

Occupational Health and Safety Management System (SMK3) at the workshop of vocational high schools

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ARTICLE INFO

Article History

Received:

14 September 2021;

Revised:

14 November 2021;

Accepted:

19 November 2021;

Available online:

23 June 2022

Keywords

Occupational Health and Safety Management System (SMK3); Vocational High Schools; Workshop

ABSTRACT

This research aims to identify the planning implementation, identify Management System (SMK3) at the workshop of vocational high schools in the major of construction and property engineering to identify the implementation, and identify the evaluation of the implementation of the Occupational Health and Safety Management System (SMK3) at the workshop of Construction and Property Engineering Study Program, one of the Vocational High Schools in Central Java. This research is qualitative by using data collection techniques in interviews, observations, and documentation the validity of the data using source triangulation. Data analysis used descriptive qualitative. The results show that the workshop building at one of the Vocational High Schools in Central Java has been well planned in its implementation of OHS. The implementation of OHS is categorized as quite well implemented. The evaluation of the implementation of OHS is categorized as quite well done. Hence, the Occupational Health and Safety (OHS) management system at the Vocational High Schools needs to be improved. The school can collaborate with stakeholders to follow up on the management system of OHS.



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How to cite:

Rizbudiani, A. D., & Jaedun, A. (2021). Occupational Health and Safety Management System (SMK3) at the workshop of vocational high schools. *Jurnal Pendidikan Vokasi*, 11(3), 326-336.

<https://doi.org/10.21831/jpv.v11i3.43817>

INTRODUCTION

Occupational safety and health (OHS) has been regulated in Law Number 1 of 1970, where occupational safety and health is on land, air, or in water as long as it is within the scope of Indonesia's territory. However, this problem is neglected in Indonesia (Lestari et al., 2013; Ramdan & Handoko, 2016; Wirahadikusumah, 2007). The construction sector is a very high risk of work accidents due to neglected occupational safety and health factors besides other primary sectors such as agriculture, fisheries, mining, and timber (Khosravi et al., 2014; Rofiah, 2016). Construction projects consist of resource aspects to achieve a quality product efficiently and effectively at the appropriate price (Widiastuti & Widowati, 2014). One of these resources is manpower.

The central statistics agency showed that the number of construction experts based on qualifications increased from 2017-2019 (Badan Pusat Statistik Republik Indonesia, 2020). These expert workers include working in the development sector, such as building buildings, roads, and so on. The labor calculation is as follows: there were 167,713 people in 2017, 244.930 people in the following year, and 263.598 people in 2019. Furthermore, BPJS for employment has reported 147.000 cases of work accidents or 40.273 cases of work accidents per day in 2020 (Maudica et al.,

2020). In the case of developing countries, the death rate from work accidents in construction projects is three times greater compared to developed countries (Haris, 2017; King & Hudson, 1985; Wirahadikusumah, 2007). In the implementation of construction projects, the most dangerous work is carried out at heights and excavation (Wirahadikusumah, 2007).

In minimizing work accidents, it is necessary to carry out a policy for OHS worker protection. Various safety factors such as organizational management, physical work environment, safety behavior, and safety climate can be used as approaches to prevent work accidents (Satoto & Khoiroh, 2018). The International Labor Organization (ILO) is a policy regarding OSH in the Guidelines on Occupational Health and Safety Management System, where the ILO standards have the same principles as OHS in Indonesia. However, implementing ILO standards without certification is allowed. In addition, integrating SMK3 is also allowed with existing management in the work environment (Maudica et al., 2020). The rules regarding organizational management related to OSH are written in the Minister of Manpower Regulation Number 5 of 1996 concerning the OHS Management System and Government Regulation of the Republic of Indonesia Number 50 of 2012 concerning the Implementation of the OHS Management System. The existence of an OHS management system can reduce work accidents, both from the workforce's behavior and the work environment's conditions (Maudica et al., 2020; Satoto & Khoiroh, 2018).

