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The Influence of Hard Skills K3, Soft Skills and Work Environment on the Behaviour of Implementing K3 in Welding Practices of Mechanical Engineering Study Program Students in Vocational High Schools in North Sulawesi

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ABSTRACT
Vocational High Schools (SMK) are educational institutions that prepare graduates to be ready to work, so that there are more practical lesson hours compared to theory lesson hours. With so many hours of practice, vocational school students are very vulnerable to work accidents. Preventive measures against work accidents, when students carry out work practices, must implement K3. The behaviour of implementing K3 can be influenced by the K3 hard skills mastered by students, the soft skills possessed by students and the practical work environment. Through this research, we want to find out how much influence K3 hard skills, soft skills, and work environment have on students' behaviour in implementing K3. The student population as respondents was 73 students taken from vocational schools that have a mechanical engineering study program, namely SMKN 2 Bitung, SMKN 2 Manado, SMK Garuda Bitung and SMK Cokroaminoto Kotamobagu. By using a saturated sampling technique, the entire population was taken as a sample with a sample size of 73 students. The analysis technique in this research uses regression and correlation analysis techniques, and it is revealed that there is an influence between hard skills on the behaviour of implementing K3 of 0.69 (69%), there is an influence between soft skills on the behaviour of implementing K3 of 0.76 and there is an influence The relationship between work environment and behaviour of implementing K3 is 0.85 (85%). With these findings, it is hoped that vocational schools will focus more on improving occupational safety and health (K3) learning materials so that students have optimal K3 hard skills. Providing lessons or other activities that can develop students' soft skills and improve the comfort of the welding work practice environment must be taken into account, such as noise levels, ventilation, lighting, room cleanliness and preparing complete personal protective equipment (PPE).

Keywords: *Hard Skill K3, Soft Skill, Work Environment, Behaviour of Implementing K3*

1. INTRODUCTION

Vocational high school (SMK) is an education system in Indonesia, which aims to prepare students to be able to work in certain fields. There are various types of fields studied, such as machinery, electricity, automotive, building, and others. In accordance with the aim of vocational schools to prepare students to be able to work, the learning material mostly applies practice rather than theory, with an estimate of 70% practice and 30% theory. There are many hours of practical lessons so that students do a lot of practical work, and this condition shows that vocational schools are similar to industry

The engineering study program as one of the areas of expertise in SMK, there are welding lessons to be taught to students, and it is hoped that students will have good welding competence or skills. By him students continue to be trained how to weld properly, so that the practice of welding in school workshops is often done by students. However, in carrying out welding practices, students are not aware of the dangers of welding, and the types of welding hazards according to Siswanto [1] can be classified into 2 parts, namely physical hazards and chemical hazards. Physical and chemical hazards in the welding process, such as smoke, light, dust, heat, electric shock, etc., are very harmful to the health of students who

carry out welding practical work, which can have an impact on safety at work. The results of a preliminary survey conducted by I. Parsaoran Tamba as a researcher at the Vocational High School who became a research study found work accidents resulting from physical hazards and chemical hazards in students carrying out welding work practices, such as eye disorders due to exposure to welding light, exposure to welding flashes on the skin, electric shock, shortness of breath, coughing, and others.

Work accidents experienced by workers can be caused by 2 causes, namely: unsafe actions and unsafe conditions [2,3]. According to the report of the International Labor Organization that 88% of work accidents are caused by unsafe acts, 10% are caused by unsafe conditions and 2% are caused by unforeseen circumstances [4]. Even the results of Du Pont's research also show that 80 to 90 percent of accidents are caused by unsafe actions, not unsafe conditions [5]. Observing the opinion of [2], [3], and [6], it is possible that students who experience work accidents while carrying out welding practices are caused by unsafe actions. Student behaviour is possible because they do not apply occupational safety and health (K3) principles when carrying out welding practices

The behaviour of applying K3 principles to students who carry out welding work practices can be seen from the actions taken by students during practice starting at the beginning of practical work, doing practice and the end of practice. If students' actions do not apply the K3 principles (unsafe action), then work accidents will definitely be experienced by students. On the other hand, if students apply K3 principles in carrying out welding practices, work accidents can be avoided. The behaviour of implementing K3 principles can be influenced by students' hard skills, students' soft skills and students' work environment. Therefore, hard skills, soft skills and a comfortable work environment really support students to apply K3. As K3 knowledge (hard skills) is defined as the science of anticipating, recognizing, evaluating and controlling hazards that arise in or from the workplace that can interfere with the health and welfare of workers, taking into account the possible impact on the surrounding community and the environment in general in order to maintain and protect facilities. human resources in the workplace [2, 7].

