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Knowledge about Safety Practices in Workshop among Student in Industrial Training Institute

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ABSTRACT

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The aim of this paper is to look into the safety practices in the workshop among students at the Industrial Training Institute (ITI) in term of knowledge aspect. This study was conducted using questionnaire for quantitative and interview for qualitative approaches. The study was conducted by distributing questionnaires to respondents consisting of 176 students from two selected ITI. An interview session also been conducted with four instructor from four selected workshop. The data from questionnaire were analysed using IBM Statistical Package for the Social Sciences (SPSS) Software version 21.0. Analysis is translated into mean, frequency and percentage. Findings show that knowledge about safety practices in workshop among student in ITI is very high. Hopefully with the information obtained from the study findings, appropriate measures and approaches can be identified to ensure that safety practices in the workshops are constantly enhanced.

Keywords:

Knowledge, workshop, industrial training institute, safety practices

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1. Introduction

The increasingly different setting of economic situation and society in the twenty-first century (21st) also affected and contributed to the changes in Technical and Vocational Education Training (TVET) [1]. Industrial Training Institute (ITI) is one of the branches of TVET in which it will produce skilled manpower from the technical field. Therefore it is suggested to increase the collaboration of tertiary institutions with industry to deliver job-ready graduates, with a focus on vocational education and training as mentioned by [2]. In order to produce these high-skilled students to be ready for workforce, they will often use workshops for their practical training. This is to reinforce the knowledge gained by the students before stepping into the realm of work. As the skills and vocational education is the link between education received during learning and real conditions in employment, therefore, students at the ITI who carry out practical work in the workshop are also not excluded from practicing safety measures.

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Workshop safety is an aspect that needs to be the main focus in doing practical work while in the workshop. It should be emphasized not only when doing practical work but at any time when the student is in the workshop. Safety can be regarded as a habit or as a form of positive attitude. It will not be born alone unless the person himself sets it up whether to regard it as a priority or not. According to [3], they need to understand their responsibilities to protect themselves, their work colleagues and the wider community and environment. These safety aspects should be applied to foster safety values at all levels. Awareness and knowledge of safety in doing work must be implemented at the grassroots level in order to nurture the attitude of the employee who is always aware of the safety aspect when doing a job or task. The delivery of Occupational Safety and Health as a fundamental part of vocational education may set the shade for having these students adopt safe work procedures within their orientation toward work [4].

Knowledge regarding occupational hazard and safety practices is important in order to mitigate negative consequences as stated by [5]. Having the knowledge of safety practices is very helpful and crucial to start from early stage in preventing the occurrence of accidents in the workshop or at any workplace. Accidents and damage happen due to not enough knowledge and skills, especially in the use of machinery or equipment according to [6]. Table 1 shows the accident record that had happened in workshop from local and overseas.

Table 1
Workshop Accident Record of Local and Overseas Polytechnic

Location	Workshop	Type of injury	Year
Bay of Plenty, Taranga, New Zealand	Wood	Disconnect the left thumb, suffering from damage to the nerves left palm	2009
Polytechnic	Welding	Burning Hand (Exposed to hot iron)	2010
Polytechnic	Machine	Head Injury (affected by hot iron rod)	2010

Source: Che Juhan Negara [7]

Accidents that occur usually result in serious or mild injuries, disability and sometimes death. Therefore, the rules and safety of workshops need to be taken seriously by all parties. Without doing so, it will bring harm to the students and others involved. This is because practical class differs from theory class, which only interacts with the teacher. While for practical classes, students will interact with dangerous equipment and machines. Thus the aim of this study is to examine the safety practices in workshop among student in ITI in term of knowledge aspect and whether there are any significant differences in having knowledge about safety among gender.