The Occupational Health and Safety management system (SMK3) voluntarily applies an international standard called the Occupational Health and Safety Assessment Series (OHSAS) 18001. However, as time goes by, several organizations plan to implement SNI ISO 45001:2018 from Government Regulation Number 50 of 2012 (Indrajaya & Suhendar, 2021; Masjuli Masjuli et al., 2019). SNI ISO 45001:2018 was built with a "plan-do-check-act" or PDCA approach (Masjuli Masjuli et al., 2019; Morgado et al., 2019). Thus, there is an integration between ISO 45001:2018 and Government Regulation Number 50 of 2012 regarding the requirements of the ISO 45001:2018 clause that is relevant to the article in Government Regulation Number 50 of 2012 (Hanifah et al., 2020). Various industries and organizations have implemented SNI ISO 45001: 2018, including PT Putrajaya Suskes Makmur (Indrajaya & Suhendar, 2021), CV Javatech Agro Persada Pati (Prastawa et al., 2021), and PT Petrindo Semesta (Yoshana et al., 2019).

The Occupational Health and Safety management system (SMK3) includes planning, implementation, responsibilities, procedures, processes, implementation, achievement, review, and maintenance of occupational safety and health policies. In terms of the education aspect, OHS planning has been integrated with the vocational high schools curriculum, which has been regulated in Ministerial Regulation Number 34 of 2018 concerning National Standards for Vocational High Schools Education/Vocational Madrasah Aliyah (Hidayat & Wahyuni, 2016; Miftachul & Suparman, 2017).

Law Number 20 of 2003 concerning the National Education System states that Vocational High Schools are secondary school level that prepares students to work in specific fields. One of the vocational education's goals is to improve intelligence, knowledge, personality, noble character, and the student's ability to live autonomously and take further education under their vocational program. In addition, the Industrial Revolution 4.0 also expects an appropriate and supporting curriculum for Vocational High Schools to improve the vocational skills of undergraduates. Hence, they can work in industry or the business world (IDUKA). In facing the Industrial Revolution 4.0, revising the SMK curriculum to suit the students' ability and the business and industrial world is significant (IDUKA) (Pangestu & Sukardi, 2019).

The Construction and Property Engineering skill program is related to construction work, where the learning process is more during practice in a workshop building. The work accident often happens in this building since the machines and equipment are the carried out practicum (Miftachul & Suparman, 2017). School workshops building is school facilities in the form of places and spaces commonly used by teachers and students for the teaching and learning process. The workshop has criteria to achieve the school program objectives. In one of the observations made in several schools, several workshops majoring in construction and property engineering did not comply with Standard Operating Procedures, such as outdated equipment. The requirements include workshop planning, workshop management and maintenance, and workshop management (Ramadina & Hadi, 2015). Various types of risk occur in building workshops during practice, including material handling,

workplace design, hand tools, and machine protection. Furthermore, work organization, worker facilities, noise control, vibration, and electricity risk are considered as the risks (Hargiyarto, 2011; Hidayat & Wahyuni, 2016).

According to previous research, to determine the importance of the topic, some products have been developed in information systems that can support and provide services regarding workshop management in vocational high schools (Ramadina & Hadi, 2015). In accordance with the finding above, other studies also have demonstrated the application of OHS in an automotive workshop at a university in Yogyakarta (Khurniawan, 2016). Specifically, such an evaluation of workshop facilities and infrastructure has been examined in fulfilling standard facilities and infrastructure for the practice of computer and network engineering expertise packages (Susanto & Sudira, 2016).

In this study, the term occupational safety and health management system (SMK3) is based on Government Regulation Number 50 of 2012. This study focuses on the occupational health and safety management system (SMK3) in the construction and property engineering vocational school. Thus, students will have knowledge and skills related to safety. This knowledge consists of preventing work accidents, developing concepts, assessing the importance of OHS, understanding hazards in the workplace, and using preventive measures. The matters studied are related to OHS planning, OHS implementation, and evaluation of OHS implementation in the construction and property engineering department. This research aims to identify implementation planning and implementation and evaluate OHS implementation in construction and property engineering vocational school workshops..

