

Increased Knowledge of Occupational Health and Safety (OHS) for Students of Graphic Production Department at SMKN 7 Jakarta

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Abstract:

Safety culture is the key in the preventing of accidents and occupational diseases in the work environment and industry. Safety culture must be trained since school, especially vocational high school. The results of the literature state that OHS training taught during formal schools has an effect on decreasing working injury incidence (WIs) when they work in industry. Occupational Health and Safety (OHS) training for Vocational High School students majoring in Graphic Production has never been carried out and even there is no subject. Therefore, the OHS training is expected to become a routine training as a provision and familiarize the safety culture in the schools. The aim of this training is to improve the competence of students in SMKN 7 Jakarta majoring in Graphic Production. The method in this training is carried out online using the media zoom meeting for 3 hours with two meetings. This training begins with a general OHS behavior assessment and then the results of the assessment are used as the basis for developing training materials. The training materials were given to students of SMKN 7 majoring in graphic production for class XI. Prior to the implementation of learning, a pre-test of OHS material and post-test was given to determine if there was a change in knowledge after being given OHS training online. Based on the results, online OHS training activities can increase the knowledge of the Graphic Production Department Vocational High School students. It is hoped that the increase in knowledge will become an attitude and behavior so that safety will become a culture in schools

Keywords: OHS, Training, Graphic, Vocational School, Safety

INTRODUCTION

The majority of industrial workers in Indonesia are middle-level workers. Vocational High School (SMK) is an educational institution that produces workers/technicians at the secondary level. The role of SMK is directly proportional to the industry's need for a large number of middle-level workers. This role encourages the advancement of vocational education institutions. With the National Development Plan of the Long-Term Development Plan (RPJP) for the year of National Education, 2005-2025, a gradual and sustainable growth target of SMK leading to an increase in the number of SMK compared to SMA (senior high school) will reach a ratio of 70: 30 in 2025.

Increasing the ratio of the number of SMK indicates that industrial workers are young workers. SMK as a place for labor producers is required to be in line with industry needs. Mastery of occupational health and safety skills and knowledge are important to master in supporting the production process in industry (Basori, 2019). In addition, the OHS (Occupational Health and Safety) aspect is an important agenda in the 21st century (Abdullah et al., 2021).

SMKN 7 Jakarta is one of the schools that has a graphic production department. Graphics production is a major that educates students to be competent in the field of graphic printing that is reliable and ready to work in the graphics industry. The graphics industry is one of the manufacturing industries that uses machine

technology that continues to grow rapidly. In addition, the use of chemicals such as ink. Chemicals such as dyes are rarely even known to workers of the dangers they cause (Paramasivam et al., 2010). The hazards and risks faced by the graphics industry range from physical, chemical, ergonomic, mechanical, and even psychological hazards (Starovoytova, 2018) (Dzah, 2021). Therefore, Occupational Health and Safety (OHS) education in schools is important so that students can prepare themselves when entering the industrial world. Based on the results of the interview that there is no OSH learning in the graphic production curriculum. However, there have been lessons learned about environmental health related to the handling of printing waste.

Occupational Health and Safety is the duty of all people who work in industry and other workplaces. This is because in every workplace there is always a source of hazards that may not be eliminated (Ridasta, 2020). Young workers will face various hazards and risks while working. Workplace accidents in young workers have become one of the world's public health problems more than 20 years ago. Workplace conditions and workers are the main determinants of work accidents in the workplace. Workers aged less than 25 years in France show that 1 in 10 workers has an accident at work (Boini et al., 2017).

