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The Influence of Discipline and Responsibility on Self-Awareness of the Application of Occupational Safety and Health in the Practical Lecture of Mechanical Engineering Education

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*I Made Veda Narayana Vijaya, Farhan Yadi[ab]
[12]Sriwijaya University, Indonesia.
Corresponding Author: farhan@unsri.ac.id

ABSTRACT

This study aims to determine the effect of discipline and responsibility on students' self-awareness in implementing Occupational Health and Safety (OHS) in practical lectures at the Mechanical Engineering Education Study Program, Sriwijaya University. This study uses a quantitative approach with a survey method with the number of samples determined using the Slovin formula. Data analysis was carried out using Structural Equation Modeling-Partial Least Square (SEM-PLS) to determine the relationship and influence between variables. The results of the study indicate that both discipline and responsibility have a positive and significant effect on students' self-awareness in implementing OHS. The combination of the two variables also provides a greater contribution to increasing self-awareness. This study is expected to provide practical contributions in improving the implementation of OHS in the practical lecture environment, as well as being a reference for the development of occupational safety-based learning policies and strategies in higher education.

Keywords: *Discipline, Responsibility, Self Awareness, K3, Mechanical Engineering Education.*
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INTRODUCTION

With the development of science and technology in the industrial and public service sectors, occupational health and safety issues have become increasingly complex. This has an impact on the perspective of the industrial world and public service centers on the importance of implementing the principles of Occupational Health and Safety (K3) seriously in their activities. Occupational health and safety in the laboratory is an effort to provide safety assurance and improve the health of laboratory users, in this case students, lecturers and Educational Laboratory Officers (PLP) by preventing accidents and occupational diseases and controlling hazards in the laboratory. However, because the scope of educational laboratories is much smaller compared to the industrial world, this is often ignored even though The potential hazards that result also cause financial losses, damage to equipment in the laboratory, and diseases that may be caused. due to work accidents and even risks that most high, namely death (Olewski & Snakard, 2017).

Occupational Health and Safety (K3) is a condition in work that healthy and safe Good That for his job, company as well as for the community and the environment around the factory or workplace (Fadillah, Taufan M, Amay Suherman, 2019). Occupational safety and health (K3) is a condition that must be realized in the workplace with all efforts based on science and deep thinking to protect workers, individuals, work, and culture through the application of accident prevention technology that is applied consistently in accordance with applicable regulations and standards (Parashakti & Putriawati, 2020).

Occupational Safety and Health (K3) is very important in vocational education because the practical environment that resembles the industrial world has the potential to present risks

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of accidents and work hazards. The implementation of K3 aims to create a safe learning environment, protect students and educators from injury, and instill a culture of occupational safety from an early age. In addition, the implementation of K3 helps increase students' awareness of the safety procedures they will face in the real workplace, so that they are more prepared and competent when entering the industrial world. Thus, vocational education does not only focus on technical skills, but also on safety and health as an integral part of the learning process.

Occupational Safety is stated on Constitution No. 1 Year 1970 that is that every power Workers have the right to receive protection for safety in carrying out work and other people in the workplace are also guaranteed their safety. Occupational safety and health contain the value of protecting workers from accidents or occupational diseases. Work accidents can also affect company productivity. Meanwhile, laws and regulations concerning the use of PPE are contained in articles 12 and 13 concerning Workers' Obligations and Rights. Based on the results of the 2023 recording, the number of accidents Work in Indonesia according to type membership BPJS employment reported 159,12 cases from wage-earning workers, 7,845 cases from non-wage-earning workers and 1,363 cases from workers construction. Whereas for disease caused by Work recorded as much as 91 cases. Number work accident in Indonesia still classified as tall, especially in the industrial sector. Most work accidents occur due to human factors. error or error man. This happen Because lack of awareness and commitment to occupational safety and health at both individual and organizational levels. Occupational safety aims to protect workers' rights. his safety in do work For welfare life and increase national production and productivity, ensure the safety of every person in the workplace, production sources are maintained and used in a way safe And efficient Safety And Health Work is a thought and effort to ensure the integrity and perfection of both the physical and spiritual workforce in particular, and humans in general. (Fadillah, Taufan M, Amay Suherman, 2019).