RESEARCH METHOD

This research was a qualitative study. It was related to the planning, implementation, and evaluation of OHS in a workshop building. This study used one of the vocational high schools in Central Java which has a construction and property engineering expertise program. The focus of this study was the workshops contained in the construction and property engineering expertise program, namely the Interior Design and Furniture Engineering (DITF) workshop and the Sanitation and Maintenance Building Construction workshop (KGSP). The sampling technique used snowball sampling with a willingness to be a respondent and fill out informed consent in the research as the requirement, including productive teachers of the construction and property engineering expertise program, related workshop technicians, and students of the property and property engineering expertise program as many as six teachers, one tool man, and eight students.

The instruments used are interview guides, documentation sheets, and observation sheets. Researchers made direct observations of every activity every day for observation and documentation. The interview was recorded using a smartphone. Data collection techniques through interviews, documentation, and observation. The data validity technique in this study used source triangulation. These sources come from the results of interviews, observations, and results of documentation reviews. Data analysis used descriptive qualitative with outlined the Occupational Health and Safety Management System (SMK3) in the vocational high school building workshop.

RESULT AND DISCUSSION

This finding raises interesting questions about the nature and extent of the occupational safety and health management system (SMK3) in the workshops of vocational high schools. In order to develop a broader picture of occupational safety and health in the OHS workshop, further study on the occupational safety and health management system (SMK3) is required, following the curriculum from the ministry of education and the vocational curriculum under the auspices of the Ministry of Industry and is integrated with the existing needs in industry and the business world (IDUKA).

Work safety is concerned with soft and hard equipment and the way it works. Occupational health is a means to achieve the welfare of the workforce (Hargiyarto, 2011). In addition, safety is a safe physical, social, spiritual, emotional, psychological, and at work from the threat of danger

(Komarudin et al., 2016; Kuswana, 2014). To avoid the threat of danger, an OHS Management system is needed where the OHS Management System has basic principles, including commitment and policy, planning, implementation, measurement, and evaluation, as well as review and improvement (Alokabel et al., 2014).

Table 1. OHS Analysis in One of the Vocational High School in Central Java

| Sub Variable | Indicators | Findings |
|--------------------------------|--|-----------------------------|
| Planning Implementation of OHS | Planning of OHS | Quite well done |
| | Standard of implementation OHS | Require further examination |
| | Information broadcast related to OHS | Carried out well |
| | Implementation of OHS | Carried out well |
| | Workshop's tools and supplies | Require further examination |
| Implementation of OHS | Inter-system management | Carried out well |
| | Reporting the flow of work accident | Have not done yet |
| | Observing OHS while the practice occurs | Carried out well |
| | Maintenance of workshop's tools and supplies | Quite well done |
| Evaluation of OHS | Evaluation of OHS implementation | Quite well done |
| | OHS improvement of the workshops | Carried out well |

Table 1 shows that the result of observations related to the planning of OHS, OHS implementation, and OHS evaluation in one of the vocational high schools in Central Java will be described by the following variables: 1.) OHS implementing planning; 2.) Implementation of OHS; and 3.) Evaluation of OHS Implementation.

OHS Implementing Planning

On variable planning implementation of OHS in SMK contains aspects of the plan for implementing OHS and standards of OHS. In the plan of OHS, the results found are that there is still a lack of knowledge regarding the OHS implementation plan for both teachers and technicians at the school. The standard of OHS contains the principles and standards of the OHS Management System based on Government Regulation Number 50 of 2012 regarding the implementation of OHS. In the results found regarding the OHS implementation plan and standards in OHS planning, teachers and technicians can still not explain the standards for implementing OHS based on these rules. The following is an excerpt from a statement from a resource person regarding the workshop's OHS plan:

“Regarding planning, yes, from central regulations, adaptation schools from the center.” – Mr. AG (head of the KGSP department and KGSP teacher)

Furthermore, the resource person also explained the OHS plan of the school as part of education with the following quote from the statement:

“I think yes, some of it has been planned, but it has not been fully fulfilled, because we are also not purely for the industrial world, but we are the world of education” (AG)

The teachers and technicians only know that there are regulations governing workshop OHS, but if they are asked about it in detail, they still cannot answer it. This is shown in the following excerpt from the conversation by the teacher resource person:

“Not yet, don't know more about the standard yet.” (AY/DITF teacher)

“I don't even know.” (SY/KGSP teacher)

*“There are regulations regarding SMK3, but I don't really know the details yet *laughs*” (KS/DITF teacher)*

This is supported by previous research, which showed that the OHS plan containing the OHS policy in the workshop at one of the vocational high schools majoring in the building had reached 67% (Miftachul & Suparman, 2017). OHS implementation standards required further examination. The role of productive teachers and technicians is understood only about OHS regulations in general. This result might be related to previous research, which contained hazard identification reaching 100% (Miftachul & Suparman, 2017). It was meant that all productive teachers could identify potential dangers and OSH risks associated with productive learning, both theoretical and practical learning (Miftachul & Suparman, 2017). Thus, the OHS implementation planning variable with indicators of the OHS implementation plan is included in the "Good enough" category, and the OHS standard is included in the "Require further examination" category.

Implementation of OHS

The implementation of OHS contains seven studied aspects: the dissemination of OHS information, the application of OHS, equipment, inter-system involvement, reporting of work accidents, supervision during practice, and maintenance of workshop facilities. The first aspect, the dissemination of OHS information, has been carried out well. Dissemination of information related to OHS was obtained from the teacher's explanation before doing the practice. The following statement from the source shows this:

"Oh yes, the way is when we put the theory in there at the beginning, we want to use this tool, the safety of the work is like this, avoid parts like this. That's all. Usually, the theory runs out for a while, our children take it to the workshop. This is the tool, we have to avoid like this like this." (WY/DITF teacher)

In addition, OHS information is obtained from the internet. The school facilitates with wifi. The following student statements support this:

"... if other additions come from the internet" – MJ (student of class XI KGSP).

"Yeah.. that's your teacher. Continue to use the internet using the school's wifi.. there is no school yet to bring a speaker about OHS.. " (DV/Student of class XI KGSP).

The findings in this aspect are that students obtain information from teachers when they want to teach practice and the internet. This finding is supported. It also accords with earlier observations, which showed that the information spread through posters and slogans installed in workshops (Miftachul & Suparman, 2017). The second aspect is the application of OHS is carried out well. OHS implementation indicators include understanding OHS according to teachers and students, how teachers apply OHS in workshops and student behavior or culture during practice. The following statement proves the understanding of OHS:

"..the point is that K3 is.. hmm.. so that we can work comfortably and maximally so that there is no such thing as interference, there is an accident that causes the student to not be able to take lessons." (AH/Head of the KGSP department and KGSP teacher).

"Yes, in my opinion, the effort or method to maintain occupational safety, health and security from the workpiece, ourselves and work tools." (DN/student of class XI DITF)

The Standard Operation Procedure (SOP) application is only attached to the wall for application in the workshop. The following statement evidences this:

"Actually, the SOP itself has been pasted, so students can immediately know. There are SOPs for tools; only some didn't have time to install." (WY/DITF teacher)

This statement is supported by Figure 1 regarding the SOP posted in the following workshops.