The results of a study in France showed that OHS education during school was able to reduce the occurrence of work-related injuries for young workers (Boini et al., 2017). Thus, schools become an important foundation for recognizing and learning aspects of OHS starting from knowledge, to practice both when in the lab and when entering the industry after graduating from school. Printing laboratory will use many *hand tools*, chemicals, electrical devices and machines all of which represent potential safety hazards. Sheets and equipment safety kits are essential. However, most accidents in printing labs occur when students use simple hand tools or handle paper, plates, chemicals, and other materials they use on a daily basis (Heuschel et al., n.d.). One way to reduce injuries due to work accidents in industry is through OHS training conducted at school and at work. This training is the main

concern of various countries to reduce the incidence of work accidents. Research in Cairo shows that only 12.2% of students who have attended OHS education have experienced the danger of work accidents (NS & M, 2014). Schools are the key to understanding and mastering occupational health and safety. Therefore, in vocational schools, especially practical learning, it is necessary to apply health and safety such as in the workplace / industry.

The purpose of this community empowerment is to provide competence in the field of Occupational health and safety with indicators of increasing basic safety knowledge after being given training. This knowledge can be the basis for the formation of OHS attitudes and behaviors so that they can prevent work accidents.

The solution to the problems above is through OHS training for Graphic Production Department students. This OHS training activity was held at SMKN 7 Jakarta, especially class XI Graphic Production Department, which was attended by 63 students. This training is carried out online by using zoom meeting media. The implementation of this training activity is carried out twice in a week with a duration of 3 hours of online meetings per meeting. This is done because learning in schools still follows the policy of the government, namely online learning. Therefore, the implementation of OHS training was carried out online

OHS training is one of the trainings that is often held by companies in the workplace. OHS training is a program to control the existence of work hazards and risk management so that work accidents can be avoided. Many work accidents occur due to unsafe actions during work. Even OSH education is considered as one of the strategic programs for workers because it has a positive impact on OSH knowledge for workers in Jordan (Ram et al., 2018). OHS training plays a role in increasing knowledge and practice of OHS in a work environment that still requires close supervision from supervisors (Sharma, 2016).

Material content of OHS training is an introduction to OHS in general, identification of hazards and risks, Personal Protective Equipment, 5R, and APAR (Light Fire Protective Equipment).

METHOD OF IMPLEMENTATION

The target of this community empowerment is students of class XI Graphic Production Department at SMKN 7 Jakarta, followed by 63 students. This service team consists of several lecturers and 1 student from campus. The provision of OHS material is provided by a team of service personnel who have competence in the field of Public Health and as General safety experts at Politeknik Negeri Media Kreatif. This activity lasted for 2 days using a zoom meeting interspersed with games, and pre and post exams. The indicator of the success of this community empowerment is the increase in knowledge of the students of SMKN 7.

The improvement of safety competence for students is carried out through efforts to make students aware of the prevention and promotion of occupational safety and health which is carried out in several ways, namely 1) pre-assessment which is used to find out factually real conditions related to safety knowledge, attitudes and behavior. After knowing the factual conditions of all students, the next step is 2) compiling an activity plan. The planning of activities carried out mainly is compiling materials according to the needs of the targets/students and compiling learning modules, 3) implementing activities that begin with filling out the pre-test before the material and end with the post-test and then continue with the basic safety material. The last step is 4) Evaluation by giving questions before and after the OSH training.

The following are the activities carried out in the process of implementing OHS training activities at SMKN 7 Jakarta:

1) *Pra assesment*

carried *activities are* out to determine safety behavior, namely knowledge, attitudes and practice (KAP) related to safety culture that has been carried out by every student at school. There are 55 students involved in filling out this online questionnaire. Based on the results of the assessment, it was found

that more than 50% stated that they had never received OSH training or education at school.

Based on the results of interviews with the school that the graphic production department focuses on processing printed waste only. Thus OHS education has never been taught directly in schools. This needs to be a concern because in the field of work in the graphic industry, the OHS aspect is very concerned because hazards and risks have the potential to occur in the industry.

Information about OHS by students was obtained via the internet (54.5%) followed by information from school teachers (20%). Although there are no Safety lessons in schools, it is possible that teachers at schools have indirectly taught safety aspects to their students. The value of safety knowledge is at a sufficient level with a percentage of 81.9% and a high knowledge category of 9.1%. The aspect of knowledge that is still low is related to hazards in the workplace, types and functions of personal protective equipment and regulations of safety in Indonesia. The attitude aspect shows a fairly good attitude towards safety culture with a percentage reaching 92.7% (51 students). While the aspects of safety cultural practice based on the results of the questionnaire that safety cultural practices have been implemented well with a presentation of 89.1%. Thus, the OHS culture in schools is quite good but training is still needed to increase knowledge and maintain OSH cultural habits in schools. This pre-assessment will be used as the basis for the preparation of the OHS training plan.