According to Klaus [8] hard skills as knowledge refer to the technical abilities and factual knowledge needed to do work and more technical aspects [8]; [9]. Based on Klaus [8] and Marando [9], students must master K3 knowledge (hard skills) and apply it in practical welding work, in order to apply K3 principles. By having K3 hard skills, students can: recognize sources of danger in the workplace, control workplace hazards, use appropriate personal protective equipment (PPE) to protect exposure to workplace hazards and recognize the impact of work accidents.

Ndikom [10] revealed that there is a positive relationship between knowledge (hard skills) and behaviour. Reinforced by Skinner [11] states that science (hard skills) makes it possible to explain behaviour. While soft skills which consist of interpersonal skills and intrapersonal skills must be owned by students in applying the K3 principles. Soft skills possessed by students encourage students to apply hard skills when doing welding practices. As stated by Klaus [8], hard skills refer to the technical abilities and factual knowledge needed to do a job, while soft skills allow someone to use hard skills more often. The opinion of Klaus [8] shows that there is a relationship between soft skills and the behaviour of implementing OSH in practical work. And students' soft skills must be applied in every job so they are used to working safely, both individually and in groups. In accordance with the opinion of Direitoa and Duarte [12] who stated, if you have never taken the time to practice your soft skills, there is no better time than now to start. According to Sonmez [13] soft skills are behaviours that can be transferred and can be used in various functions, activities, contexts and include the manners and personality traits needed to get along with other people and build positive relationships [12,14].

The work environment when students practice welding contains various sources of danger such as: physical dangers, chemical dangers, biological dangers, psychological dangers, physiological/ergonomic dangers, mechanical dangers, electrical dangers, and other substance dangers. Work environment conditions are closely related to student behaviour in applying K3 principles. In accordance with the opinion of Paco & Lavrador [15], there is a relationship between the environment and behaviour towards the environment. Besides, environmental factors are also the dominant factors that characterize a person's behaviour [16]. Apart from personality (individuals) being able to predict behaviour, the environment can also predict a person's behaviour and the work environment is closely related to behaviour in implementing K3 [17]. Kustono [4] stated that there is a relationship between the work environment and worker safety behaviour, and this relationship is often used to find the causes of work accidents.

The behaviour of implementing K3 can be seen in students when carrying out practical welding work, where students before work, while working or at the end of work always control and use personal protective equipment. As Santrock [18] and Runtukahu [19] stated, behaviour is everything (activity) that we do and can be seen directly, such as activity, response, performance and reaction.

Observing the relationship between K3 hard skills, soft skills, the work environment and the behaviour of applying K3, the researcher wants to try to find out how big the influence of K3 hard skills, soft skills and the work environment is on the behaviour of applying K3 in

the welding practice of vocational school engineering study program students in North Sulawesi.

2. METHODOLOGY

This research includes quantitative research used to determine causal rather than a variable measurement. This research variable consists of 3 independent variables (Hard Skills, Soft Skills, Work Environment) and 1 dependent variable (K3 implementation behaviour). Hard skill variable data (X1) was taken using an instrument test, soft skill variable data (X2) was taken using a Likert scale questionnaire instrument and work environment variable data (X3) was taken with a questionnaire instrument by asking students directly. While the behaviour variable applying K3 (Y) is used direct observation of the type of permanent product recording using differential semantic instruments regarding initial work behaviour, current work behaviour and final work behaviour.

The collected data is processed using parametric statistics. The research method uses correlation analysis, because it wants to know the degree of relationship between variables [20]. Furthermore, regression analysis was used to see how big the relationship between variables.