Laboratory as a place to carry out academic activities includes student practicums, lecturer and student research and community service on public own use tool And material or specific materials that require specific handling to minimize possible work risks. Student practicums are complex activities because they involve many aspects, namely psychomotor aspects (skills), cognitive aspects (knowledge) and affective aspects (attitudes) of the students themselves (Ayana, 2017).

Self awareness or self-awareness is raw materials that important to show clarity And understanding about behavior somebody. Self-awareness is also a starting point for personal development (Mumpuni, 2018). There is also a definition of *self-awareness* according to Steven and Howard (2003, in Fixky 2018), namely the ability of individuals to recognize feelings, reasons for feeling them, and realize the influence of their behavior on others. This includes the ability to clearly convey one's thoughts and feelings, defend oneself and defend one's opinion (assertive), direct and control oneself, the ability to be independent, recognize and accept one's shortcomings and strengths, realize one's potential, and be satisfied with one's potential. (Sihaloho, 2019).

Then according to (Dody, 2016) Self-awareness is an assessment of one's own behavior or self-defense with a state in which a person can understand themselves as precisely as possible. Self-awareness is the ability to recognize and sort out feelings in self, understand matter Which currently We feel and connection behavior We are towards others in terms of awareness of school discipline and in the surrounding environment, in this case self-awareness is related to forming attitudes. Student awareness of implementing occupational health and safety is still very low, especially the use of personal protective equipment (PPE).

This study aims to determine the factors that causing students to be negligent in their occupational health and safety when conducting practicals or research and to be able to provide solutions or take appropriate steps to increase understanding and awareness in order to realize occupational health and safety in the laboratory.

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Based on the observations I saw during the practical lectures, there were still students who were lacking self-awareness of K3. This can be seen when students take welding practice lectures on cutting practical materials using a grinder, students are still lacking in the use of PPE for K3.

METHOD

The type of research is a scientific method used to obtain data with a purpose and usefulness. This research is seen from the data analysis, using descriptive statistical analysis. Descriptive statistics are statistics used to analyze data by describing or depicting the data that has been collected as it is without intending to make conclusions that apply to the public or generalization. According to Sugiyono (2013:8), quantitative research methods are used to research certain populations or samples, data collection using research instruments, data analysis is quantitative, with the aim of testing the established hypothesis.

Place For do study This implemented in the educational laboratory technique machine Sriwijaya University . The research population used in this study were all students of Mechanical Engineering Education Class of 2022, and Class of 2023 totaling 138 students, this data is based on PTM student data obtained from Sriwijaya University. Determination of the number of samples in this study was by using the Slovin formula. "The Slovin formula is used to determine the size of the research sample with the selected level of significance, will use 0.05 (5%) or 0.01 (1%)". The population number N = 138 assuming an error rate = 5%, then The number of samples to be used in this study is 152 people.

Before being used to collect data, the research instrument was tested for construct validity through expert judgment to ensure the suitability of the statement items with the theoretical constructs being measured. The validation process involved the supervisor and validator who assessed readability, clarity of wording, and relevance to the research variables, namely the ability of discipline and responsibility in the context of K3 towards self-awareness. After revision based on the validator's suggestions, the instrument was declared valid and ready to be used as a research measuring tool.

Then a reliability test was conducted using the Cronbach Alpha technique which obtained a Cronbach's Alpha value of 0.668, which means it is far above the minimum limit value of 0.60. This shows that the instrument used in this study is in the very reliable category. Thus, the questionnaire instrument is suitable for measuring the variables of students' discipline and responsibility abilities in the K3 course towards *self-awareness* .

