, only 22% students recognized the meaning of signs indicating to occupational safety and health, which is also a hazard for their everyday functioning (in transport, in cases of evacuation or fire) where they encounter the mentioned signs.



Graph 3. Recognition of signs for safety and health at work

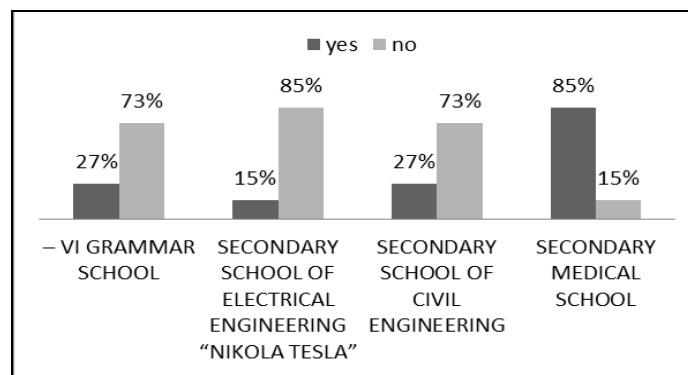
The results of the question relating to personal safety equipment and items were unexpectedly poor. The students needed to state three or more personal safety at work items (for construction sites, laboratories, and factories). Only 33% out of the total number of students who were surveyed within the research answered correctly, which is devastating. The students from all three vocational schools have practical training conducted in a working environment with potential risks for safety and health at work, it is believed they should know which safety equipment items they should use for personal protection.

### **Knowledge of first aid**

When asked „Can you give first aid“, the students answered with „yes“ and „no“ and provided the following responses:

- 62.5% out of the total number of respondents would not know how to give first aid,
- 15% of the students from the Secondary Medical School would not know to give first aid,
- 77.7% out of the total number of students (excluding those from medical school) would not know how to give first aid.

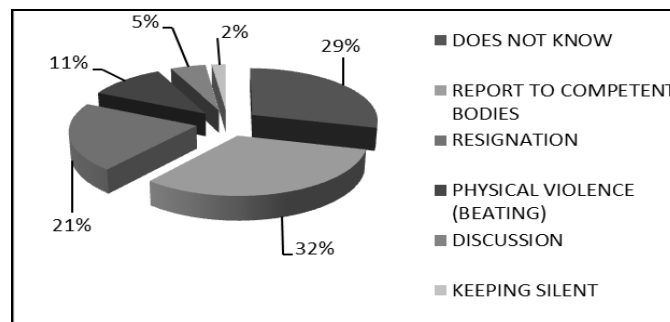
Except for the students from medical school, students from the schools included in this research do not receive any training in first aid. Those who responded positively to this question acquired their knowledge in the area of first aid by themselves, through activities organized by organizations of the Serbian Red Cross.



Graph 4. Ability to give first aid in students

### Reactions to mobbing

When asked „The employer offends you, humiliates you, and deprives you of the right to rest or work. What would you do? The students responded in the following manner:



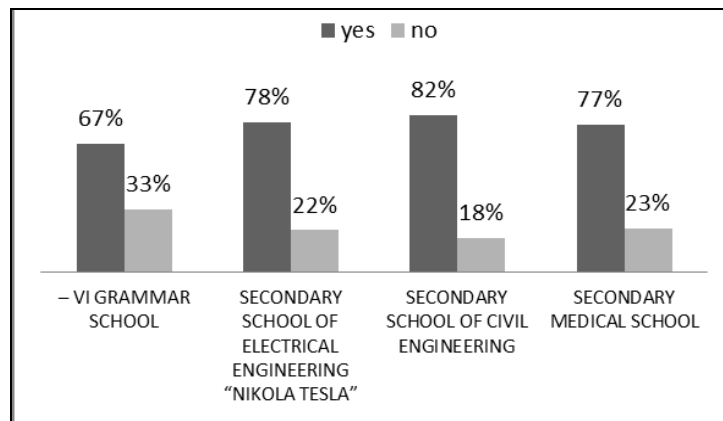
Graph 5 Reaction to mobbing

Based on the obtained results, we conclude that student reactions to mobbing at work would be different (from keeping silent to physical violence), with as many as 29% of the total number of respondents who would not know what to do. What gives rise to worry are the responses of the students who would react to a mobbing situation with violent behavior, which mostly occurred in grammar school students with 17%, while ranging between 6% and 10% in students from other

schools. As occurrence of intensified mobbing is a notorious phenomenon, it is necessary to educate young people how to provide an adequate reaction to such a situation and at least inform them about Article 13 and Article 14 of the Law on prevention of mobbing, so that they could know how to react and who to address (Law on Prevention of Mobbing, 2010).

