Evaluation of Occupational Health and Safety (OHS) Implementation of Vocational High School Workshop at Surakarta City

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Abstract. The high number of work accidents due to human error or another is one that needs to be considered in the framework of both industry and educational institutions. This study is intended to determine the effectiveness of the level of implementation of Occupational Health and Safety (OHS) regulations in vocational schools in the city of Surakarta. This research used research method that developed by Stufflebeam, that was CIPP model (Context, Input, Process, Product). The population in this study was all vocational students in the city of Surakarta. The sample was used 217 students with purposive sampling technique in 4 places namely SMK Negeri 2 Surakarta, SMK Negeri 5 Surakarta, SMK Pancasila Surakarta, and SMK Purnama Surakarta. Data collection using interviews, observation, documentary studies and questionnaires. Data analysis for qualitative data using interactive analysis model and the quantitative data using assessment criteria. The results show that, Context: (1) There is no official who joined OHS (2) The absence of detailed division of tasks. Input: (1) There is no system integrated with the school structure, (2) No officers are trained in OHS field, (3) OHS facility has standard with a percentage equal to 68,2%. Process: (1) The use of OHS infrastructure includes the high category with the percentage of 59,9%. (2) Student motivation and awareness of OHS included in a high category with a percentage of 68,2%. (3) OHS materials have been processed in basic subjects, only less training. Product: Implementation of OHS in School workshop included in a high category with percentage 82,5%.

1. Introduction
The development of industry in Indonesia takes place very rapidly along with the progress of science and technology in the era of industry 4.0 today. The process of industrialization of Indonesian society is accelerating with the establishment of diverse companies and workplaces. The rapid development of
this industry is also accompanied by the presence of greater and diverse risk of danger due to the transfer of technology where the use of machines and work equipment increasingly complex to support the running of the production process.

The progress of industrialization, mechanization, and modernization in most cases increased the intensity of operational work and worker's tempo. Increasing the intensity of operational work and work tempo require the intensive deployment of workers as well. Consequently, workers experience fatigue and lack of attention to other things and it is the cause of accidents while working. Work accidents in 2011 occurred 96,400 accidents. As many as 96,400 workplace accidents happened, 2,144 workers were recorded dead, and 42 others were disabled, while until September 2012 the number of work accident was still high which was in the range of 80,000 cases of a work accident. Occupational accident cases average 99,000 cases per year, and 70% of them result in death and disability for life. In the year 2013 recorded nine people die every day due to accidents. By the end of 2017, there were 80,393 cases.

The cause of accidents, in general, is due to the conditions and unsafe actions of workers. Specifically about the act of insecurity is closely related to the human factor or occurs due to human error (human error). Another problem is that workers often do not want to use Personal Protective Equipment (PPE) that has been provided for various reasons. Also, there are workers who are less understanding about OHS [1]. The most of the supervisors did not receive information from the schools as to what should be included when introducing OHS at workplace [2].

The majority of industrial workers in Indonesia are middle or middle-level workers. Vocational High School (SMK) is an educational institution that produces manpower /technicians at mid-level. The role of SMK is directly proportional to the industry's need for very large mid-level workers. This role encourages the advancement of vocational education institutions. By the National Development Plan of the Long-term Development Plan (RPJP) of the National Education year, 2005-2025 has been projected gradual and sustainable growth target of SMK which leads to the increasing number of SMK compared to SMA until reaching ratio 70:30 in 2025.

SMK which is a container of labor producers is required to form according to industry needs. Mastery of skills and knowledge of occupational health and safety including those that are important to be mastered in supporting the production process in the industry. Occupational health and safety is the duty of everyone working in the workshop. Schools, in this case, become the key to understanding and mastery of occupational health and safety, therefore in vocational schools, especially in practical learning should need to implement health and safety as in the workplace/industry environment. The importance of OHS and risk education is enhanced due to the rapid development of the society, new technologies, and demographic changes [3].

The questions in this study based on CIPP model background and concept evaluation (Context, Input, Process, Product) are described as: (1). Context: Are there any Health and Safety commitments and policies in Vocational High School workshop in Surakarta city? (2). Input: What is the guarantee of Occupational Health and Safety at Vocational High School Workshop in Surakarta City? (3). Process: How is the implementation of Health and Safety at the Vocational High School workshop in Surakarta city? (4). Product: How the results of the implementation of Health and safe workshop in Vocational High School in the city of Surakarta.