2. Methodology

This study was conducted using mix method. The mixed method is a research approach that combines quantitative and qualitative data collection and analysis [8]. Questionnaires that have been tested are being used for quantitative data collection. Qualitative data collection methods were conducted by interviewing relevant instructor or supervisor to supplement the information from the quantitative results obtained. The data collected from the questionnaire is being analysed using the IBM Statistical Package for the Social Sciences (SPSS) software version 21.0. The statistics are derived from percentage, mean, frequency, and standard deviation. In addition, t-test is used to examine whether there are significant differences between genders in term of knowledge towards safety practices in workshop. The population involved in this study consist of 320 students from two

selected industrial training institute with a sample of 176 students using stratified sampling. The questionnaire contain two demographic data including gender and level of qualification; and 30 questions regarding knowledge consisting knowledge about general safety requirements, chemical management, electrical appliances and emergency response. The questionnaire has been piloted to a sample of 20 students from the same background of research setting. The reliability of the knowledge questionnaire is valid with Cronbach alpha value of 0.846.

3. Results and Discussion

From the questionnaire and interview session conducted at selected Industrial Training Institute (ITI), the findings are divided into two parts: Part A and Part B. Part A contain respondents' personal information such as gender and education level. Part B contains items that respond to the question of study. The question of the study to be discussed is the knowledge about safety practices in workshop among students in ITI.

Table 1
Background of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	114	64.8
Female	62	35.2
Level		
Malaysian Skills Certificate	89	50.6
Malaysian Skills Diploma	55	31.3
Others	32	18.2

Table 1 above shows the respondent distribution by gender. From the total respondent, the analysis showed that a total of 176 people respondent involved in this study consisted of 114 (64.8%) male and 62 (35.2%) female students. Majority of the respondent involved is male student. In term of qualification level, the result showed that 89 (50.6%) of the respondent coming from Malaysian Skills Certificate level, 55 (31.3%) from Malaysian Skills Diploma level and 32 (18.2%) from others. We can see that majority of the respondent are coming from Malaysian Skills Certificate level.

a. *Students' knowledge of safety practices while at the workshop*

Table 2 show the result from questionnaire, where the mean and standard deviation is shown for each of the question asked to the respondent. Average mean value for all aspects of knowledge is at 3.90. This shows that the level of knowledge of safety practices by the students were high.

The output from interview session also supported the result from the questionnaire. Based from the interview session, the informant is agreed that all respondent is having a good knowledge of safety practices in the workshop. They are given a safety briefing before they start their task in the workshop and they will be monitored during their session in workshop. The component of safety is also embedded in their subject and safety is also part of component to be assessed during their final assessment.

The results of this study are relevant with [9], [10] and [11] in which they found that knowledge has a positive and significant influence towards safety practices in workshop. Thus, the higher the knowledge regarding the safety aspect in workshop is better as the student will apply a good safety practices. Having the knowledge is one of the most basic things that must be understood by students before carrying out practice in the workshop. Knowledge of workshop safety is one of the

precautionary measures from the occurrence of accidents in the workshop. When students have less knowledge about the safety rules and regulation in the workshop, it will cause errors and can trigger accident to happen. Safety rules should be known and understood as best as possible so that they can lead to a safe practice action.