The population is the entire object or research subject [21]; [22] totalling 73 students taken from all Vocational Schools in North Sulawesi that have a Mechanical Engineering study program, namely SMK Negeri 2 Manado totaling 20 students, SMK Negeri 2 Bitung totaling 31 students, Garuda Bitung Vocational School totaling 11 students, and Cokroaminoto Kotamobagu Vocational School totaling 11 students,

The sampling technique used was a saturated sampling technique. According to Sugiono [23], saturated sampling technique is a sample determination technique when all members of the population are used as samples. Furthermore Arikunto [21] suggests that if the research subjects are less than 100, it is better to take all of them so that the research is a population study. However, if the subjects are large or more than 100, then between 10-15% or 20-25% or more can be taken. So, the sample in this research is the entire population, namely 72 students.

3. HYPOTHESIS

The research hypothesis is as follows:

1. There is an influence between K3 hard skills on behaviour in implementing K3
2. There is an influence between soft skills on behaviour in implementing K3
3. There is an influence between the work environment on behaviour in implementing K3
4. There is a joint influence between K3 hard skills, soft skills, work environment on behaviour in implementing K3

4. RESULT AND DISCUSSION

The students' hard skills varied greatly with the lowest score being 43 and the highest being 91 (see Table 1). The interpretation of scores or categories of hard skill scores can be categorized into three parts: high, medium, low or good, moderate, less [24]. The interpretation of the three categories of scoring categories (low, medium and high) is as follows:
The Data 0 - 33.3 are low (0%)
The Data 33.4 - 66.6 are medium (58.9 %)
The Data 66.7 - 100 are high (41.1 %)

Table 1. Data Hard Skill.

No	Data	Frequency	Percent (%)	Cumulative Percent (%)	Category Hard Skill
1	43	3	4.1	4.1	Medium
2	46	1	1.4	5.5	Medium
3	49	2	2.7	8.2	Medium
4	51	4	5.5	13.7	Medium
5	54	3	4.1	17.8	Medium
6	57	5	6.8	24.7	Medium
7	60	6	8.2	32.9	Medium
8	63	9	12.3	45.2	Medium
9	66	10	13.7	58.9	Medium
10	69	1	1.4	60.3	High
11	71	1	1.4	61.6	High
12	74	8	11.0	72.6	High
13	77	4	5.5	78.1	High
14	80	5	6.8	84.9	High
15	83	4	5.5	90.4	High
16	86	3	4.1	94.5	High
17	89	2	2.7	97.3	High
18	91	2	2.7	100	High
Total		73	100		

Examining the data in Table 1 shows that the hard skills of SMK students are in the range from medium to high, and no students get low scores. Students' hard skills at medium criteria are 58.9% and at high criteria are 41.1% indicating that students really pay attention to the teacher when giving K3 learning material.

The average value of students' hard skills ($\bar{X}1$) is 65.71, this condition shows that the average students' K3 hard skills are still at medium criteria. This finding shows that students are more focused on learning K3. And teachers who provide K3 subject matter must be able to motivate students to focus more on K3 lessons.

Table 2 shows the students' soft skills data, where the data varies greatly, the lowest got a score of 52 and the highest got a score of 180. Soft skill data used as independent variable (X2) consisting of intrapersonal skill and interpersonal skill can be seen in table.2. According to [25], interpreted (5 category) soft skill data as follows:

The Data 0 - 36 are very weak
The Data 37 - 72 are weak
The Data 73 - 108 are enough
The Data 107 - 144 are strong

The Data 145 – 180 are very strong

Table 2. Data Soft Skill.

No	Data	Frequency	Percent (%)	Cumulative Percent (%)	Category Soft Skill
1	52	1	1.4	1.4	Weak
2	72	1	1.4	2.7	Weak
3	80	4	5.5	8.2	Enough
4	108	5	6.8	15.1	Enough
5	112	20	27.4	42.5	Strong
6	120	4	5.5	47.9	Strong
7	123	7	9.6	57.5	Strong
8	144	10	13.7	71.2	Strong
9	145	9	12.3	83.6	Very Strong
10	159	7	9.6	93.2	Very Strong
11	180	5	6.8	100	Very Strong
Total		73	100		

The data in the table 2 shows that the soft skills of students as respondents are very good, it is evident that only a few receive weak criteria (2.7%). The rest got enough criteria (12.3%), strong criteria (56.2%) and very strong criteria (28.7). The soft skill mean obtained ($\bar{X}2$) is 127.71 indicating that the average student's soft skills are strong. The research data shows that the soft skills (interpersonal skills and intrapersonal skills) of the students are actually very good. Which means when students carry out practical work they will remind each other about work safety, and also individually can practice work safely.