2. Methods
This research was an evaluation of CIPP model. This study used a population of vocational high schools in the city of Surakarta with a sample of 4 schools namely SMK N 2 Surakarta, SMK N 5 Surakarta, SMK Pancasila Surakarta, SMK Purnama Surakarta and students of class XI and XII with
the number 217 students. The sampling technique used is purposive sampling. The following describes the instrument that used in this study.

**Table 1.** The technique of Collecting Data

| Evaluation Aspect | Indicator | Data Source | Research Instrument |
|-------------------|-----------|-------------|---------------------|
| **Context**       | OHS Commitment and Policy in the School Workshop, including: (1)OHS Organization, (2)Vision and Mission OHS Management, (3) Occupational Health and Safety Management Program, (4) Identify Existing Conditions and Source of Hazards | Documents, Archives, and Informants | Document and Interview Study |
| **Input**         | 1. Availability of Trained Personnel (Competency OHS Teacher PengampuPraktek) | Documents, Archives, Informants, and Respondents | Document and Interview Study, questionnaire |
|                   | 2. Availability of Integrated Systems and Procedures to the Board | | |
|                   | 3. Availability of Facilities, Pre-Supporting Facilities and the Environment | | |
| **Process**       | 1. Use of Facilities and Infrastructure | Documents, Archives, Informants, and Respondents | Document and Interview Study, questionnaire |
|                   | 2. Motivation and Awareness of Teachers and Students towards OHS | | |
|                   | 3. Training and OHS Competency for Teachers and Students | | |
| **Product**       | The existence of OHS Systems Involving Management, Teachers, and Students to Reduce Occurrence of Work Accidents in the School Workshop | Documents, Archives, and Informants | Document and Interview Study |

Data analysis in this study using two analytical techniques, descriptive data analysis and analytical data analysis. Descriptive data analysis using interactive model analysis technique [4]. Analytical analysis of this study using the component assessment criteria that developed by Saifuddin[5].

### 3. Results and Discussion

The results of this study indicate that:

#### 3.1 Context

The results of interviews on work health and safety commitments and policies in the school workshop were conducted with the head of the program, the head of the workshop and the practical teachers in each school to strengthen and confirm the findings of the document observation. From the data can be described that each school has not implemented the form of management in the implementation of OHS in the school workshop. Special organizations or personnel that regulate and supervise the course of occupational health and safety in school workshops do not yet exist. From the findings, the actual implementation of health and safety in the workshop has been done, but there is no detailed job desk and clear about the health and safety of the workshop structure.
3.2 Input
3.2.1 Availability of Integrated Systems and Procedures to School Management
From the interviews found the conditions where schools, workshops, and teachers realize the importance of the integrated system. But if the system is run, it means there should be an addition or procurement of things that support the realization of the implementation of the system. E.g., the presence of competent personnel in the field of OHS. If it is held, there must also be an improvement on its administration. Many things to consider according to the situation and condition of each school. Moreover, each school also has limited personnel. But in reality, there is no school that integrates OHS management with schools.

3.2.2 Availability of Trained Personnel
From the data obtained, it can be explained that in each school there is no trained personnel about health and safety. There is even no teacher data ever attending training on OHS. Each teacher can apply safety based on standard operational procedure (SOP) as a teacher. Each teacher before carrying out teaching and learning activities always prepare a lesson plan (RPP). In RPP practice activities, always inserted health and safety procedures. Work safety procedures are always used by teachers as a basis when running practice activities in the workshop.

3.2.3 Availability of Supporting Infrastructure
Data indicator of the availability of supporting facilities is also obtained from the questionnaire. Questionnaires are used to determine the availability of supporting infrastructure data from the opinions of respondents that have been prepared in a questionnaire. The supporting facilities included in the questionnaire are: 1) First Aid Kit, 2) Laundry, 3) Toilet/Bathroom, 4) Cleaner, 5) Sawdust, 6) Manual Book, 7) Waste Disposal Site, 8) OHS Rules, 9) Jobsheet, 10) Specialty Places for Practice Tools, 11) Ventilation.