The data collection techniques used are questionnaire and observation techniques. According to Sugiyono (2017), questionnaires are defined as a method collection data where respondents were asked to answer a series of written questions or statements. Respondents' answers are collected directly through questionnaires or surveys. This method can help obtain a large number of responses from respondents. The data analysis techniques used are validity and reliability tests, normality tests, homogeneity tests, SEM PLS tests.

Structural Equation Modeling (SEM) is a set of statistical techniques that allow testing a relatively complex set of relationships that cannot be solved by linear regression equations. In SEM there are 3 (three) activities simultaneously, namely checking the validity and reliability of the instrument (*confirmatory factor analysis*), testing the model relationship between variables (*path analysis*), and obtain a suitable model for prediction (structural model and regression analysis) (Harahap, 2020). According to Abdillah & Jogiyanto (2015) in Salukh et al. (2022) *Structural Equation Modeling-Partial Least Square* (SEM-PLS) is a variant-based structural equation analysis (SEM) that can simultaneously test measurement models and test structural models.

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FINDINGS AND DISCUSSION

The method used in this study is a quantitative method with an exposé-facto approach. This approach was chosen because the researcher did not provide direct treatment, but rather analyzed the relationship between variables based on existing data. The instrument used was a closed questionnaire based on a Likert scale which was compiled based on indicators of discipline and responsibility towards *self-awareness*. This instrument has previously gone through a construct validation stage by the supervising lecturer and expert validator, and its reliability has been tested using the SPSS version 24.0 program.

The data analysis process was carried out systematically, starting with a quantitative construct validity test through expert assessment, then continued with a reliability test using Alpha Cronbach. After the instrument stated valid And reliable, done test prerequisite in the form of normality test And test homogeneity variance For ensure data meets the requirements of parametric statistical analysis. Furthermore, a hypothesis test was conducted with smart-pls to determine the influence of discipline and responsibility variables. Respond to *self-awareness* partially and simultaneously.

Before conducting a hypothesis test, a prerequisite analysis test must first be carried out. For ensure that data that used fulfil assumption basic in parametric statistical analysis. The prerequisite tests conducted include normality tests and variance homogeneity tests.

Normality

In this study, the normality test was conducted using the Kolmogorov-Smirnov method with the help of the SPSS version 24.0 program. The decision-making criteria in this test are: If the significance value (Asymp. Sig. 2-tailed) > 0.05, then the data is declared normally distributed. If the significance value ≤ 0.05, then the data is not normally distributed.

Table 2. Normality Test

One Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		152
Normal Parameters [a,b]	Mean	.0000000
	Std. Deviation	2.74953141
Most Extreme Differences	Absolute	.070
	Positive	.052
	Negative	- .070
Test Statistics		.070
Asymp. Sig. (2- tailed)		.064 [c]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Based on the output obtained, the Asymp. Sig. (2-tailed) value is 0.064, and the Monte Carlo Sig. (2-tailed) value is 0.200. Both significance values are greater than 0.05. Thus, it can be It is concluded that the residual data in this study is normally distributed, so it meets the requirements for conducting parametric statistical tests.

Homogeneity

In this study, the homogeneity test was carried out using Levene's Test through help program SPSS version 24.0. Data is said fulfil condition homogeneous if the value significance (Sig.) > 0.05. The following are the results of the homogeneity test of variance on the research data:

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Table 2. Test Homogeneity Discipline to *Self-Awareness*

Test of Homogeneity of Variances

		Levene Statistics	df1	df2	Sig.
DISCIPLINE	Based on Mean	.618	11	140	.812
	Based on Median	.483	11	140	.911
	Based on Median and with adjusted df	.483	11	101,782	.910
	Based on trimmed mean	.579	11	140	.844

Table 3. Test Homogeneity Not quite enough Jaewab to *Self Awareness*

Test of Homogeneity of Variances

		Levene Statistics	df1	df2	Sig.
RESPONSIBILITY	Based on Mean	.740	11	140	.698
	Based on Median	.626	11	140	.804
	Based on Median and with adjusted df	.626	11	105,432	.803
	Based on trimmed mean	.718	11	140	.719