Data from research on the student practical workshop work environment can be seen in Table 3, where the assessment of the practical work environment felt by students, the data varies, with the lowest score being 13 and the highest score being 32. This condition shows that the practical work environment used by students in carrying out welding differed in response from students. The data criteria are divided into 4 parts namely:

The Data 0 – 8 are not very comfortable
The Data 9 - 16 are uncomfortable
The Data 17 - 24 are comfortable
The Data 25 - 32 are very comfortable

The data in Table 3 shows that 8.2% of respondents stated that the work environment practice practice criteria were uncomfortable, 45.3% were comfortable, 46.6% were very comfortable.

Table 3. Data Work Environment.

No	Data	Frequency	Percent (%)	Cumulative Percent (%)	Work Environment Category
1	13	5	6.8	6.8	uncomfortable
2	14	1	1.4	8.2	uncomfortable
3	17	1	1.4	9.6	comfortable
4	20	1	1.4	11.0	comfortable
5	21	18	24.7	35.6	comfortable
6	24	13	17.8	53.4	comfortable
7	26	7	9.6	63.0	very comfortable
8	29	11	15.1	78.1	very comfortable
9	30	12	16.4	94.5	very comfortable
10	31	3	4.1	98.6	very comfortable
11	32	1	1.4	100	very comfortable
Total		73	100		

Looking at the data in Table 3 shows that the average student stated that the student practical work environment was comfortable with an average value ($\bar{X}3$)= 24.55. The results of the student practical work environment data are very good to use as a place for welding practice, because students feel comfortable doing work practice.

Data from behavioural research applying K3 when students practice welding can be seen in Table. 4. As measurement behaviour of implementing K3 by using differential semantic scale consisting of range -3, -2, -1, 0, 1, 2, 3, then if this data is categorized according to Djaali [24] that is:

- If the data moves from value 0 to value -3 then the behaviour of K3 respondents getting negative.
- If the data moves from a moving value from 0 to 3 then the behaviour of implementing K3 respondents are getting more positive.

Based on the opinion of Djaali [24] hence can be arranged category of K3 behaviour as follows:

The data 0.1 - 11 are quite positive / good enough
The data 12 - 22 are positive / good
The data 23 - 33 are very positive / very good

Table 4. Data Behaviour of Implementing K3.

No	Data	Frequency	Percent (%)	Cumulative Percent (%)	Behaviour of Implementing K3 Category
1	18	1	1.4	1.4	Good
2	20	1	1.4	2.7	Good
3	21	4	5.5	8.2	Good
4	24	22	30.1	38.4	Very Good
5	27	12	16.4	54.8	Very Good
6	30	17	23.3	78.1	Very Good
7	33	16	21.9	100	Very Good
Total		73	100		

The data in Table 4 regarding behaviour of implementing K3 shows that students always apply K3 when practicing welding. It is proven that 8.3% apply K3 well and 91.7% always apply it very well. If you look at the average value ($\bar{Y}$) = 27,56 shows that when students carry out work practices, they always apply K3 principles very well.

The test results to see the relationship between hard skills K3, soft skills, work environment and the behaviour of implementing K3 can be seen in Table.5

Table 5. Relationship between K3 Hard Skills, Soft Skills, Work Environment and K3 Implementation Behaviour.

		Hard Skill K3	Soft Skill	Working Environment	Behaviour Implementing K3
Hard Skill K3	Pearson Correlation	1	.792**	.781**	.836**
	Sig. (2-tailed)		.000	.000	.000
	N	73	73	73	73

Soft Skill	Pearson Correlation	.792**	1	.851**	.876**
	Sig. (2-tailed)	.000		.000	.000
	N	73	73	73	73
Work Environment	Pearson Correlation	.781**	.851**	1	.923**
	Sig. (2-tailed)	.000	.000		.000
	N	73	73	73	73
Behaviour Implementing K3	Pearson Correlation	.836**	.876**	.923**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	73	73	73	73
**. Correlation is significant at the 0.01 level (2-tailed).					