The result of a questionnaire of means of infrastructure can be seen in the following table.

| Category    | Frequency | Percentage |
|-------------|-----------|------------|
| Very high   | 148       | 68.2%      |
| High        | 69        | 31.8%      |
| Medium      | 0         | 0%         |
| Low         | 0         | 0%         |
| Very low    | 0         | 0%         |

Based on table 2 can be seen as the indicator of infrastructure facilities of each school, in a very high category with a percentage of 68.2%. This indicates that the indicator of infrastructure facilities included in the very high category.

3.3 Process
3.3.1 Use of Infrastructure
The results of interviews on indicators of the use of infrastructure facilities conducted to the head of the program, head of the workshop, and teacher. The results can be illustrated that so far the use of OHS tools has been done well. Students when the practice has been using Personal Protective Equipment (PPE) in the form of work uniform but other PPE not yet used like mask and gloves, besides that there is manual of each engine which is used for practice to facilitate student in doing dismantling and reassembling. For more details can be seen in the table below.
Table 3. The Use of OHS Infrastructure

| Category    | Frequency | Percentage |
|-------------|-----------|------------|
| Very high   | 130       | 59.9%      |
| High        | 87        | 40.1%      |
| Medium      | 0         | 0%         |
| Low         | 0         | 0%         |
| Very low    | 0         | 0%         |

The indicator of the use of infrastructure facilities in the category is very high with a percentage of 59.9%.

3.3.2 Student’s Motivation and Awareness of OHS

The results of the interviews conducted to the head of the program, the head of the workshop and the teachers of practice in each school indicated that students' awareness of OHS in the workshop is said to be 80%. These findings are presented by informants that there are still students who when the practice is not serious, more joking and it can potentially cause accidents, such as playing with oil or fat also play with tools of practice. Teacher practitioners cultivate students' awareness in some ways including 1) briefing at the beginning of practice, 2) giving sanctions when some are not serious in practice, 3) others showing videos due to work accidents, so students are afraid not to be serious when practice.

Table 4. Student’s Motivation and awareness of OHS

| Category    | Frequency | Percentage |
|-------------|-----------|------------|
| Very high   | 148       | 68.2%      |
| High        | 67        | 30.8%      |
| Medium      | 0         | 0%         |
| Low         | 2         | 1%         |
| Very low    | 0         | 0%         |

Indicators of student's motivation and awareness of OHS in the very high category with the acquisition of percentage equal to 68.2%.

3.3.3 OHS Competencies of Teachers and students

The interview data shows that in each school has never conducted any training or training on health and safety for teachers and practitioners of students, but for students of OHS competence have been included in basic lessons of vocational techniques.

This is inversely related to the theory review that OHS training is necessary to ensure safety [6]. the 'professional knowledge of reference' needs to be identified to design training content that combines the 'regulated safety' and 'managed safety' that are necessary to produce safe working conditions. The objective of education in the field of OSH is to equip students with the necessary knowledge, information and develop their abilities and skills [7]. The one way attempt to minimize the number of occupational accidents is through education and training [8].

For the efficiency and effectiveness of OHS training, there is no need to provide high-cost face-to-face meetings, but can use online tutorials [9].

3.4 Product

The data shows that there have been no serious workplace accidents in the workshops of each school, while accidents have occurred only minor accidents that can be handled immediately and do not result in serious injuries or impacts to students. During this implementation of safety in each school has
involved all teachers, especially teachers practice assisted by students. But there has not been a system that is organized in writing about health and safety at the workshop. So far, the only form of informal consensus. The results of direct observation in the field using the checklist obtained results with a percentage of 82.5%, or it can be said that the implementation has been running well and in the high category. This checklist sheet is based on labor minister's regulation no. PER.05/MEN/1996 on health and safety management system.

4. Conclusion
Based on CIPP evaluation, it is important to note about OHS management and its training for safe work safety. Vocational School that OSH-based is one way to prepare students to enter work [10]. Also, the future strategic direction of OHS as a provision of occupational health services for safety and health of students and workers guaranteed [11].

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5. References
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