Based on the output of Levene's Test for Homogeneity of Variance, the significance values (Sig.) obtained were 0.618 (based on the mean), 0.483 (based on the median), 0.483 (based on the median with adjusted df), and 0.579 (based on the trimmed mean) for discipline towards *self-awareness* , while 0.740 (based on the mean), 0.626 (based on the median), 0.626 (based on median with adjusted df), And 0.718 (based on trimmed mean) responsibility for *self-awareness* . All significance values are greater than 0.05, so it can be concluded that there is no significant difference in variance between groups. Thus, the data in this study meets the assumption of homogeneity of variance, which means that the variance between groups is homogeneous.

After the data is declared valid, reliable, and meets the assumption of homogeneity of variance, the next step is to conduct a hypothesis test. This hypothesis test aims to determine whether there is a significant influence of the influence of Discipline and Responsibility on Self-Awareness of K3 Implementation in Mechanical Engineering Education Practice Lectures at Sriwijaya University. The test was carried out using Smart PLS V4.1.1.2.

Outer Loading

Outer loading is a value that explains the relationship (correlation) between an indicator and its latent variable. The higher the outer loading, the closer the relationship between an indicator and its latent variable. Outer loading values > 0.7 are acceptable. While outer loading values < 0.4 are always eliminated from process analysis. Mark outer loading > 0.7, means 0.72 ≈ 50% variability from a indicators can explained or absorbed by its latent variables. In general, outer loading values of 0.4-0.7 can be considered for elimination when when eliminated increases the composite reliability or average variance value.

Table 4. Results Outer Loading

	Discipline	**Self Awareness**	**Not Quite Enough Answer**
A1	0.722		
A2	0.787		
A3	0.813		
A4	0.813		
A5	0.751		
A6	0.744		
A7	0.726		
A8	0.730		
A9	0.728		
B1			0.748
B10			0.740
B11			0.772
B2			0.738

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B3	0.720
B4	0.758
B5	0.789
B6	0.795
B7	0.861
B8	0.778
B9	0.750
C1	0.816
C2	0.838
C3	0.839
C4	0.834
C5	0.790
C6	0.870
C7	0.827

Based on the outer loading results in the Figure, it is known that all outer loading values are > 0.7, which means that all indicators are maintained in the analysis process. Next. In addition to looking at the value of the loading factor, validity can also be seen from the value of AVE, which is said to be valid if the AVE value > 0.5.

Table 5. AVE Results

	Cronbach's alpha	Reliability composite (rho a)	Reliability composite (rho c)	Average variance extracted (AVE)
Discipline	0.907	0.907	0.924	0.575
Self Awareness	0.925	0.926	0.940	0.690
Not Quite Enough Answer	0.931	0.933	0.941	0.591

From the results above, it can be seen that the AVE value of all variables is above 0.5 (green) so that the test can be continued. In the context of PLS-SEM, Composite reliability is a more appropriate measure of reliability, compared to Cronbach's alpha. The composite reliability value received is > 0.7. Composite value reliability 0.6-0.7 is still acceptable for exploratory research. Based on the composite reliability results in Figure , it is known that all composite reliability values are > 0.7. So it can be concluded that the construct has good reliability.

Discriminant Validity: Cross-Loading

Discriminant validity tests the extent to which a construct is truly different from construct other. Compare mark outer loading of an indicator on its latent variable and the outer loading value of the indicator against other latent variables. This approach is called cross loading. On approach This, mark outer loading a indicator to its latent variable, must be greater than the outer loading value of the indicator to other latent variables. In this approach, it is tested whether an indicator is really better at measuring its latent variable, compared to other latent variables.