Results of testing the relationship between variables Hard Skills K3 (X1), Soft Skills (X2), Work Environment (X3) with behaviour implementation Behaviour (Y) shows that the correlation value (R) obtained for all relationships is significant, as proven by all significant values being smaller than 0.05 (0.000 < 0.005). And the influence between variables X1 to Y, variables X2 to Y, and variables X3 to Y can be seen in Table.6.

Table 6. The Influence of K3 Hard Skills, Soft Skills, Work Environment Variables on K3 Implementing Behaviour.

Influence	R^2
Hard Skill K3 → Behaviour of Implementing K3	0.69
Soft Skill → Behaviour of Implementing K3	0.76
Work Environment → Behaviour of Implementing K3	0.85

Table 6 shows that the influence of K3 hard skills on the behaviour of implementing K3 is 0.69, the effect of soft skills on the behaviour of implementing K3 is 0.76 and the influence of the work environment on the behaviour of implementing K3 is 0.85

The influence between the variables obtained (see Table.6) can be proven from the regression equation as shown in Table.7, Table.8 and Table.9

Table 7. Regression Equation Coefficient Influence Hard Skill K3 on Behaviour of Implementing K3

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	9.343	1.441		6.481	.000
Hard Skill	.271	.021	.836	12.852	.000
a. Dependent Variable: Behaviour of Implementing K3					

Looking at the test results in Table.7, the regression equation for the effect of K3 hard skills on the behaviour of implementing K3 is Y = 9.343 + 0.271 X1. This equation shows that the behaviour of students applying K3 is influenced by students' K3 hard skills. If a student's hard skill increases by 1, the student's K3 application behaviour also increases by 0.271, and this effect is very positive. Based on the results of this research, if students want their behaviour to apply K3 very well in welding practice, then the students' hard skills must be good too, therefore K3 learning must really be taught well. The research findings show that the influence of hard skills on the behaviour of implementing OSH is very strong at 0.69 (69%). Therefore, to optimize the behaviour of implementing K3, students must have maximum K3 hard skills. Mastery of good hard skills in students is needed, if students want to be successful in all work activities. And hard skills are also the most important part if students want to compete in looking for work, as stated by [26], namely technological knowledge and skills provide a basis for developing national competitiveness. The influence of OSH hard skills on the behaviour of applying OSH, the findings of this study, are reinforced by the findings of several expert studies, which state that there is a relationship between hard skills and any behaviour [10, 11, 26, 27, 28]

Table 8. Regression Equation Coefficient Influence Soft Skill on Behaviour of Implementing K3.

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	10.581	1.136		9.318	.000
Soft Skill	.133	.009	.856	15.271	.000
a. Dependent Variable: Behaviour of Implementing K3					

This equation shows that the behaviour of students applying K3 is influenced by students' K3 hard skills. If a student's hard skill increases by 1, the student's K3 application behaviour also increases by 0.271, and this effect is very positive. Based on the results of this study, if students want the behaviour of applying K3 to be very good in welding practice, then students' hard skills must be good too, therefore K3 learning must be really well taught. The research findings show that the influence of hard skills on the behaviour of implementing K3 is very strong at 0.69 (69%). Therefore, to optimize the behaviour of implementing K3, students must have maximum K3 hard skills. Mastery of good hard skills in students is needed, if students want to be successful in all work activities. And hard skills are also an important part if students want to compete in finding jobs, as stated by Cacciolatti [26], namely technological knowledge. The effect of soft skills on the behaviour of implementing K3 is 0.76 (76%), if you look closely, this effect is very strong. very. And the influence of soft skills on the behaviour of applying K3 can be seen from the increase from the regression equation Y = 10.581 + 0.133 X2, where if students can improve soft skill 1 then they can increase the behaviour of applying K3 by 0.133. By him, students' soft skills must be continuously instilled in carrying out welding work practices so that the behaviour of applying K3 in welding practices continues. This condition shows that soft skills which include interpersonal skills and intrapersonal skills are the most important part when students carry out welding work practices to be safe.