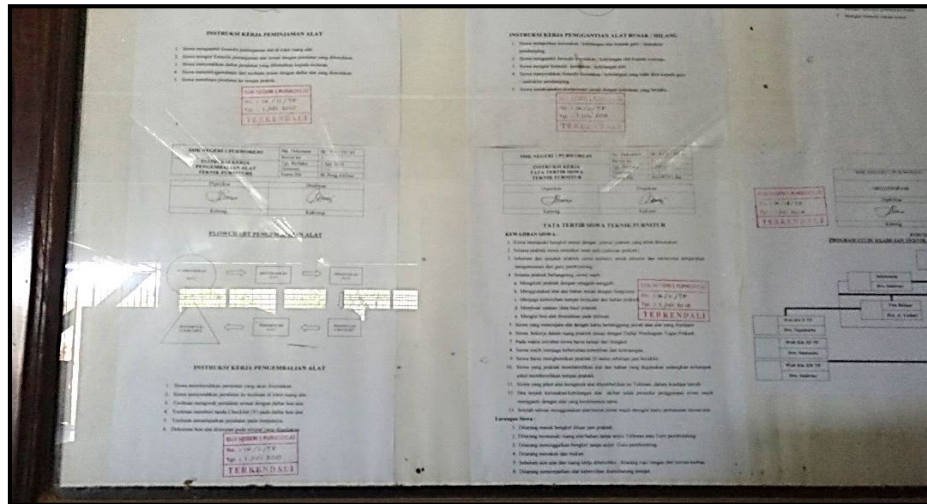


Figure 1. Standard Operation Procedure (SOP) in the Workshop

This is due to the research findings that the regulations required the students to be disciplined and obedient, firm by teachers when teaching field practice, and a school environment that supports students to always be on time. The results support previous research, where individuals and groups have achieved information about OHS (Nugroho et al., 2019). In addition, there was also a significant influence of OSH knowledge and attitudes on the implementation of OHS (Pangeran et al., 2016; Sidauruk et al., 2014; Simanjuntak et al., 2012). In addition, the implementation of OHS also included the workshop work environment. The work environment in both workshops required attention and improvement. The requirements for the workshop work environment should have a balanced layout, such as sorting by a group of workers and re-adjusting tables, chairs, and tools to make them more ergonomic. For example, a workshop floor needs repair.



Figure 2. Cement-Patched Workshop Floor

This finding is in line with other results that facilities, lighting, working weather, and control of noise, vibration, and electricity hazards must be considered (Hargiyarto, 2011). The third aspect in the equipment and supplies for the workshop was carried out well due to the terms of procurement and purchase of goods and services under the workshop's needs. It can be said to be quite good because the workshop space is still limited. This is under the statement of the following sources:

“...just an untidy arrangement. The space is not wide enough. After all, the room is still 1.5x how much should it be widened to 3x3.” (AG/Head of the KGSP department and KGSP teacher)

The results of this study also support evidence from a previous study with 100% achievement regarding the importance of buying goods by including product specifications and storing them properly (Miftachul & Suparman, 2017). However, some equipment (the cement mixer machine at the KGSP workshop) does not have a specific storage location due to inadequate space (Hidayat & Wahyuni, 2016). In addition, the students explained that improvements in practical questions were required. An appropriate and adequate workshop atmosphere should meet the standards to achieve the main goal of the workshop itself (Pangestu & Sukardi, 2019).

The fourth aspect in the implementation of inter-system engagement runs well. This was found through the findings that the involvement relates to teachers and technicians, teachers and students, technicians and students. The results follow the student involvement during the implementation of OHS at one of the universities in Indonesia in a workshop. It has an average of 3.32 which means good (Hidayat & Wahyuni, 2016).

The fifth aspect, the accident flow report, is classified as unfulfilled. Reporting accident flow report itself begins when the person is in an accident and then reports to the school clinic. After that, check the section affected by accident, whether it needs to be followed up in the hospital or needs to rest if it feels necessary to be taken to the public health center. If seriously referred to the hospital with the school clinic team and the M&R team from the school. This depends on the seriousness of the injury due to a work accident. This statement is supported by the results of interviews with the following:

“Yes, we usually report it at the school clinic; later from it, there is a record for reporting to the school, there is data like that.” (AY/DITF teacher)

“Not yet, yes, for example, if it happens, we give first aid, we give iodine and then go to the UKS if necessary to go to the hospital, but not here yet.” (HY/KGSP teacher)

The findings are obtained; thus, the victims were never seriously injured, yet minimal work accidents in the two- workshops building. Previous research stated that the achievement was 62.5%. Schools should have a flow in an effort to deal with emergencies in the event of an unwanted event (Miftachul & Suparman, 2017). The sixth aspect, supervision during practice, has been carried out well by productive teachers and technicians to students. This is because the research findings show that teachers provide control when students practice in the workshop, such as if there are students who have difficulty, the teacher will guide them. The statement of SY:

“We watched together, sometimes left and sometimes accompanied them. If accompanied continuously, students will feel bored and afraid because this assistance's name can be good. It cannot be good. The child whose name is being waited for is even fearful of doing it, not being able to. But if you leave it, it's terrible because the child will later be confused if he wants to ask. Suppose the children here are not crowded when they stay. And the children here are still relatively good..”