Table 6. Results Validity Discriminant Cross Loading

	Discipline	Self Awareness	Not Quite Enough Answer
A1	0.722	0.572	0.680
A2	0.787	0.551	0.578
A3	0.813	0.541	0.580
A4	0.813	0.541	0.580
A5	0.751	0.554	0.646
A6	0.744	0.573	0.618
A7	0.726	0.513	0.544
A8	0.730	0.650	0.619

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A9	0.728	0.660	0.612
B1	0.574	0.584	0.748
B10	0.581	0.604	0.740
B11	0.595	0.705	0.772
B2	0.557	0.590	0.738
B3	0.534	0.578	0.720
B4	0.577	0.588	0.758
B5	0.672	0.679	0.789
B6	0.677	0.696	0.795
B7	0.710	0.740	0.861
B8	0.616	0.643	0.778
B9	0.684	0.583	0.750
C1	0.685	0.816	0.720
C2	0.624	0.838	0.702
C3	0.591	0.839	0.701
C4	0.670	0.834	0.724
C5	0.580	0.790	0.657
C6	0.660	0.870	0.688
C7	0.605	0.827	0.624

In cross-loading testing, the loading value between each indicator and its corresponding latent variable is compared to the loading values between that indicator and other latent variables. It is expected that the loading value between an indicator and its own latent variable is higher than the loading values between that indicator and other latent variables. Based on the cross-loading results, it can be concluded that the loading values between each indicator and its respective latent variable are indeed higher compared to those with other latent variables.

Structural Model Testing (Inner Model)

The structural model was evaluated using R-square for the dependent variable and path coefficient values for the independent variables which were then assessed. its significance is based on the t-statistic value of each path.

Table 6. R Square Results

	R-square	**Adjusted R- square**
Self- awareness	0.713	0.710
Responsibility	0.648	0.645

On The table presents the r-square values. (determination coefficient). The r-square value is a value that states how much the independent variable is able to explain the variance of the dependent variable. Quantitative Data Analysis with SmartPLS 4 It is known that the r-square value on the latent variable *self-awareness* is 0.713, which means that the Compensation variable is able to explain the variance of the dependent variable satisfaction by 71.3%. Meanwhile, the r-square value is known on variable latent Performance is 0.648, which means variable Compensation and satisfaction capable explain variance from variable not free Performance as big as 64.8%.

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Inertial Model

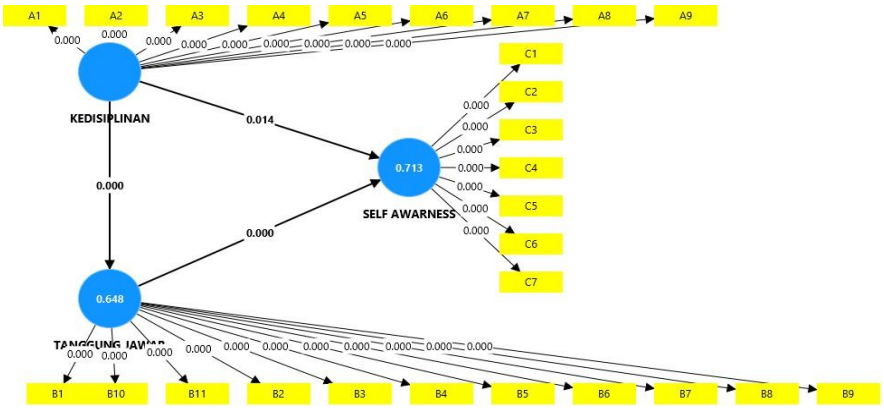

Figure 1. Iner Model

Furthermore, significance testing will be conducted to determine whether compensation has a significant effect on satisfaction.