2) *Planning Activities*

At this planning stage, an analysis is carried out first in order to get the right solution. The resulting solution is the creation of an OHS learning module for graphic production and OHS education training which is carried out online using the Zoom Meeting application. Before the

material begins, a pre-test will be given and then it will end with a post-test. The making of safety learning modules is made in easy-to-digest and simple language adapted to the language style for vocational students. Sources of material come from various sources such as books and journals.

3) Implementation of Activities

The implementation of these activities can run well. This activity was carried out for two meetings with the duration of each meeting being 3 hours including time for pre-test and post-test. Before the material begins, students have been given the OHS module so that students can prepare themselves well. During the online learning process interspersed with games and a question and answer process so that students do not feel bored during learning. In addition, in the assessment process, rewards will be given to those who get the highest score.

4) Evaluation of Activities

This evaluation is carried out at the final stage. Evaluation is carried out on the assessment process and attendance during learning. Evaluation activities are carried out by giving pre-test and post-test after the material. After obtaining both values, statistical testing (SPSS) was carried out to determine the difference before and after training.



Picture 1. Opening Program and online OHS training

RESULTS AND DISCUSSION

This OHS Training activity was given to all students of SMKN 7 Jakarta majoring in graphic production for class XI. Training was given directly by the Graphic Engineering lecturer at Politeknik Negeri Media Kreatif through the zoom meeting platform. Activities carried out online with a frequency of meetings twice for 6 hours. The number of students involved in this activity up to the final evaluation stage was 25 students. This activity began with an opening attended by teachers and remarks by the principal which was conducted online. After being given a speech by the principal and representatives of the Graphic Engineering study program, the next event was the *pretest* which was given through an online questionnaire. The following are the results of research and evaluation in community empowerment activities that have been carried out:

That almost students who participated in this OHS training had never previously received training or learning related to occupational safety and health. Only 5 participants had received OSH training (9.1%) (Table 1). Thus the OHS training

carried out is one of the means to improve the competence of the graphics field.

Based on the Graphic of SKKNI that safety is a supporting competency in every job that must be done by workers in the graphic industry. For example, when working in the pre-printing field, the competency that must be achieved is making plates. When making plates, OHS competence becomes the support, namely the presence of PPE used by participants when printing plates because of the chemicals used. This knowledge related to PPE is the basis for providing materials.

Tabel 1. Learning History of OHS Trainees

Vairabel	Frequency	%
Have Received OHS training	5	9,1
Never Received OHS training	50	91

Source: Primary Data, processed 2022

The most OHS knowledge obtained by SMKN 7 students was obtained from the internet (54.5%) followed by teachers (36.4%) as in (Table 2). The internet is one of the sources of information used to access health information by high school students in Jeddah and even improve their health status (Alghamdi et al., 2019). Ease of access from the internet has a positive impact on health information that all students want to know. However, what must be done is to control access to health information in order to avoid news or information that is not valid. The teacher's role is very important to provide guidance on health, including about safety.

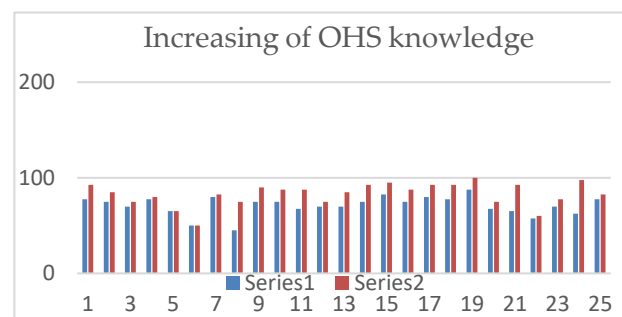
Tabel 2. Source of OHS Knowledge Students of SMKN 7 Department of Graphic Production