Previous research has also reached 100% where it has supervised practicing students and informed them about the dangers of the tools to be used and their prevention (Miftachul & Suparman, 2017). In addition, other research shows the lower the supervision of the workforce, the greater the unsafe action taken (Suryanto & Widajati, 2017). The supervision of the teacher is going around and checking the work of students and paying attention to the completeness of the use of Personal Protective Equipment (PPE) during practice (Erfian & Raharjo, 2020).

The seventh aspect in the maintenance of the OHS facilities of the two workshops was in a good category. The results are the role of the Maintenance and Repair (M&R) team at the Vocational School, teachers, technicians, and students. They were mutually responsible for borrowing and returning tools to them. This is supported by one of the following statements by the informants:

“Yes, there is already an M&R Team, so later we will schedule the damage to the equipment which will be repaired.” (KS)

Previous research with 69% achievement stated that they had not implemented a schedule for usage cards, offer cards, and repair cards (Miftachul & Suparman, 2017). It is significant to have practical facilities and infrastructure to build student competence in vocational education (Pangestu & Sukardi, 2019; Susanto & Sudira, 2016).

Evaluation of OHS Implementation

The OHS evaluation that will study consists of evaluating the application of OHS and improving OHS in the workshop. In the evaluation of the application of OHS containing the evaluation of the OHS policy of the workshop according to the rules, the results found are that the teachers only evaluate students' performance when doing practice, not related to OHS policies. This is indicated by one of the following quotes from the teacher resource person statement:

"... the school just gave an appeal for the arrangement of the workshop space, right there are rules and regulations, so what kind of machine is arranged, how is the circulation arrangement already there, only here it will only be made, such as a green line and then limits on the placement of machines or furniture has a yellow line or something like that, yes, there is an appeal." (AY/DITF teacher)

In the aspect of improving OHS, the results found are OHS socialization. The school will also revamp the workshop and adjust it to the workshop in the industry so that students are ready to compete in the business and industrial world (IDUKA). The statement of the following:

"Well, this may be later. With the existence of an independent Adiwiyata, it will be completed. Until then, safety posters must exist. In general, there are still posters about going to the school environment. But in the future, you will stay there because that is one of the conditions for Adiwiyata to be independent, right? That's one thing. Secondly, these two schools will lead to the industrial class. This will be monitored directly by Toyota. Yesterday it was surveyed." (SY/KGSP teacher)

Thus, the SMK in the aspect of evaluating the workshop policy is quite good, and the aspect of improving the OHS of the workshop is quite good. In previous studies, the improvement of OHS in the workshop with 100% achievement, the school handled the problem by helping with transportation and providing insurance costs to students who got work accidents. In addition, the policy evaluation with the achievement of 25%, the school was still not maximally evaluating the OHS policy for the workshop (Miftachul & Suparman, 2017).

CONCLUSION

The OHS Management System (SMK3) obtained in a vocational school building workshop in one of Central Java in the aspect of planning the implementation of OHS has been implemented quite well. In the aspect of implementing OHS implementation, it is categorized as quite well implemented. The aspect of evaluating the implementation of OHS is categorized as being well done. Thus, the OHS Management System (SMK3) at the SMK needs to be improved. The school can work with stakeholders to follow up on the OHS Management System. With the planning and implementation of an excellent occupational safety and health management system (SMK3) in-school workshops, students will be more self-aware regarding work safety. Thus, students can apply the behavior to obey their work safety in the industrial world (IDUKA).

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