Table 7. Significance Test Results

	Original sample (O)	Sample average (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	Mark P (P values)
Discipline -> Self Awareness	0.264	0.264	0.107	2,468	0.014
Discipline -> Responsibility	0.805	0.811	0.038	21,172	0.000
Responsibility -> Self Awareness	0.618	0.621	0.098	6.282	0.000

Based on the table, it is known that the path coefficient value (original sample) of discipline on *self-awareness* is 0.264, which is positive, which means that discipline has a positive effect on *self-awareness*. It is known that the P-Values value = 0.003 <0.05, so it is concluded that discipline has a significant effect on *self-awareness* . Based on these results, the results obtained are that discipline has a positive and significant effect on *self-awareness* (hypothesis accepted). It is known that the path coefficient value (original sample) of discipline on not quite enough the answer is 0.805, namely worth positive, which means that discipline has a positive effect on responsibility. It is known that the P-Values = 0.000 < 0.05, so it is concluded that discipline has a significant effect on responsibility. Based on these results, then The results obtained showed that discipline had a positive and significant effect on responsibility (hypothesis accepted). It is known that the path coefficient value (original sample) of responsibility on *self-awareness* is 0.621, which is positive, which means that responsibility has a positive effect on self-awareness. awareness. It is known that the P-Values = 0.000 < 0.05, so it is concluded responsibility has a significant effect on *self-awareness* . Based on these results, the results obtained show that responsibility has a positive and significant effect on *self-awareness* (hypothesis accepted).

Table 8. Testing Mediation

		Sample average (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	Mark P (P values)
Discipline -> self awareness	0.497	0.504	0.091	5.475	0.000

Based on the results of the mediation test, it is known that there is a direct influence of discipline on *self awareness* is 0.497 (Original Sample column). It is known that the P-Values = 0.000 < 0.05, so it is concluded significantly mediates the relationship between discipline influence *self-awareness* directly.

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CONCLUSIONS

Discipline and responsibility have a significant effect on increasing students' self-awareness in implementing K3 during practice in the Mechanical Engineering Education Study Program, Sriwijaya University. Students who are disciplined and responsible are more concerned about safety, are able to recognize potential hazards, and apply K3 independently. This creates a safe, productive learning environment that is in accordance with the demands of the world of work in the engineering field, and forms a positive safety culture.

REFERENCES

Ayana, M. (2017). The effect of discipline and responsibility on students' self-awareness in safety practices. Journal of Educational Psychology, 12(2), 85–94.

Dody, S. (2016). The Role of Self Awareness in Mediating the Influence of Academic Supervisory Supervision and Principal Managerial Ability on Competence Teacher. *Journal Education Knowledge Social* , *26* (1), 35– 43. http://journals.ums.ac.id/index.php/jpis/article/view/2063

Fadillah, Taufan M, Amay Suherman, A. (2019). Industrial Occupational Health and Safety (K3) Standards in Machining Practice Learning at Vocational High Schools. *Journal of Mechanical Engineering Education* , *6* (1), 112–117.

Harahap, LK (2020). SEM (Structural Equation Modeling) Analysis With SMARTPLS (Partial Least Square). *Faculty of Science and Technology Uin Walisongo Semarang* , *1* , 1.

Mumpuni, T. (2018). The Relationship between Self Awareness and Participant Discipline Educating Grade VI at Mi An Nur Deyangan Mertoyudan in the 2017/2018 Academic Year. *Proceedings of the 7th National Conference of the Association of Postgraduate Programs of Muhammadiyah Aisyiyah Higher Education Institutions (APPPTMA)* , 385–395.

Olewski, T., & Snakard, M. (2017). Occupational health and safety management in manufacturing industries. Journal of Safety Research.

Parashakti, RD, & Putriawati. (2020). The Influence of Occupational Safety and Health (K3), Work Environment and Workload on Employee Performance. *Journal of Occupational Health and Safety (JHS) Applied Management* , *1* (3), 290–304. https://doi.org/10.31933/jimt.v1i3.113

Salukh, L., Azizah, S. N., & Dear, A. (2022). Statistics Study with IBM SPSS and Data Interpretation. Yogyakarta: Andi Publisher.

Sihaloho, RP (2019). The Relationship Between Self Awareness and Deindividuation in Students Who Perpetrate Hate Speech. *Mandala Education Scientific Journal* , *5* (2), 114. https://doi.org/10.58258/jime.v5i2.795

Sugiyono. (2017). *Quantitative, Qualitative, and R&D Research Methods* . Bandung: Alfabeta.

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