### **Student attitudes on education in the area of safety and health at work**

76 % of the respondents believe that they need theoretical and practical education in the area of occupational safety and health in their secondary education, with the following explanations: “I want to know how to protect myself”; “I want to know how to help others”; “I am afraid of getting hurt”; “I need knowledge in the area of first aid”



Graph 6. Student attitudes on education in occupational safety and health

The findings indicate, which is encouraging, that awareness on the need for education which would contribute to their feeling of safety and readiness to get into action with the purpose of ensuring personal safety and safety of others in the environment is recognized in a large number of surveyed students.

### **Safety and health at work in European educational institutions**

In numerous European countries, the education system has long ago involved theoretical and practical education and student training for a safe and healthy life. The department of education which is engaged in promotion of safety and health in German educational institutions encompasses some 2.9 million children; some 363,000 teachers, nursery school teachers and caretakers in about 48,000 children’s institutions and more than 56,000 children in kindergartens, managed by about 33,000 people; about 11.5 million students and 800,000 teachers in 45,000 general and vocational schools; some 2.2 million university students and 300,000 scientific workers in 418 universities (German Social Accident Insurance [DGUV], 2014).

Teachers from vocational secondary schools throughout Europe have a central position in transfer of knowledge in the area of occupational safety and health. As these skills may not be

gained through theoretical education only, cooperation between schools and companies is needed, as well as cooperation between educational institutions and state institutions responsible for the promotion of the preventive culture of safety and health at work. State institutions and professional associations provide support to implementation of preventive measures; they provide advice on all issues relating to safety and health and organize workshops on various topics relating to prevention in secondary vocational schools. For curricula, professional associations provide various materials for schools and teachers' work, as well as workshops for teachers (DGUV, 2014b). The process of introduction of occupational safety and health in schools in Germany lasted for a long time, and was accompanied with various issues. The accompanying arising issues included law enforcement, distribution of competences and authorities over educational institutions, small budgets, as well as some issues relating to the lack of labor organization (Kohte, Faber, 2007).

Together with the Napo Consortium, EU-OSHA, European Occupational Safety and Health Agency presented a new current project aimed at familiarizing elementary school students with the basics of safety and health. The "Napo for teachers" initiative facilitates a whole range of teaching aids for teachers who may use them by taking them over from the Internet. Intended for children aged 7 – 11, these teaching aids are based on a cartoon character named Napo, who helps European Occupational Safety and Health Agency to transfer the message on safety and health at work in an entertaining and interesting manner (OSHA, 2014c), (Napo, 2014). The activities implemented for the purpose of extension and promotion of preventive culture of occupational safety and health in students throughout Europe are of great importance. The content of the activities is versatile, easily accessible in any form, and aimed at stimulating students to embrace safe and relevant behavior (Service Centre for Health Education [GIVE], 2014).

### **The role of educated and engaged employee**

Care about people is one of the most important ways in implementation of social responsibility. A company needs to pay particular attention to all its employees and potential employees, especially from the standpoint of observance of principles of rights at work. When speaking of care about human resources, there is a permanent question of how to attract potential employees, assist them in permanent education, and keep them in long-term perspective. There is a multitude of concepts developed on the topic of their long-term (life-long) learning. Namely, it is companies and organizations that attempt to protect employees at various levels through permanent education of their employees, cooperation with different organizations which organize training and educational programs, provision of internships for young people, and development of an enjoyable working environment. The nature and effects of relations between employees and the company, as well as the level to which employee behavior and attitudes contribute to reaching the company goals, have a very important place in the conditions of high competitiveness and modern working environment. Development of an engaged and dedicated employee is the task of the management to enable implementation of management, which observes roles of stakeholders such as the owners, employees, consumers, and others (Mamula, 2010).

Educated and engaged employees are more likely to be more involved and dedicated to their work. If employees are not engaged, they will be less focused on their work, and more likely to make mistakes. This has significant implications in the industries where safety is an important factor. The research conducted by SHRM Foundation in a production company shows that educated and engaged employees were by five times less in the danger of being involved in a safety incident, which had a major impact on costs. The average price of a safety incident for an unengaged employee amounted to about 329 US\$ as compared to the average of 63 US\$ for an engaged employee (Lockwood, 2007).

According to Kotler, Kartajaya, Setiawan (2010) once job seekers are in the company, they will test the integrity of their employer. They will observe how companies demonstrate the values they proclaim. An employee survey by Tom Terez confirms that purpose is one of the meaningful experiences in the workplace. One of the core values of the Bagel Works store is health and safety. To demonstrate its commitment to these values, the company buys smaller bags of flour to avoid back injuries to employees that carry them, although purchases in smaller packaging are more expensive (Stanfield, 2002).