Vairabel	Frequency	%
Internet	30	54.5
teacher	20	36.4
School/ environment	4	7.3
Others	1	1.8

Source: Primary Data, processed 2022

There is an increase in OHS knowledge by students of SMKN 7 Graphic Production

Department Class XI as shown in Figure 2. The average value for before this evaluation was 71 while the average value after attending the training was 83. The maximum score after participating in the training was 100 (all correct). This increase needs to be tested statistically whether there is a significant difference between before and after the OSH training. Based on the results of the SPSS test, the data obtained were not normally distributed so that the nonparametric test was used, namely the Wilcoxon test. The following is the average knowledge test scores before and after the OSH training.



Gambar 2. Overview of OHS Knowledge Improvement Before and After Training

Tabel 3. Average Value of Knowledge Before and After OSH Training students of SMKN 7

Variable	Average Knowledge Value OHS			P
	Before	After	Difference	
OHS knowledge	71	83	12	0,001

Source: Primary Data, processed 2022

Based on Table 3, the significance value shows the number 0.001 with a *p value* <0.005. Thus, the significance value is less than 0.005 indicating that there is a significant difference between before and after OHS training. OHS training has an impact on increasing OHS knowledge, this is in accordance with research conducted by Panjaitan at SMK Wirajaya Tanjung Morawa, Deli Serdang Regency, there was an increase in OHS understanding after OHS training was carried out, which was 33.3% (Panjaitan et al., 2021). The training materials presented in the OHS training focused on procedures for implementing OHS and the concept of hazards in the workplace. OHS

training for vocational students in Rangkasbitung sub-district offline also received a positive response, namely an increase in knowledge and positive attitudes after being given material on *risk assessment* (Novianus & Musniati, 2020). Although this OHS training activity is carried out online, it can still provide positive changes, such as online service on mental health (Lestari & Fuada, 2021).

The OSH knowledge provided in the OSH training at SMKN 7 Jakarta is the basic concept of safety, starting from the definition, purpose, function and logo of safety to the safety regulation, namely Law No. 1 of 1970. The basic concepts are given on the first day of training using powerpoint, modules, and OHS videos to provide understanding to SMKN 7 students. Other material is about the concept of hazards and risk, Personal Protective Equipment (PPE), Five R's, Concept of Fire and APAR, First Aid, and safety symbols. The material presented is explained as far as possible by providing examples of its application to the graphics industry. This is to increase the understanding of safety in accordance with the competence of the participants, namely to become an operator in the field of graphics or printing.

OHS material for the graphic production Vocational High School is not yet in the curriculum. Thus the provision of this training can be used as a sustainable program for the following year. The graphics industry is one of the manufacturing industries that produce on the basis of cultivation. The technology used in the production process is growing rapidly, therefore safety material should be taught in schools. So far, the graphic production Vocational School in the DKI Jakarta area has only focused on managing print waste. Several studies have stated that work accidents often occur in the graphics industry. Research in Makassar City on print operators showed that out of 146 operators, 106 of them had experienced injuries (Darwis et al., 2020). This OHS training is expected to have a positive impact, namely an increase in awareness to students so that safety culture can be realized and can cultivate it when they are involved in the graphics industry. It is proven in

France that OHS education while in school is able to reduce the occurrence of work-related injuries for young workers (Boini et al., 2017).

After being given OHS training as a form of appreciation from the presenters, the student who gets the best score gets an award and is given a prize. This is a means of encouraging all students at SMKN 7 Graphic Production Department.

CONCLUSION

Conclusion

Community empowerment to all students of SMKN 7 Graphic Production Department on OHS provides an increase in OHS knowledge so that it can support competence in the graphic field. OHS training is expected to provide awareness of the importance of applying this knowledge so that safety culture can be applied since school and will be carried over until they enter the industrial world.

Saran

OHS education should be taught and included in the curriculum of the graphic production department as an effort to prevent work accident injuries when working in the print industry.

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