The behaviour of applying K3 when students do practicum is determined by setting student soft skills and without good soft skills management (emotional management), it will be difficult for students to carry out K3 implementation behaviour effectively. As Gardenswartz [29] argues, emotions are the source of engagement, joy, and energy, they are also at the heart of

anger, frustration, and disengagement. Feelings are there, whether you like it or not. If you don't acknowledge andmanage them, they'll be managing you, your relationships, and your workplace environment. Without the ability to understand and deal with emotions effectively, you will continue to undermine your chances of effectiveness. Good soft skills are needed by students in the world of work, even in the 21st century soft skills are a prerequisite when someone gets a job, as stated by Klaus [8] as follows: 21 st century employers are looking for graduates who possess soft skills that include responsibility, self-confidence, social and communication skills, flexibility, team-spiritedness, good work attitude, self-motivation and self- management". The findings of [30] show that vocational high school students must improve the quality of their graduates if they want to go international, if they don't improve it will be difficult to find work, even though their hard skills are very good. And if students want to besafe and secure in doing practical work, they must always apply K3. And the success of implementing K3behaviour, both hard skills and soft skills must work together, as is the opinion Daryanto [26] who stated that a balanced mix of both technical and social skills appears being important.

Table 9. Regression Equation Coefficient Influence Work Environment on Behaviour of Implementing K3.

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	9.502	.909		10.454	.000
Work Environment	.736	.036	.923	20.286	.000
a. Dependent Variable: Behaviour of Implementing K3					

The research findings also show that the environment has a large influence on the behaviour of implementing K3 when students carry out welding work practices, namely 0.85 (85%). This condition shows that the work environment in any condition greatly influences the behaviour of implementing K3. The magnitude of the increase in the influence of the work environment can be seen from the results of regression testing with the equation Y = 9.502 + 0.736 X3. So it can be seen that if the work environment assessment increases by 1, the behaviour of implementing K3 increases by 0.736. Based on the findings of this research, when students want optimal K3 implementation behaviour, the work environment becomes the dominant concern. And the work environment has a very strong influence on behaviour in implementing K3. The findings of this research are strengthened by expert opinions which state the relationship between the work environment and behaviour [4, 16, 17, 31].

The research findings show a very strong influence of K3 hard skills, soft skills, work environment on behaviour in implementing K3. And this research also reveals the joint influence of K3 hard skills, soft skills, work environment on behaviour in implementing K3. The joint influence can be seen in the regression equation in Tabel.10

Table 10. Regression Equation Coefficient Joint Influence between K3 Hard Skills, Soft Skills, Work Environment on Behaviour of Implementing K3.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.443	.866		8.595	.000
Hard Skill K3	.072	.022	.222	3.329	.001
Soft Skill	.034	.012	.223	2.814	.006
Work Environment	.446	.062	.560	7.220	.000
a. Dependent Variable: Behaviour of Implementing K3					

The regression equation for the joint effect of OSH hard skills, soft skills, work environment on the behaviour of implementing K3 (see Table.1), is as follows: Y = 7.443 + 0.072 X1 + 0.034 X2 + 0.446 X3. And the magnitude of the joint influence is 0.899 (89.9%) and the joint influence is very strong. The regression equation Y = 7.443 + 0.072 X1 + 0.034 X2 + 0.446 X3, shows that the work environment (X3) has a very strong influence, next is the influence of hard skills and the next is soft skills. It can be concluded that the three variables X1, X2, X3 must work together to improve behaviour in implementing K3. By optimally implementing K3 behaviour, work accidents experienced by students can be minimized or until there are no work accidents (zero accidents).

5. CONCLUSION

Based on the results of calculations and testing research data, it concludes:

1. There is an influence between K3 hard skills on behaviour in implementing K3 as big as 0,69 (69%), which can be proven by the equation Y = 9.343 + 0.271 X1
2. There is an influence between soft skills on behaviour in implementing K3 as big as 0,76 76%), which can be proven by the equation Y = 10.581 + 0.133 X2
3. There is an influence between the work environment on behaviour in implementing K3 as big as 0,85 (85%), which can be proven by the equation Y = 9.502 + 0.736 X3
4. There is a joint influence between K3 hard skills, soft skills, work environment on behaviour in implementing K3 as big as 0,85 (85%), which can be proven by the equation Y = 7.443 + 0.072 X1 + 0.034 X2 + 0.446 X3.

With the behaviour of applying K3 to each welding practice, work accidents experienced by students can be reduced or even no work accidents (zero accident). As a suggestion, teachers should increase the provision of OSH subject matter, motivate students well and develop

students' soft skills and improve the work environmentfor welding practice.

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