In Serbia today there is no official cooperation between schools and companies through which a company could provide its contribution to education and training of students for safe and healthy work, with the aim of mitigating risks at work. Having in mind that students are potential employees, this form of cooperation would contribute to mutual benefits. The newly employed would be ready to contribute at once to the development of a safer working environment, while the company would enjoy multiple benefits, as added value to its competitive business operations and as a contribution to the functioning of a safe social community.

### **Final considerations**

Based on the research conducted, it may be concluded that there is the necessity of implementation of safety and health at work within the educational system in the Republic of Serbia. The results speak about the low level of awareness of potential risks in the working environment, low culture of prevention, and poor preparedness on part of students who are to enter the world of labor; the results also speak about a great desire and need for adequate education and training for safe and healthy work among students.

Educated students will be better prepared for their encounter with the working environment, aware of the need to mitigate risks in order to prevent injuries at work, professional and occupational illnesses and impairments. Thus, socially responsible companies diminish losses in business operations due to unsafe work of the recently employed, save time for introductory education, achieve greater efficiency in work, and minimize the possibility of accidents with catastrophic consequences and incapacity to work within the working environment. Healthy work in companies is treated as an economic performance factor and as such empowers employees, while as a consequence resulting in a strong company image among its partners, end-customers, users, as well as in the whole social community.

The proposal for future research is based on the idea of taking into consideration a broader sample of respondents from a larger number of secondary schools from different regions in



Serbia. The results obtained should indicate to the critical points of the level of awareness and preventive culture of safety and protection of health at work. Activities aimed at integration of safety and health at work in education it should be planned and implemented based on a more representative sample and more relevant indicators, in line with the Strategy of safety and health at work of the Republic of Serbia. This paper is a relevant base for implementation of further analyses.

## References

- German Social Accident Insurance [DGUV]. (2014a). Available at <http://www.dguv.de/de/Pr%C3%A4vention/Fachbereiche-der-DGUV/Bildungseinrichtungen/index.jsp>, May 2014
- German Social Accident Insurance [DGUV]. (2014b). Available at <http://www.dguv.de/de/Pr%C3%A4vention/Themen-A-Z/Bildungseinrichtungen/Berufsbildende-Schulen/index.jsp>, May 2014
- Kohte, W., Faber, U. (2007). Arbeits- und Gesundheitsschutz in Schulen, 6-13, 39-46, <http://www.gew-berlin.de/public/media/KotheGutachtenEndfassung.pdf> , June 2014
- Kotler, P., Kartajaya, H., and Setiawan, I. (2010). *Marketing 3.0*. New Jersey: John Wiley & Sons, Inc., Hoboken.
- Law on Secondary Education. (2013). Official Gazette of RS, No. 55/2013
- Law on Prevention of Mobbing. (2010). Official Gazette of RS, No. 36/2010
- Lockwood, N. R. (2007). Using employee engagement to achieve advantage over competition. *SHRM Research, Quarterly*, 2-11
- Mamula, T. (2010). Relationship management – the employee as a stakeholder. *XII International symposium SYMORG*, Zlatibor, Serbia.
- Napo. (2014). Available at <http://www.napofilm.net/en/the-napo-story>
- Occupational safety and health agency [OSHA]. (2014a). Available at [https://osha.europa.eu/de/priority\\_groups/young\\_people](https://osha.europa.eu/de/priority_groups/young_people)
- Occupational safety and health agency [OSHA]. (2014b). Available at <https://osha.europa.eu/en/topics/osheducation/>
- Occupational safety and health agency [OSHA]. (2014c) Available at <https://osha.europa.eu/en/press/photos/napo>,
- Service Centre for Health Education [GIVE]. (2014). Available at <http://give.or.at/index.php?id=74>
- Stanfield, B. R. (2002). Walking the Talk: The Questions for All Corporate Ethics and Values Is: How Do They Play Out in Real Life? *Edges Magazine*.

## **Biographies**

**Marija Djurovic** has a Master's Degree in Biology; she is an environmental management specialist and teaches biology and environmental protection at a secondary school. She is also engaged in scientific research work in the areas of environmental protection and safety and health at work. She promotes raising of the general level of environmental awareness and the meaning of prevention and safety and health at work culture.

**Tatjana Mamula** has been working as an assistant professor at the Metropolitan University, where she lectures on the following subjects: Marketing Research, Consumer Behavior, and Brand Management. She received her Ph.D. degree in organizational sciences. She has managed a large number of quantitative and qualitative research projects, as a director of marketing research company MASMI. She has participated in numerous conferences in the area of marketing, management, and branding. Tatjana is a member of several professional associations: ESOMAR (global association of marketing researchers), SEMA (Serbian marketing association), Association of business women, Serbian association of managers, and others.