Table 2
Student Knowledge on safety practices while at the workshop

No.	Item	Mean	Standard Deviation
Q1	I understand the safety measures explained before the practical session begins.	4.21	.647
Q2	I can not work in groups of more than five (5) students per device or per experiment.	3.10	1.104
Q3	I do practical work or assignments based on the instruction or permission from the supervisor.	4.18	.639
Q4	I work in workshop without supervision from supervisor.	3.63	1.119
Q5	I do not smoke in any area that is not allowed in the workshop.	4.34	1.034
Q6	The floor in my workshop is free from stuff (eg box, paper, chemical, oil, water, machine equipment) which may cause slipping/dropping and falling.	3.70	1.033
Q7	During the workshop, I did not use hand tools to joke or play with friends.	4.12	.915
Q8	I did not drink and eat in the workshop	3.75	.872
Q9	I always wear personal protective equipment in the workshop.	3.98	.796
Q10	I can see the safety warning signs clearly around the workshop.	4.23	.663
Q11	I know the ban on the use of jewelry during practical work in the workshop.	4.27	.643
Q12	I use hand tools properly and safely.	4.21	.673
Q13	I did not use damaged tool and would report to the supervisor immediately	4.08	.817
Q14	I operating the machine without supervision from supervisor.	3.26	1.222
Q15	I will report any strange sound from the machine immediately to the supervisor.	3.91	.890
Q16	I will not joke and/or play around when practical work is done in the workshop.	4.14	.774
Q17	Chemical storage containers are labelled correctly in the workshop.	4.11	.782
Q18	I can see a warning sign that there are chemicals in the workshop clearly displayed.	4.04	.788
Q19	I know there is an 'Emergency Spill Kit' in the workshop to act if there is a chemical spill.	3.68	.901
Q20	All sockets, switches and plugs are not damaged and no burning effect in the workshop.	3.69	.881
Q21	I know the safety device on every machine/tool (eg fence, security button, etc.) should work well before it is being use.	4.08	.627
Q22	I make sure all machine electric switches are turned off after use	4.28	.682
Q23	I will make many connections from one source of the socket.	3.14	1.135
Q24	I did not touch the unlined wire of life	3.93	.995
Q25	I can see fire-fighting equipment (Fire Hydrant, Fire Extinguisher, Hose Reel, Sprinkler, etc.) in a dedicated place in the workshop.	4.23	.713
Q26	Sprinkler, nozzle, clipper, glass, fire-fighting device are in good condition.	4.10	.693
Q27	I did not see an emergency route map displayed in workshop area.	3.01	1.214
Q28	Emergency routes in the workshop are not blocked (eg: boxes, files, chairs, papers, etc.).	3.85	.862
Q29	I know the functions and ways of using medicines in the First Aid Kit	3.87	.684
Q30	I have a list of telephone numbers to be contacted if accident occurs in the workshop.	3.77	.789
Total		3.90	.373

Knowing the safety rules of the designated workshops, students may be able to do practical work well. Therefore, the rules provided are intended to safeguard the student personal safety, equipment and machinery as well as to avoid any potential risks. This is because knowledge serves as the core of determining attitudes, intentions and behavior because without knowledge, one cannot act on any information or problem that is given to them [12]. Even though the average results shown very high levels of knowledge but, there are a few item show a moderate value of mean. Knowledge has significant influence on the student safety practices in workshop.

b. Significant differences between male and female student's knowledge on safety practices while at the workshop

The test shows that there is no significant difference of the knowledge aspect between male and female students towards safety practices in the workshop at the industrial training. The value of $t = -1.625$, $P = .106$ is insignificant because it exceeds 0.05. The results showed that there was no difference in the mean score of the knowledge aspect in the workplace safety practices between male students (Mean = 3.862, SD = 0.3732) and female students (Mean = 3.957, SD = 0.368).

Table 4

T-test analysis for knowledge aspect on safety practices in terms of gender

	Male (n=114)		Female (n=62)		t	Sig.P
	Mean	Std. Deviation	Mean	Std. Deviation		
Knowledge	3.862	.373	3.957	.368	-1.625	.106

*Significant at $p < 0.05$

This result is relevant and supported by finding from [13], [14] and [15] in which gender status does not have any significant differences in term of knowledge of the student toward safety practices in workshop. Even though according to [16] indicates that women are more likely to practice safe practices than men but from the study shows that the level of student knowledge on safety practices in a workshop is seen to have no significant difference between male and female students. Having knowledge and knowing the right tools and measures to avoid accidents must be learned by all individuals regardless of gender in the workshop.

4. Conclusion

As a conclusion, it is found that knowledge about safety practices among students in workshop is at a high level. All items on safety aspects show a high level. However, there are still items that are at a moderate level. Although the percentage is small, its presence can cause accidents which indirectly harm students, governments, administrators and so on. Therefore, it is very important that this small percentage value be eliminated so that accidents can be deduced.

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